Ecosystem Restoration Program Plan
Year 13 Annual Report

(State FY 2012-13)

Implementing Agencies:
California Department of Fish & Game
United States Fish & Wildlife Service
NOAA Fisheries Service

Introduction

The Sacramento–San Joaquin Delta is an area of critical importance to California. It is home to more than half a million people; contains 500,000 acres of agriculture; provides drinking water for more than 25 million Californians; and serves as habitat for a diverse assortment of plant and animal species. However, due to the State's increasing population and demand for water and changing environmental conditions, the Delta is in jeopardy of collapse.

The Ecosystem Restoration Program (ERP) is a multi-agency effort with a Focus Area that includes the Sacramento–San Joaquin Delta, Suisun Bay, the Sacramento River below Shasta Dam, the San Joaquin River below the confluence with the Merced River, and their major tributary watersheds directly connected to the Bay–Delta system below major dams and reservoirs (Figure 1). Principle participants overseeing the ERP are the Department of Fish and Game (DFG), the United States Fish and Wildlife Service (USFWS), and the NOAA's National Marine Fisheries Service (NMFS), collectively known as ERP Implementing Agencies.

The ERP goals delineate the objectives for the future condition of the ERP Focus Area. Ecosystem restoration goals help develop and organize the numerous components of ERP. ERP is guided by six strategic goals as follows:

1. Recover endangered and other at-risk species and native biotic communities;
2. Rehabilitate ecological processes;
3. Maintain or enhance harvested species populations;
4. Protect and restore habitats;
5. Prevent the establishment of and reduce impacts from non-native invasive species; and
6. Improve or maintain water and sediment quality.

This document, the ERP Plan Year 13 Annual Report, describes the progress made toward achieving these six strategic goals. It summarizes the activities accomplished by ERP during the previous State fiscal year, Year 12, while identifying priority activities for the current fiscal year, Year 13, including activities completed by DFG ERP staff. A more detailed discussion of ERP activities for Year 13 can be found in the Ecosystem Restoration Program Activities Report Year 13 (DFG 2012).

Figure 1. ERP Focus Area.

ERP Funding

Funding for ERP has come from both State and federal sources. In addition, ERP funding has been used to match other sources of funding to complete priority projects.

State Funding. The primary sources of State funding for ERP projects include the following:

- Proposition 204–Safe, Clean, Reliable Water Supply Act (1996)
- Proposition 13–Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act (2000)
- Proposition 50–Water Quality, Supply and Safe Drinking Water Projects Act (2002)
- Proposition 84–Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act (2006)

For Year 13, ERP is requesting $31.4 million for program implementation (a combination of newly encumbered funds and reappropriated funds from previous years) to fund ongoing ERP project activities during State fiscal year 2012-2013. Approximately $5.3 million of that will support staff that will manage over 80 expected projects active during Year 13, as well as fund staff participating in various administrative, planning and monitoring efforts that affect the Delta ecosystem.

Federal Funding. Federal Bay–Delta funding for federal fiscal year 2013 is $133.4 million. Approximately $56.5 million will fund ecosystem restoration through various agencies, programs, partnerships, operations, and direct habitat restoration projects.

ERP Grant Program

A principle activity of ERP is to manage funded projects within the Focus Area. ERP has funded many projects to address the six strategic goals. Table 1 lists the types and number of projects funded by ERP through Year 12. In addition, Table 1 classifies each project by the primary type of work being accomplished. Note that most of the projects provide multiple benefits towards achieving more than one ERP goal, but they are only listed once under the primary function of that project. For specific information about any ERP project please contact ERP staff directly (ERP staff contacts can be found on the ERP website: http://www.dfg.ca.gov/erp/).

Table 1. Types and Number of Restoration Projects Funded by ERP Through Year 12

Type of Restoration Project	Amount Approved	Project Count
Riparian Habitat	$46,742,099	30
Fish Screens	$130,584,064	65
Ecosystem Water and Sediment Quality	$84,091,332	68
Hydrodynamics, Sediment Transport, and Flow Regimes	$37,871,441	31
Upland Habitat and Wildlife Friendly Agriculture	$57,952,260	13
Fish Passage	$72,013,291	17
Local Watershed Stewardship	$20,814,159	55
Shallow Water and Marsh Habitat	$74,578,297	53
At-Risk Species Assessment	$50,731,065	51
Non-Native Invasive Species	$33,761,206	35
Administrative or Program Support	$22,073,158	17
Harvestable Species Assessment	$8,949,094	10
Technical Support	$5,060,670	5
Environmental Water Management	$8,200,853	9
Environmental Education	$7,051,745	33
Lowland Floodplains and Bypasses	$46,023,066	30
River Channel Restoration	$25,005,948	18
Estuary Foodweb Productivity	$2,172,064	4
Mine Remediation	$2,177,550	4
X2 Relationships (Freshwater-Seawater Interface)	$509,222	1
Total	**$736,362,584**	**549**

Note: Changes in numbers from previous years reflect completed projects or those that are still in progress. Projects previously reported that have been withdrawn, canceled, or combined with others have been removed. A project type used in previous reports may have been changed to one that is a better match to its primary function.

ERP Grant Management. At the close of Year 12, ERP managed 77 active grant projects, including more than 20 projects that initiated work in Year 12. In addition, ERP completed work on 13 projects during Year 12, which are shown in Appendix A. Appendix B provides a summary of active projects during Year 13.

ERP Projects Database. ERP utilizes an Access/SQL Server database to track programmatic and fiscal information pertaining to ERP grants. DFG's Information Technology Branch maintains the hardware and software that support the database. Data entry and updating responsibilities are completed by ERP staff from the Water Branch and DFG Regions. ERP is required to report project information from the ERP Projects Database to update the Delta Stewardship Council on ERP's progress twice a year (June and December). The projects database is also used to update and maintain the Bond Accountability Databases, and project eligibility lists maintained by the Department of Water Resources, Department of Parks and Recreation, Department of Finance, and State Treasurer's Office.

