CALFED Bay-Delta Program

Ecosystem Restoration Program Plan Year 7, Year 6 Annotated Budget, and Milestones Update (State FYs 2006-07; Federal FYs 2007)

Implementing Agencies:
California Department of Fish & Game
United States Fish & Wildlife Service
NOAA's National Marine Fisheries Service

CALFED
BAY-DELTA
PROGRAM

August 1, 2006

Program Plan Organization

The California Bay-Delta Authority Act requires implementing agencies to develop an annual program plan and proposed budget for the following budget year describing how each implementing agency proposes to carry out their respective program elements during the following year. Each program plan and proposed budget must include program priorities, work plans, proposed budgets, and significant program products. Last year, the California Bay-Delta Authority did not approve the Ecosystem Restoration Program's (ERP) Multi-year Program Plan because there was a budget shortfall between the priority tasks and the available funding.

The context for the ERP plan is one of consistency amid transition and uncertainty. The primary focus of this program plan is Table 1, Year 6 Activities and Projected Year 7 Activities. This table records the ERP's priorities carried over from last year's plan, and includes information about what happened in Year 6 and what is planned for Year 7. These priorities are based on the goals, objectives, and targets for the Program that were identified in the Ecosystem Restoration Program Plan (2000) Volumes I, II,. In Year 6, activities were prioritized as a result of current issues such as the declining Delta pelagic species, and this prioritization was carried forward into Year 7.

This program plan serves as the vehicle to meet the above stated requirements, which includes the annual planning and budget document known as the Annotated Budget for implementing the Single Blueprint for Ecosystem Restoration (referred to as the Single Blueprint document). The years referred to in this document, e.g., Year 6, correspond with the State fiscal year (July to June) beginning with the year the Record of Decision was signed (2000-2001 State fiscal year, or Year 1); the Federal fiscal year is October to September. The annual Milestones Assessment is attached as an addendum to this document; the annual assessment is called for by the regulatory agencies as part of the reinitiation of consultation process, which began in 2004.

Several ongoing efforts, such as the Pelagic Organism Decline studies, are part of the backdrop that contributes to the uncertainty for this program plan. A partial list of other efforts that contribute to the uncertainty includes:

- 10 Year Action Plan— HCP/NCCP. In 2005, the CALFED Bay-Delta Program (Program) underwent an extensive review by the Little Hoover Commission, the California Department of Finance and KPMG, an independent management agency. As a result of the three reviews, the state Administration developed a 10-Year Action plan, which outlines the efforts to refocus the Program to meet the State's integrated resource management needs. As part of negotiations on the 10-Year Action Plan, water users, environmental groups and regulatory agencies sought a new approach for managing environmental regulatory requirements for the Delta. Through a voluntary process, water users who must comply with the California and Federal Endangered Species acts regarding on-going operations of their water projects are working cooperatively to explore preparation of one or more Habitat Conservation Plans under Section 10 of the Federal Endangered Species Act and Natural Communities Conservation Plans under the California Endangered Species Act (HCP/NCCP). It is anticipated that an HCP/NCCP for the Delta would serve as a strategic plan for guiding restoration efforts in the Delta.

The HCP/NCCP is only a small part of the overall ERP, and ought not to be confused as replacing the larger effort that is the ERP. Rather, the HCP/NCCP fits within the larger Ecosystem Restoration Program.

- Transition from California Bay-Delta Authority (CBDA) to the Department of Fish and Game (DFG) as lead State Implementing Agency. For the first four years of the Program, the ERP was managed by CBDA staff; statutorily, DFG was named as the State Implementing Agency for the ERP and was made responsible for its management. Over the past year, CBDA and DFG staffs have been working to make the transition of management responsibilities and decision making go as smoothly as possible. Beginning July 1, 2006, DFG, with the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), in coordination with CBDA, has full responsibility for the day-to-day management and administration of the ERP.

- End of Stage 1 Decisions. Ten years ago the Program was established to address and resolve long-standing disputes over California water management and its impacts. In its formative stage, the Program represented an unprecedented effort to build a framework for managing California's most precious natural resource: water. After years of public hearings, two draft programmatic environmental documents, and the CALFED Multi-Species Conservation Strategy (MSCS), the final Programmatic Environmental Impact Statement/Report and Record of Decision (ROD) were certified and signed in July and August 2000, respectively. As stated in the 10 Year Action Plan:

  > Both the PEIS/R and ROD pointed out that the Program had a 30-year time horizon, and because of that time frame, the approach would be one of staged implementation and decision-making. This strategic approach would allow decision makers to actively and adaptively manage the water resources by incorporating knowledge developed through research, project implementation, and monitoring. The adaptive management approach was selected to underscore the idea that while the Program's objectives are fixed over time, the actions may be adjusted to assure a durable solution even as conditions change, and as more is learned about the system and how it responds.
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  > As documented in the PEIS/R and ROD, the CALFED Agencies agreed that the first stage (Stage 1) would last seven years, after which a series of questions would be answered in order to collectively and collaboratively determine the activities for the Program's next stage. As stated in the Implementation Plan, "Stage 1 actions are subject to revision, including modification, deletion, or addition of individual actions, based upon information developed during program implementation; available resources, including funding and personnel; and logistical considerations." Some Stage 1 actions, along with other actions identified in the PEIS/R, were summarized and highlighted in the ROD and became collectively called "ROD Commitments." [Those actions characterized as ROD Commitments are a subset of actions listed in the larger PEIS/R document and are not limited to the Stage 1 timeframe; ROD Commitments apply to the 30-year Program.] ROD Commitments and Stage 1 actions do not focus on the same proposed actions, although there is some duplication; Stage 1 decisions are to be based upon the results of Stage 1 actions and ROD Commitments.
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  > Implementation of Stage 1 actions and ROD Commitments were hampered by state and federal budget shortfalls and staff reductions, resulting in delays in carrying out the anticipated actions.

Contracting difficulties sometimes led to missing critical timeframes and therefore added more delay to initial project implementation.

Stage 1 decisions are those which need to be made in order for policy-makers to determine the next steps for the CALFED Program, including the ERP. As stated in the ROD et. al., certain assumptions were in place in 2000 regarding funding, implementation time lines and adaptive management that did not take place as originally intended. As noted earlier, the anticipated level of funding did not occur and various factors affected carrying projects forward on the original time lines.

As stated in the 10 Year Action Plan, the Stage 1 decisions are:

- What additional actions are needed to achieve the drinking water quality goals?
- What is an appropriate scope for the ERP and related actions so the regulatory commitments can be extended beyond December 2007?
- Should the screened Sacramento River diversion be built or should alternatives to the Through-Delta conveyance be reconsidered?
- Should surface storage facilities be constructed?
- Is a new approach needed to reduce Delta levee risks?

- Milestones. In 2004, the Program completed a mid-Stage 1 assessment of progress towards achieving the milestones, a discrete set of ERP actions focused on contributing to recovery of endangered and threatened species. The U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the California Department of Fish and Game (CDFG) determined that the Program was making sufficient progress towards achieving the milestones and agreed to extend both the Environmental Water Account (EWA) and programmatic biological opinions and the Conservation agreement regarding the Program's Multi-Species Conservation Strategy (MSCS) to the end of Stage 1 (December 31, 2007).

  In their letters to the Program, both USFWS and NMFS listed milestones and other issues that they would like to see additional work during the remainder of Stage 1. The agencies also requested that the Program report annually about the continued progress toward achieving the milestones and addressing the other issues. The 2005 annual assessment is attached to this document as an addendum.

- PSP: Assisting Farmers Integrating Ecosystem Restoration Activities. In 2005, ERP solicited project proposals for grants to assist farmers in integrating agricultural activities with ecosystem restoration. The ERP has approximately $9 million for these grants. There were 76 grant applications submitted. After administrative, technical and scientific review, the Selection Panel made its initial recommendations in July 2006. These recommendations are subject to public review, which has not been completed at the time this report was written. After public comments are reviewed, the Selection Panel will make its final recommendations in fall 2006. The proposals and the Selection Panel's recommendations are available online at:
  http://www.delta.dfg.ca.gov/erp/grants_opportunities_2005_initial_recommendations.asp

- Delta Vision Process. Also in 2005, Assembly Bill 1200 (Laird) was enacted, which requires a report to the Legislature by January 1, 2008, that identifies, evaluates and comparatively rates principal options to carry out certain objectives for the Delta or the Sacramento and San Joaquin Rivers. To accomplish this,

the Department of Water Resources and DFG were directed to study specific issues such as subsidence, earthquakes, floods, climate change, sea level rise and salmon restoration. The process by which this report will be written has been dubbed the "Delta Vision Process," which will encompass and integrate many of the ongoing but separate planning efforts for the Delta and Suisun Bay and Marsh (Delta-Suisun).