Other ERP Activities

In addition to administering a grant program, ERP staff engage in activities that have ecological impacts within the ERP Focus Area and statewide. ERP staff are involved in planning efforts carried out by State and federal agencies, non-governmental organizations, stakeholders, and local governments. Currently, staff are developing conceptual models and monitoring programs, coordinating on non-native invasive species issues, and continuing coordination with related Programs.

***Adaptive Management and Performance Measures*.** ERP staff are actively involved in developing an adaptive management framework to be utilized by ERP. In addition, ERP staff are collaborating with other agencies to facilitate the implementation of a common approach for adaptive management implementation. Adaptive management is defined in the Delta Reform Act (Water Code Section 85052) as "a framework and flexible decision-making process for ongoing knowledge acquisition, monitoring, and evaluation leading to continuous improvements in management planning and implementation of a project to achieve specified objectives." An adaptive management approach provides a structured process that allows for taking action under uncertain conditions based on the best available science, closely monitoring and evaluating outcomes, and re-evaluating and adjusting decisions as more information is learned.

A key component of an adaptive management framework is the identification of measurable outcomes and associated performance measures linked to programmatic objectives via models. Measurable outcomes and accurate and operational performance measures are critical components of the adaptive management process in order to:

- document desired and anticipated outcomes following implementation of specific actions;
- help to define the monitoring required to evaluate the outcomes of those actions; and
- track progress towards achieving stated objectives (Dahm et al. 2009).

In Year 12, ERP staff revised the ERP adaptive management framework and associated performance measures for inclusion in the ERP Conservation Strategy to align with the adaptive management framework recommended in the Delta Plan.

Conceptual Model Development and Action Evaluation Process. Conceptual models represent a critical component of a science-based, transparent adaptive management process. They formalize and apply current scientific understanding, and provide a venue to identify areas of uncertainty, identify possible restoration actions, develop expectations, assess likelihood of success, define monitoring needs, and evaluate tradeoffs associated with different management actions. The Adaptive Management Planning Team and Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) developed an initial suite of life history and ecosystem conceptual models and a scientific evaluation process to assess outcomes of proposed restoration actions in the Delta. The models were developed using a common approach and a robust set of tools so that this process would support consistent application of

adaptive management. An early use of the models and evaluation process was to evaluate draft conservation measures for the Bay Delta Conservation Plan. ERP continues to work with the Delta Science Program, and other interested parties, to refine and further develop conceptual models of relevance to resource management in the Delta.

Non-Native Invasive Species Program. Under the Non–Native Invasive Species (NIS) Program, ERP funds one position in DFG to coordinate activities to prevent the introduction of —and manage the existing—non-native invasive plant and animal species throughout the ERP Focus Area. DFG works with government and non-government agencies, private and public entities, researchers, educators, and other stakeholder groups to identify and resolve issues involving invasive species as stressors that affect or may affect native plants, wildlife, and/or habitats. The NIS Program activities DFG staff are involved in include:

- attending intradepartmental and interagency committee and working group meetings;
- attending and giving presentations or providing input at public meetings, conferences, and workshops;
- developing and distributing education and outreach materials to other agencies, entities, and the public;
- assisting in the preparation of management and response plans, best management practices, and other guidance/informational documents; and
- managing existing contracts and grants for research, education, outreach, and management activities.

Year 12 ERP Highlights

The following discussion highlights a few of ERP's accomplishments in Year 12. A more detailed summary of the full range of ERP Year 12 activities can be found in the Ecosystem Restoration Program Activities Report Year 13 (DFG 2012).

Battle Creek Salmon and Steelhead Restoration Project. The Battle Creek Salmon and Steelhead Restoration Project aims to restore and increase the populations of State and federally listed winter and spring-run Chinook salmon and steelhead in cold-water and high-elevation habitats. This is being accomplished through modification of the Battle Creek Hydroelectric Project facilities and operations, owned and operated by Pacific Gas and Electric. The modifications will occur in three phases, which includes increasing instream flow releases, removing five diversion dams, constructing fish ladders and fish screens on three diversion dams, and constructing tailrace connectors to minimize the diversion of water from the North Fork of Battle Creek to the South Fork. Once all three phases have been completed, the project will have restored fish access to approximately 42 miles of habitat in Battle Creek and an additional 6 miles of habitat in its tributaries.

Year 12 accomplishments for the Restoration Project included continued work on the fish screen and ladder construction at the Eagle Canyon and North Battle Creek Feeder

diversion dams, as well as the Inskip Powerhouse penstock bypass and tailrace connector, now approximately 90% constructed. The removal of Wildcat Dam in August 2010 opened up 15 miles of upstream habitat, and monitoring surveys in the fall of 2011 indicated an increase of over four times the number of spring-run Chinook salmon redds previously found above the former dam site. Since 1996, ERP has contributed over $75.1 million towards restoration on Battle Creek (State: $34.4 million, Federal: $39.1 million, California Urban Water Agencies under Category III program: $1.6 million). Currently ERP has four active projects for Battle Creek restoration.

Contaminants and Water Quality. Ecosystem water quality is an important facet of the overall ERP effort. The purpose of the ecosystem water quality program is to create water quality conditions that fully support a healthy and diverse ecosystem and the multiplicity of human uses of waters, including environmental, agricultural, drinking, industrial, and recreational. To achieve this, degraded water quality and contaminants present in the water column and sediments need to be addressed and ultimately eliminated. In Year 12, ERP supported projects on understanding methylmercury production and management measures focused on reducing production and/or exports; methylmercury affects on birds in San Francisco Bay; dissolved oxygen depletion in the Stockton Deep Water Ship Channel; modeling of the San Joaquin River watershed to assist in dissolved oxygen load allocation; contaminant affects on delta smelt; contaminant and disease affects on delta smelt health and productivity; and the nutritional status of juvenile salmonids exposed to various water quality stressors.

Patterson Irrigation District Fish Screen. In partnership with the Anadromous Fish Screen Program (AFSP) and Patterson Irrigation District (PID), ERP provided State funding for the new 195 cfs Patterson Irrigation District Fish Screen and Intake Facility located on the San Joaquin River near the town of Patterson. The new facility prevents entrainment of at-risk native fish species, including Chinook salmon and Central Valley steelhead, by replacing the existing unscreened diversion with a state-of-the-art fish screen and intake facility which meets or exceeds federal and state screening criteria. Beginning in 2001, the ERP provided grant funding for the planning, design and environmental compliance, and construction phases of the project. Construction was completed and the new facility was dedicated on September 29, 2011. The total project cost $13.8 million contributed through the following funding sources: $6.9 million Federal (AFSP), $5.38 million State (ERP), and $1.52 million local (PID).

American Basin Fish Screen and Habitat Improvement Project. In partnership with the Anadromous Fish Screen Program, ERP is providing matching State cost share for the construction phase of Natomas Mutual Water Company's new 389 cfs screened pumping plant (Sankey Diversion) on the Sacramento River. When completed, the new facility will improve fish passage conditions for at-risk species in the Sacramento River by replacing existing unscreened diversions with a consolidated fish screen and intake facility which meets or exceeds federal and state screening criteria. Components of the project include construction of the screened Sankey Diversion, construction of distribution facilities required to deliver water from the Sankey Diversion outfall to existing points of use, the decommissioning, demolition and site restoration of the

Northern and Bennett Pumping Plants on the Natomas Cross Canal, and the decommissioning and removal of the Verona Diversion Dam. Construction began in 2010 and is expected to be completed in 2014. The estimated total project cost is $46 million contributed through the following funding sources: $23 million Federal (AFSP), $21.6 million State (ERP), and $1.4 million local funds.

ERP Coordination

Partners, including stakeholders and other State and federal agencies, are essential to accomplishing shared Delta ecosystem restoration visions and goals. ERP staff continue to coordinate with a growing number of partners that address ecosystem restoration within the ERP Focus Area.

Delta Stewardship Council (DSC). ERP management and staff coordinated with the Delta Stewardship Council and Delta Science Program staff in the development of the Delta Plan, particularly the chapters relating to ecosystem restoration, water quality, and adaptive management, as stipulated in a Memorandum of Understanding (MOU), dated January 4, 2011, between the DFG and DSC. ERP staff contributed to the planning of the Delta Plan, the development of policies, recommendations, performance measures and supporting text, and review of staff drafts of the Delta Plan and associated Draft Environmental Impact Statement. Portions of the ERP Conservation Strategy were incorporated into the Delta Plan, including a description of—and rationale for—habitat types targeted for restoration, suggested actions for management of non-native invasive species, and an elevation map to help guide habitat restoration priorities in the Delta.

In addition, ERP staff coordinated with Delta Science Program staff to ensure that the ERP adaptive management framework, as revised for the ERP Conservation Strategy, aligns with the adaptive management framework in the Delta Plan.

Central Valley Project Improvement Act (CVPIA). The CVPIA, enacted in 1992, mandated changes in management of the Central Valley Project (CVP), particularly for the protection, restoration, and enhancement of fish and wildlife. Among its provisions for water transfers and contracts, CVPIA calls for 800,000 acre-feet of water dedicated to fish and wildlife annually, special efforts to restore anadromous fish populations by 2002, a restoration fund financed by water and power users for habitat restoration and enhancement and water and land acquisitions, and firm water supplies for Central Valley wildlife refuges (USBR 2008).

CVPIA programs integrated with ERP implementation will continue in Year 13. Such programs include the Anadromous Fish Restoration Program (AFRP), which addresses environmental limiting factors for anadromous fish; the Dedicated Project Yield, which augments flows on CVP-controlled streams and moderates CVP pumping from the Delta; and the AFSP, which assists in the screening of water diversions to protect fish.

Bay Delta Conservation Plan (BDCP). ERP continues to provide BDCP with technical assistance including the development of biological goals and objectives, selecting appropriate methods for scientific analysis, development of an adaptive management and monitoring program, and conducting data analysis, peer review, habitat mapping, and other activities associated with developing a Natural Communities Conservation Plan and Habitat Conservation Plan.

The BDCP Conservation Strategy is being developed to restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework (BDCP 2012). Several State and federal agencies, public water agencies, non-governmental organizations, agricultural interests, and other organizations are working together to develop the plan. If adopted and approved by the State and federal agencies, the BDCP will result in the issuance of long-term regulatory authorizations and assurances for activities involving the extensive restoration of habitat in combination with alterations to water conveyance infrastructure and water management. ERP Implementing Agencies will continue to coordinate with the BDCP process to assure consistency with ERP goals and objectives.

***FloodSAFE California* Initiative (FloodSAFE).** FloodSAFE is an integrated, system-wide approach for sustainable flood risk management in California. The overall vision of FloodSAFE is to improve public safety, protect and enhance environmental and cultural resources, and support economic growth by reducing the probability of destructive floods, promoting beneficial floodplain processes, and lowering the damages caused by flooding. DFG participated in the development of the 2012 Central Valley Flood Protection Plan (CVFPP), including its accompanying Conservation Framework (CF), with the goal of providing input making it consistent with the ERP Conservation Strategy. The CVFPP is required to describe how DWR and other partners will protect, enhance, and improve the status and trends of ecosystem processes, habitats, and species associated with this flood management system.

After being initially adopted by the Central Valley Flood Protection Board on June 29, 2012, the CVFPP will be revised and adopted every 5 years after this initial adoption. ERP and regional DFG staff will continue to provide DWR with data support and document review, as well as policy and technical advice for development of the first revision due in 2017.