The final scope of the report is still being discussed, but at the time of this program plan, the focus of the Delta Vision Process and resulting report is to analyze the risks and consequences of several scenarios, including "business as usual," regarding the many uses and resources of the Delta-Suisun. In particular, this analysis will look at the risks and consequences in light of changing climatic, hydrologic, environmental, seismic, and land use conditions. The Delta Vision report will include:

1. Ecosystem functions and biodiversity, aquatic and terrestrial flora and fauna
2. Land use and land use patterns, agriculture, urbanization, and housing
3. Transportation, streets, roads, highways, waterways and shipping channels
4. Utilities, aqueducts, pipelines, and gas and electricity transmission corridors
5. Water supply and quality, municipal and industrial discharges, and urban and agricultural runoff

Many of the issues and options that will be addressed in the Delta Vision report are similar to those addressed in the ERP; therefore, information and actions developed and pursued by the ERP will be instrumental in developing the Delta Vision report. ERP planning and Delta Vision efforts will be coordinated closely.

- Delta Risk Management Strategy (DRMS). The DRMS planning group, concurrent with the Delta Vision Process, is assigned to evaluate the potential risks and hazards to the Delta, including seismic effects, subsidence, flood analysis in light of climate change resulting from global warming, current levee condition, and necessary improvements. Hydrodynamic analyses will address water circulation, residence time, temperature, tidal amplitude, tidal excursion, tidal mixing, tidal transport, and range. A consequences analysis will examine potential affects to ecosystem values, water supply, infrastructure, life and property, agriculture, navigation, recreation, and both the statewide and national economy in the event of levee failure. All of this will be evaluated using 50-, 100-, and 500-years projections. The final analysis and strategy will be integrated into the DVP with the ultimate purpose of providing reliable water supplies, improving water quality, protecting and enhancing the ecosystem, preserving sustainable delta lands, protecting infrastructure, improving delta levees, and providing for public safety. The scheduled timeline is to have a Final Delta Vision Report and Final Panel Recommendations by January 2008.

Year 6 Accomplishments and Projected Year 7 Activities

The ERP has nearly 100 ongoing major activities. Some new activities began in Year 6, while several others were projected to start during Year 6, but were postponed to Year 7 or later, depending upon available funding. There are more than 350 other projects that are in various stages of completion that were funded before Year 6; this report does not address all of these projects.

Table 1 lists Year 6 Activities and proposed Year 7 activities. Outlining future projects wll be guided by the outcome of existing efforts such as the Pelagic Organism Decline (POD) studies or the contractual process for projects selected through the 2004 Monitoring and Evaluation Proposal Solicitation Process (PSP) and the 2005 Assisting Farmers in Integrating Agricultural Activities with Ecosystem Restoration PSP will also guide upcoming projects.

Unless otherwise indicated, the ERP projects and activities listed in Table 1 incorporate:

- Environmental Review: CALFED Action Specific Implementation Plan (ASIP), CEQA, NEPA, CESA, and FESA
- Public Review. Each project has been subjected to one or more of these processes: the PSP, project specific environmental documentation process, the Ecosystem Restoration Subcommittee and Bay-Delta Public Advisory Committee meetings, specific workgroup and local stakeholder group meetings (i.e., Yolo Bypass Working Group) or workshops.
- Science Review. The ERP strongly emphasizes a science-based approach to ecosystem restoration and continues to integrate science into all program activities including: (1) collaborative actions with CALFED's Science Program; (2) direct involvement of the CALFED Lead Scientist in developing the project proposal review and project selection process; (3) technical and scientific review of project proposals; (4) support of scientific workshops and conferences; and (5) monitoring implementation results from project proposals and their contributions toward achieving the ERP objectives, including the MSCS/ROD milestones, and (6) updating conceptual models with newly developed information to be available for subsequent resource management decisions (adaptive management).
- Environmental Justice. Environmental Justice is an important implementation commitment of the ERP. The ERP maintains an extensive list of local agencies, tribes, and nonprofit organizations, including many representing economically disadvantaged communities, Local agencies, communities and tribes are notified when the ERP Agencies receive proposals within their jurisdictions so they are aware and can provide comments if they choose to do so. Their comments are considered in grant recommendations.The ERP holds workshops to explain grant-making guidelines, criteria and processes in communities in its solution area and provides assistance to grant seekers through a toll-free telephone number and on-line materials.
- Land Conservation. The final Programmatic Environmental Impact Statement/Report (2000) outlines potential impacts to agricultural lands resulting from land acquisitions and restoration. Migitation strategies are outlined in the programmatic environmental document (Section 7.1-2). These strategies include supporting the California Farmland Conservancy program in acquiring easements on agricultural land to prevent its conversion to urbanized uses and increase farm viability. Also, restoring existing habitat as available would be a priority over converting agricultural

land. Additionally, individual acquisition and/or restoration projects would be subject to environmental review and public comment through the California Environmental Quality Act (CEQA) process.