Fish Restoration Program Agreement* (FRPA)*. FRPA is an agreement between DFG and DWR to cooperatively establish the management, financial, and implementation framework necessary to execute specific Reasonable and Prudent Alternatives (RPA) prescribed by the USFWS Biological Opinion (BiOp), NMFS BiOp and DFG Incidental Take Permit (ITP). The RPAs are intended to mitigate impacts on California Endangered Species Act and Endangered Species Act listed fish species from the ongoing operation of the State Water Project (SWP) Delta Pumping Facilities. Specifically, through FRPA, DWR and DFG, in coordination with ERP, seek to create or restore 8,000 acres of intertidal and associated subtidal fish habitat in the Delta and Suisun Marsh for Delta smelt, longfin smelt, and Chinook salmon. Significant

accomplishments in Year 12 include the completion of the FRPA Implementation Strategy, initiation of planning and design for the restoration of Prospect Island to tidal marsh, preparation of the Cache Slough Complex Conservation Strategy Work Plan, and provided funding for the ongoing restoration of Battle Creek.

Delta Tributary Instream Flow. The objective of DFG's Sacramento – San Joaquin Delta Tributary (Delta) Instream Flow Program (IFP) is to collect scientifically based defensible data on the relationships between flow and available stream habitat. DFG must conduct and provide oversight on new flow studies in Delta tributaries and make flow recommendations to the State Water Resources Control Board to fulfill the mandates of SBX7 1 over the ten year period from Year 11 to Year 21. DFG's instream flow efforts in priority Delta tributaries may include performance review of studies and development of flows by DFG or its contractors; consultation regarding study plans with individuals, agencies or corporations performing studies; review of instream flow studies not performed by DFG itself; and development of associated recommendations from studies not performed by DFG. The IFP is currently working with other DFG staff and the USFWS to develop a study plan for the Lower Butte Creek instream flow study. Work has also begun on development of a Quality Assurance (QA) program for the IFP under a contract with San Jose State University.

Fish Passage Improvement Program (FPIP). ERP continues its partnership with the Fish Passage Improvement Program (FPIP) administered by DWR. FPIP is an interdisciplinary team of DWR biologists and engineers, which identifies and evaluates the potential to modify or remove structures that impede the migration of anadromous fish within the Central Valley. FPIP works in partnerships with DFG, the CALFISH program, Fish Passage Forum, local agencies, landowners, NMFS, and USFWS.

Delta Vision Foundation. ERP staff took the lead in compiling information on DFG activities for the Delta Vision Foundation, in support of the 2012 Delta Vision Report Card (Delta Vision Foundation 2012). The Delta Vision Report Card assesses the status of the Delta ecosystem and water supply reliability and the progress and effectiveness of agencies and organizations in implementing the actions recommended in the Delta Vision Strategic Plan (Delta Vision Blue Ribbon Task Force 2008).

State Wildlife Action Plan. The State Wildlife Action Plan (SWAP) serves as a blueprint for the conservation of fish and wildlife resources. SWAP guides conservation actions for assessing the health of fish and wildlife and their habitats by identifying threats to species and habitats, outlining steps to conserve species of greatest conservation need, and establishing guidelines for monitoring the progress and success of the plan once implemented. ERP staff are part of the team developing the next update and are looking at ways to integrate new scientific findings developed as a result of ERP projects since the first SWAP was completed in 2005. ERP, natural resource agencies, non-governmental organizations, and other conservation groups utilize SWAP to guide planning efforts across California and SWAP allows DFG to apply for federal funding such as the State Wildlife Grant (SWG), Pittman-Robertson, State Sport Fish Restoration and Section 6.

California Water Quality Monitoring Council (CWQMC). The California Water Quality Monitoring Council is required under statute to develop specific recommendations to improve the coordination and cost-effectiveness of water quality and ecosystem monitoring and assessment, enhance integration of monitoring data across departments and agencies, and increase public accessibility to monitoring data and assessment information. A key recommendation of the CWQMC is to provide a platform for intuitive, streamlined public access to water quality and ecosystem information that directly addresses users' questions and decision-making needs. To implement its vision, the CWQMC and its theme-specific workgroups are developing the "My Water Quality" website (www.CaWaterQuality.net) to provide a single, global access point to a set of theme-based internet portals. The website is designed around clear intuitive questions that are readily understood by decision makers, agency managers, legislators, scientists, and the public (e.g., Are our aquatic ecosystems healthy?). ERP staff participate in workgroups tasked with developing and maintaining internet portals pertinent to aquatic ecosystem health in wetlands, streams/rivers, and estuaries.

Central Valley Regional Water Quality Control Board (CVRWQCB). Collaboration with the CVRWQCB is key to addressing water quality issues. ERP supports the CVRWQCB Total Maximum Daily Load (TMDL) activities to the extent possible either through funding projects that further the science needed to develop TMDLs, providing support for technical advisory committees for TMDLs, or funding synthesis of literature and recent research used in developing the scientific knowledge base for regulatory actions. ERP staff participates on various committees and review teams that address ERP water quality priorities.

Year 13 Priorities and Activities

ERP has identified some key priorities and activities that are anticipated for Year 13, as follows:

Grant Agreement Execution. ERP staff are currently processing the remaining grant agreements for projects that were approved through the Directed Action process or the 2010/2011 Proposal Solicitation Process (PSP). It is anticipated that at least five agreements will be executed during Year 13. In addition, ERP may identify priorities for additional projects during Year 13, as funding becomes available.

Grant Management. ERP Grant Managers are currently managing 77 active grant projects during Year 13. Continued trainings and monthly meetings for Grant Managers ensure that the goals and objectives of ERP are being met and that projects accomplish approved tasks. In addition, ERP staff are conducting site visits of active and completed ERP-funded projects throughout the Focus Area on a quarterly basis.

ERP Conservation Strategy. ERP staff are in the process of finalizing the "Conservation Strategy for Restoration of the Sacramento–San Joaquin Delta, Sacramento Valley and San Joaquin Valley Regions" (Conservation Strategy) and

anticipate release of the Conservation Strategy in September/October 2012. The Conservation Strategy outlines actions and near term priorities to address ERP goals and objectives. ERP Implementing Agencies will encourage all agencies, groups, or individuals interested in resource conservation and management in the Delta to consider the Conservation Strategy as a resource for coordinating and integrating actions in the ERP Focus Area.

ERP Highlighted Projects Report. ERP staff are compiling a report of signature projects that represent key restoration activities and priorities. This report will provide a brief summary of why each project is important to both the the Delta ecosystem and the State. Types of activities that this report will feature are floodplain restoration, tidal habitat restoration, available habitat increased, research projects, water quality, and fish screens.

Conceptual Models. Several conceptual models for physical and chemical stressors, species life histories, and delta habitats have been developed in recent years through the DRERIP meetings. Models for floodplains, salmon, and sediment will be published in an upcoming, dedicated issue of San Francisco Estuary and Watershed Science Online Journal. Many of these models will be used to evaluate restoration actions being considered for Prospect Island. In addition, ERP-supported projects are providing detailed information on mercury and methylmercury in managed wetlands that will be used to update the Mercury Conceptual Model.

Coordination and Outreach:

Delta Stewardship Council and Delta Science Program. ERP staff will continue to coordinate with the Delta Stewardship Council and Delta Science Program in the development of the Delta Plan and the Delta Science Plan (to be completed in 2013). These and other related efforts and activities are stipulated in the MOU between DFG and DSC, facilitating implementation of the Sacramento–San Joaquin Delta Reform Act of 2009.

Delta Conservancy. The Sacramento–San Joaquin Delta Conservancy (Conservancy) was established through legislation to be the primary State agency to implement Delta ecosystem restoration. ERP staff anticipate ongoing coordination and collaboration with the Conservancy on all aspects of Delta restoration.

DWRs FloodSAFE. ERP and regional DFG staff will continue to provide DWR with data support, document review, as well as policy and technical advice, related to the development of their Conservation Strategy, which is being developed from the 2012 Conservation Framework. The Conservation Strategy is due to be completed by 2014.

ERP Outreach. ERP staff recognize the importance of sharing information gained and lessons learned in respect to ecosystem restoration, especially in the Delta. To build on ERP outreach, staff will be contributing to the Bay–Delta Science Conference by assisting in the planning of the conference and presenting several posters. Poster topics

include ERP overview, ERP highlighted projects, DRERIP conceptual models, and ERP's approach to communication, collaboration, and coordination. Additionally, many ERP-funded projects will be featured during the oral presentations. ERP staff anticipate participating in outreach at other venues when opportunities are identified.

Central Valley Regional Water Quality Control Board (CVRWQCB). ERP staff work with the CVRWQCB on the Technical Advisory Committee for the Methylmercury TMDL for the Delta. ERP staff will begin work on a synthesis for dissolved oxygen projects and current state of knowledge including revision of the DRERIP Dissolved Oxygen Conceptual Model.

Project Peer Review. ERP-funded projects and related ecosystem restoration projects are peer reviewed through an agreement with the University of California at Davis. Current projects supported through this agreement include the Technical Advisory Committee for the Methylmercury TMDL, review of the adaptive management plan for the Coleman Fish Hatchery, and evaluation of restoration alternatives for Prospect Island.

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Appendix A. Grant Projects Closed in Year 12

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ERP Project ID	Project Title	Grantee	Project Cost (Total Amount Awarded)	Project End Date	ERP Goals Addressed	Type of Restoration Project
ERP-02-P21	Restoring Ecosystem Integrity in the Northwest Delta: PHASE II	Solano Land Trust	$246,370.00	2/28/2012	1 - 5	Upland Habitat and Wildlife Friendly Agriculture
ERP-02-P26	Mill and Deer Creeks Protection and Stewardship	The Nature Conservancy	$4,700,000.00	12/31/2011	1,4,5,6	Upland Habitat and Wildlife Friendly Agriculture
ERP-04-S03	Integrated Regional Wetland Monitoring / Petaluma Marsh Expansion Project	Marin Audubon Society	$235,000	11/8/2011	1,2,4	Shallow Water and Marsh Habitat
ERP-04D-S07	Real-Time Flow Monitoring	California Department of Water Resources	$473,000.00	2/1/2012	1,2,4	Environmental Water Management
ERP-04D-S09	Estimating the Abundance of Sacramento River Juvenile Winter Chinook Salmon with Comparisons to Adult Escapement	U.S. Fish and Wildlife Service	$2,067,230.00	9/30/2011	1,3	At-Risk Species Assessment
ERP-04-S02	Monitoring for Invasive Spartina Control in the San Francisco Estuary	State Coastal Conservancy	$1,234,396.32	9/30/2011	5	Non-Native Invasive Species
ERP-04-S14	Terrestrial Weed Eradication Monitoring Protocol	Sonoma Ecology Center	$111,000.00	2/28/2012	5	Non-Native Invasive Species
ERP-05-S31	Sandhill Crane Use of Agricultural Lands in the Sacramento-San Joaquin Delta Region	U. S. Geological Survey	$493,033.00	12/8/2011	1,4	At-Risk Species Assessment
ERP-05-S33	Yolo-Solano Conservation Partnership	Yolo County Resource Conservation District	$2,257,973.00	3/1/2012	1,4	Upland Habitat and Wildlife Friendly Agriculture
ERP-06D-S21	Suisun Marsh Implementation Plan (SRCD)	Suisun Resource Conservation District	$321,607.19	6/30/2012	4	Shallow Water and Marsh Habitat
ERP-07D-S02	Lake Davis Pike Eradication Project - Implementation Phase	California Department of Fish and Game	$11,691,762.00	6/30/2012	5	Non-Native Invasive Species
ERP-09D-P01	M&T/Llano Seco Fish Screen Facility-Short Term Protection Project	Ducks Unlimited	$193,987.00	10/7/2011	1-4	Fish Screens
ERP-09D-S04	Patterson Irrigation District Fish Screen Construction Project	Patterson Irrigation District	$4,565,725.00	6/30/2012	1,3	Fish Screens
ERP-09-S01	Ecosystem Restoration Program Grant Management Services	GCAP Services, Inc.	$1,511,494.69	12/15/2011	1 -,6	Administrative or Program Support
ERP-02D-P53	Lower Deer Creek Restoration and Flood Management: Feasibility Study and Conceptual Design	Deer Creek Watershed Conservancy	$1,519,200.00	9/14/2011	1,2,4	Lowland Floodplains and Bypasses

Appendix B. Grant Projects Active in Year 13

Appendix B. Grant Projects Active in Year 13

ERP Project ID	Project Title	Grantee	Project Cost (Total Amount Awarded)	Project End Date	ERP Goals Addressed	Type of Restoration Project
ERP-05-S30	A Socio-Economic and Behavioral Analysis of Farmers' Decisions to Adopt or Reject the CALFED Conservation Initiatives	Sonoma State University	$175,228.00	12/30/2013	4	Administrative or Program Support
ERP-11-S16	A Systems Biology Assessment of EDCs in the Delta	University of California, Davis	$486,411.00	1/31/2015	1,6	Ecosystem Water and Sediment Quality
ERP-09D-S03	American Basin Fish Screen and Habitat Improvement (Phase IV-Construction) Project	Natomas Mutual Water Company	$9,000,000.00	6/30/2014	1	Fish Screens
ERP-02-P09-D	American Basin Fish Screen and Habitat Improvement Project	Natomas Mutual Water Company	$12,600,000.00	6/30/2014	1 - 3	Fish Screens
ERP-05-S28	American Basin Working Landscapes Project	Placer County Resource Conservation District	$1,860,898.00	12/31/2012	1,3,4,6	Upland Habitat and Wildlife Friendly Agriculture
ERP-06D-S18	Anadromous Fish Habitat Monitoring for the Battle Creek Salmon & Steelhead Restoration	U.S. Fish and Wildlife Service	$3,360,000.00	3/31/2013	2,3	At-Risk Species Assessment
ERP-99-B01	Battle Creek Salmon and Steelhead Restoration Project	Bureau of Reclamation	$27,200,000.00	6/30/2015	1,2,4	Fish Passage
ERP-08D-S04	Battle Creek Salmon and Steelhead Restoration Project - Phase 1A	Bureau of Reclamation	$26,812,500.00	6/30/2015	1 - 4	Fish Passage
ERP-07D-S13	Blacklock Mercury Monitoring	California Department of Fish and Game	$91,276.00	12/30/2012	6	Ecosystem Water and Sediment Quality
ERP-07D-S05	Blacklock Restoration Project Monitoring	California Department of Water Resources	$382,250.00	TBD	1,2,4,6	Shallow Water and Marsh Habitat
ERP-04D-S18	BREACH III: Evaluating and Predicting 'Restoration Thresholds' in Evolving Freshwater-Tidal Marshes	U.S. Fish and Wildlife Service	$2,447,998.00	6/30/2013	1,2,4,6	Shallow Water and Marsh Habitat
ERP-04-S10	Butte Creek Spring-run Chinook Salmon Life History Investigation	California State University, Chico Research Foundation	$291,661.00	5/31/2015	1,3	At-Risk Species Assessment
ERP-04-S16	Clear Creek Anadromous Salmonid Monitoring Program	U.S. Fish and Wildlife Service	$1,974,068.00	12/31/2011	1,3	At-Risk Species Assessment
ERP-07D-P05	Clear Creek Environmental Water Program	U.S. Fish and Wildlife Service	$813,745.00	6/30/2014	1,3	Hydrodynamics, Sediment Transport, and Flow Regimes
ERP-07D-P06	Complementing Water Planning Efforts for the Delta and Sacramento River: Application of the Ecological Flows Tool	The Nature Conservancy	$1,715,533.00	10/31/2012	1 - 6	Hydrodynamics, Sediment Transport, and Flow Regimes

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ERP Project ID	Project Title	Grantee	Project Cost (Total Amount Awarded)	Project End Date	ERP Goals Addressed	Type of Restoration Project
ERP-11-S19	Corona and Twin Peaks Mine Drainage Treatment Project	Tuleyome, Inc.	$1,530,550.00	2/1/2015	6	Mine Remediation
ERP-07D-P04	Cow Creek Fish Passage and Flow Improvement Project, Phase I	Western Shasta RCD	$2,000,000.00	TBD	1 - 4	Fish Passage
ERP-05-S34	Delta Working Landscapes	Delta Protection Commission	$800,000.00	3/31/2013	1,4,6	Local Watershed Stewardship
ERP-11-S02	Development Of A Spatially Explicit Ecosystem Model To Explore Physicochemical Drivers of Step Changes in POD Species And Distribution In The Sacramento-San Joaquin Delta And Suisun Bay	U.S. Geological Survey	$356,402.00	6/30/2015	1 - 4	Estuary Foodweb Productivity
ERP-10D-S02	Development of best management practices to reduce methyl mercury exports and concentrations from seasonal wetlands in the Yolo Wildlife Area (DFG)	California Department of Fish and Game	$168,509.00	2/1/2015	4,6	Ecosystem Water and Sediment Quality
ERP-10D-S04	Development of best management practices to reduce methyl mercury exports and concentrations from seasonal wetlands in the Yolo Wildlife Area. (SJSURF)	San Jose State University Foundation	$1,632,491.00	2/1/2015	6	Ecosystem Water and Sediment Quality
ERP-02-P03-D	Dutch Slough Restoration Project	State Coastal Conservancy	$1,500,000.00	6/30/2013	1,2,4	Shallow Water and Marsh Habitat
ERP-11D-S03	Ecological Performance of Fishes in an Ever-changing Estuary: The Effects of Nutritional Status on Environmental Stress Tolerance in Sturgeon	University of California, Davis	$472,990.56	2/1/2015	1	At-Risk Species Assessment
ERP-11-S12	Evaluation of Floodplain Rearing and Migration in the Yolo Bypass	California Department of Water Resources	$878,020.00	1/31/2015	1,2,4	At-Risk Species Assessment
ERP-11D-S18	Expanding Fish Tracking Array with Real-Time Monitoring of Tagged Sturgeon and Salmonids	University of California, Davis	$690,593.00	3/31/2014	1,2	At-Risk Species Assessment
ERP-11D-S17	Fall X2 Fish Health Study: Contrasts in Health Indices, Growth and Reproductive Fitness of Delta Smelt and Other Pelagic Fishes Rearing in the Low Salinity Zone and Cache Slough Regions	University of California, Davis	$2,980,196.00	12/15/2014	1 -2	At-Risk Species Assessment
ERP-05-S26	Fish Friendly Farming Environmental Certification Program	California Land Stewardship Institute	$1,000,243.00	12/31/2012	1,4,5,6	Local Watershed Stewardship
ERP-10D-S01	Fish Passage Improvement Program	California Department of Water Resources	$1,307,000.00	3/31/2014	1,3	Fish Passage

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ERP Project ID	Project Title	Grantee	Project Cost (Total Amount Awarded)	Project End Date	ERP Goals Addressed	Type of Restoration Project
ERP-11D-S21	Groundwater Monitoring Plan for the Lake Davis Pike Eradication Project	California Department of Fish and Game	$49,000.00	7/1/2014	5	Ecosystem Water and Sediment Quality
TBD	Habitat Creation on Working Landscapes (Yolo-Solano Conservation Partnership Part II)	Yolo County Resource Conservation District	$643,000.00	TBD	1 - 4	Upland Habitat and Wildlife Friendly Agriculture
ERP-07D-P03	Hill Slough West Restoration Project, Phase I - Preliminary Restoration Design, Environmental Documentation and Permitting	California Wildlife Foundation	$646,642.00	6/30/2013	1,2,4	Shallow Water and Marsh Habitat
ERP-11-S14	Identifying habitat characteristics that support native fish in the Delta and Suisun Marsh	University of California, Davis	$1,152,195.00	3/31/2015	1 - 4	Shallow Water and Marsh Habitat
ERP-10D-S03	Instream Flow Recommendations	U.S. Fish and Wildlife Service	$785,618.00	8/31/2014	6	Local Watershed Stewardship
ERP-10D-P01	IRWM Fish and Productivity Data Analysis and Interpretation	Association of Bay Area Governments	$420,000.00	3/31/2013	1,2,4	Shallow Water and Marsh Habitat
ERP-11-S15	Linking Habitat and Spatial Variability to Native Fish Predation	University of California, Davis	$730,307.00	1/31/2015	1 - 3	Non-Native Invasive Species
ERP-11-S09	Lower Clear Creek Aquatic Habitat and Mercury Abatement Project	Western Shasta Resource Conservation District	$4,539,015.00	8/14/2015	1 - 4	Ecosystem Water and Sediment Quality
ERP-05D-S18	Lower Clear Creek Floodway Rehabilitation Project (Phase 3B)	Western Shasta Resource Conservation District	$3,482,451.00	12/31/2015	1 - 4	River Channel Restoration
ERP-11-S06	Lower Cosumnes River Floodplain Restoration Project	Ducks Unlimited	$1,244,991.00	12/31/2015	1,2,4	Lowland Floodplains and Bypasses
ERP-11-S13	Lower Putah Creek Restoration from Toe Drain to Monticello Dam: Project Description Development, CEQA Compliance, Permits, Selected Final Design	Yolo Basin Foundation	$2,160,375.00	3/31/2015	1,2,5,6	River Channel Restoration
ERP-07D-S06	Lower Yolo Bypass Collaborative Process Project	Center for Collaborative Policy	$300,000.00	6/30/2013	1 - 6	Lowland Floodplains and Bypasses
ERP-02-P08-D	M & T / Llano Seco Fish Screen Facility Short-Term and Long-Term Protection Project	Ducks Unlimited	$4,390,087.00	6/30/2012	3	Fish Screens
ERP-11D-S01	M&T/Llano Seco Fish Screen Facility Long-Term Protection Project (Phase IV)	Ducks Unlimited	$2,480,610.00	9/1/2014	1,2,4	Fish Screens
ERP-11D-S20	M&T/Llano Seco Fish Screen Facility Short-Term Protection Project-Environmental Compliance	Ducks Unlimited	$542,640.00	6/30/2014	1,2,4	Fish Screens

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ERP Project ID	Project Title	Grantee	Project Cost (Total Amount Awarded)	Project End Date	ERP Goals Addressed	Type of Restoration Project
ERP-11-S08	Management Tools for Landscape-Scale Restoration of Ecological Functions in the Delta	Aquatic Science Center	$875,000.00	1/31/2015	1,2,4	Shallow Water and Marsh Habitat
ERP-11-S05	Managing Natural Resources for Adaptive Capacity: the Central Valley Chinook Salmon Portfolio	University of California, Berkeley	$489,319.00	9/30/2015	1,3	At-Risk Species Assessment
ERP-11-S07	McCormack-Williamson Tract Flood Control and Ecosystem Restoration	Reclamation District 2110	$3,314,300.00	12/31/2017	2	Lowland Floodplains and Bypasses
ERP-02D-C12	Mercury in San Francisco Bay-Delta Birds: Trophic Pathways, Bioaccumulation and Ecotoxicological Risk to Avian Reproduction	U.S. Fish and Wildlife Service	$5,823,262.00	6/30/2014	1,3,6	Ecosystem Water and Sediment Quality
ERP-04-S15	Monitoring Responses of the Delta Smelt Population to Multiple Restoration Actions in the San Francisco Estuary	University of California, Davis	$1,499,181.23	12/30/2011	1	At-Risk Species Assessment
ERP-03-M10	Outreach and Technical Services to Support Landowner and Watershed Resident's Participation in the Battle Creek Salmon and Steelhead Restoration Project	Battle Creek Watershed Conservancy	$785,618.00	8/31/2014	1,3	Local Watershed Stewardship
ERP-02D-P60	Pacific Flyway Center Initial Planning Project	Yolo Basin Foundation	$334,021.00	6/2/2013	1,2,4	Environmental Education
ERP-05-S25	Providing Landowner Incentives to Encourage Riparian Restoration and Natural River Processes on Working Landscapes	California State University, Chico Research Foundation	$599,821.00	12/31/2012	4,5	Local Watershed Stewardship
ERP-10D-S06	Quality Assurance Consulting Services	San Jose State University Foundation	$143,674.00	6/30/2013	2	Technical Support
ERP-02D-C11	Recovery Implementation for Riparian Brush Rabbit and Riparian Woodrat on the Lower Stanislaus River	U.S. Fish and Wildlife Service	$5,465,944.00	12/31/2012	1,2,3,5	At-Risk Species Assessment
ERP-08D-S05	Refine the fall-run chinook salmon population model	California State University, Fresno Foundation	$1,000,000.00	12/31/2012	1 - 3	At-Risk Species Assessment
ERP-02-P16-D	Restoration of the Confluence Area of the Sacramento River, Big Chico and Mud Creeks	The Nature Conservancy	$2,603,377.00	1/31/2015	1,2,4,6	Lowland Floodplains and Bypasses
ERP-02D-P54	Restoring Ecosystem Integrity in the Northwest Delta: Phase II	Solano Land Trust	$1,781,658.00	3/31/2013	1 - 5	Riparian Habitat
ERP-05-S27	Rice-Cover Crop Rotation Pilot Program	California Waterfowl Association	$1,649,051.00	2/2/2013	1,3,4	At-Risk Species Assessment

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ERP Project ID	Project Title	Grantee	Project Cost (Total Amount Awarded)	Project End Date	ERP Goals Addressed	Type of Restoration Project
ERP-05D-S29	Riparian Sanctuary (Phase II) – Bringing Agricultural and Ecological Interests Together for Pumping Plant Protection and Riparian Restoration (Sacramento River Mile 178) - Design Development and Environmental Compliance	River Partners	$683,698.00	3/30/2013	1,2,4,5	River Channel Restoration
ERP-06D-S15	Sacramento River Conservation Area Forum (SRCAF)	Sacramento River Conservation Area Forum	$656,277.00	12/31/2012	4	Riparian Habitat
ERP-07D-S08	Sacramento Valley/Delta Fish Screen Program	Family Water Alliance	$4,525,636.00	12/31/2012	1,3	Fish Screens
ERP-09D-S02	Sacramento-Central Valley Fish Screen Program	Family Water Alliance	$1,500,000.00	6/30/2013	1,3	Fish Screens
ERP-11-S11	Salinity effects on native and introduced SAV of Suisun Bay and the Delta	California State University, San Francisco Romberg Tiburon Center	$412,410.00	1/31/2015	1,2,4,5	Shallow Water and Marsh Habitat
ERP-08D-S03	San Joaquin River Dissolved Oxygen/Oxygen-consuming materials in San Joaquin River	University of the Pacific	$2,992,933.00	6/30/2013	1,6	Ecosystem Water and Sediment Quality
ERP-05-S23	Selby Creek Stream Habitat Restoration and Riparian Revegetation Project	Bioengineering Institute	$475,000.00	12/30/2013	4	River Channel Restoration
ERP-04D-S20	Suisun Marsh Implementation Plan (Jones & Stokes)	Jones & Stokes	$1,050,000.00	6/30/2012	4	Shallow Water and Marsh Habitat
ERP-07D-P02	Suisun Marsh Land Acquisition and Tidal Marsh Restoration - Elevation and Contaminant Surveys, Review of Land Acquisition Package, and Review of Property Appraisal	Wildlife Conservation Board	$926,869.64	12/31/2012	1 - 6	Shallow Water and Marsh Habitat
ERP-07D-P01	Suisun Marsh Land Acquisition and Tidal Marsh Restoration - Public Notification and Site Selection	Suisun Resource Conservation District	$16,499.99	12/31/2012	1 - 6	Shallow Water and Marsh Habitat
ERP-11-S04	Survival and Migratory Patterns of Juvenile Spring and Full Run Chinook Salmon in Sacramento River and Delta	University of California, Davis	$1,746,955.00	2/28/2015	1,3	At-Risk Species Assessment
ERP-07D-S12	UCD Project Review Office Services	University of California, Davis	$3,999,997.00	6/30/2013	1 - 6	Technical Support
ERP-04D-S08c	Upper Sacramento River Basin Chinook Salmon Escapement Monitoring Program (USFWS)	U.S. Fish and Wildlife Service	$496,210.00	3/31/2013	1,3	At-Risk Species Assessment

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ERP Project ID	Project Title	Grantee	Project Cost (Total Amount Awarded)	Project End Date	ERP Goals Addressed	Type of Restoration Project
ERP-11D-S22	Water Quality Effects on Survival, Growth, and Feeding Performance in Larval Delta Smelt from the Sacramento-San Joaquin Delta	U.S. Fish and Wildlife Service	$224,760.00	2/28/2015	6	At-Risk Species Assessment
ERP-02D-P56	West Coast Ballast Outreach Project	Regents of the University of California	$478,395.00	1/31/2013	5	Non-Native Invasive Species
ERP-10D-S05	West Stanislaus Irrigation District Fish Screen Intake Final Design Planning, Environmental Compliance and Permitting Project	Western Stanislaus Irrigation District	$2,600,000.00	3/31/2015	1,3	Fish Screens
ERP-11-S10	Wetland and Rice Management to Limit Methylmercury Production and Export	U.S. Geological Survey	$197,416.00	10/15/2013	6	Ecosystem Water and Sediment Quality
ERP-07D-P07	Wildlife and Vegetation Response to Experimental and Restoration of Flooded Riparian Forest Habitat for The Cosumnes River Preserve	The Nature Conservancy	$2,055,022.00	6/30/2015	1,3,4	Lowland Floodplains and Bypasses
ERP-09D-S05	Yuba City Fish Screen Project	City of Yuba City	$500,000.00	6/30/2012	1,3	Fish Screens