The activities listed in Table 1 describe actions ERP implementing agencies believe are the highest priority to maintain the Conservation Agreement's regulatory commitments through Stage 1 (December 2007) implementation of the CALFED ROD. Therefore, the priorities described in this program plan are focused on specific actions accomplished in Year 6 and projected for Year 7. The ERP implementing agencies relied on the ERP Strategic Plan, the ERP Draft Stage 1 Implementation Plan, and the ERP Milestones Assessment to develop the list of priority actions for Years 6 and 7. These actions were developed and organized to be responsive to the POD, the CALFED Bay-Delta Program 10-Year Action Plan, Delta Vision Process and Bay-Delta Conservation Plan, and the recommendations of the Little Hoover Commission. Activities listed in Table 1 are categorized as follows:

- At-Risk Delta Dependent Fish Species
  - Native Anadromous Fish
  - Non-Native Invasive Species
  - Delta Pelagic Fishes
- Multiple Species
- Mandated Programs
  - Central Valley Project Improvement Act contribution
  - Assistance to Farmers Integrating Agricultural Activities with Ecosystem Restoration
  - Mine Remediation and San Joaquin River Dissolved Oxygen Projects
- Staff

A note about the table format. The ERP Implementing Agencies chose to use a similar table format as the one used in last year's program plan but modified to display both prior year accomplishments and projected activities in the same table. This allows for an easier comparison and provides more continuity between annual program plans.

Terms Used in the Table. One of the challenges of the ERP as a cross-jurisdictional, multi-agency effort is finding and understanding terms used to describe ERP efforts; in some cases terms have a legal or regulatory meaning that is not the intended meaning by the ERP Implementing Agencies in their efforts to describe the ERP's activities. The definitions of the terms used in Table 1 are as follows:

Activity:	Refers to the project title and includes a brief description of the desired outcome from the project.
Year 6 Activities:	Lists the significant accomplishments related to the Activity that happened between July 1, 2005 and June 30, 2006.
Year 7 Activities:	Refers to efforts related to the Activity that are projected to take place between July 1, 2006 and June 30, 2007.
Year 7 Projected Costs:	Refers to the best projection of how much funding will be granted, allocated, contracted, or spent and staff resources allocated between July 1, 2006 and June 30, 2007 for the Activity.
Funding Source:	Lists the source of funding for the Activity, if known; e.g., State, Federal, or Water User.
Agencies:	Agencies that will ensure that the Activity is carried out.

Milestones:	The ERP-MSCS Milestone numbers which this Activity is meant to help address.
Task Category:	Refers to the category that the Activity represents. There are five task categories: Planning, Research, Implementation, Education, and Monitoring.

Table 1. Year 6 Activities and Projected Year 7 Activities

At-Risk Delta Dependent Fish Species
Native Anadromous Fish

Activity: Determination of Age Structure of Central Valley Chinook Salmon. This project will determine the age structure of each population of Central Valley Chinook salmon through scale analysis. Age data will be used in combination with coded-wire tag recovery data to build cohort reconstructions for each year, and estimate population parameters for development of a full life cycle model for each Chinook run.

Year 6 Activities: Contract was packaged and submitted.

Year 7 Activities: Initial activities on this project will consist of purchasing equipment, and beginning scale analysis.

Year 7 Projected Cost: $637,412

Funding Source: Prop 50

Agencies: DFG, Pacific States Marine Fisheries Commission

Milestones: 119

Task Category: Monitoring and Research - Directed Action

Activity: Battle Creek Habitat Restoration Project. The Battle Creek Salmon and Steelhead Restoration Project would restore approximately 42 miles of historical anadromous fish habitat in Battle Creek, and an additional 6 miles of habitat in its tributaries. Components of the project include:

- Removal of 5 diversion dams that would have marginal power production value after their releases are adjusted to meet streamflow needs below the dams,
- Installing fish ladders at 3 diversion dams and screening their associated diversions,
- Increasing flow releases from all remaining diversion dams affecting anadromous fish on Battle Creek,
- Direct connection of powerhouse tailraces to power canals to eliminate redundant screening requirements, flow fluctuations associated with powerhouse operations, and false attraction of returning fish to powerhouse tailraces containing a mixture of waters from different basins.

Year 6 Activities: EIS/EIR released July 29, 2005.

Year 7 Activities: ROD anticipated in summer 2006; habitat restoration scheduled to begin in September 2006; this is a multi-year implementation project delayed because of a revised EIS/EIR, access issues, and contracting delays. Due to delays and increased costs, the Restoration Project is seeking additional funding. Thus, it is currently undergoing technical review through the Ecosystem Restoration Program.

Year 7 Projected Cost: $74,000,000

Funding Source: Prop 50

Agencies: USBR, USFWS, DFG, NMFS

Milestone(s): 57, 62, 64, 66, 67 69

Task Category: Implementation

Activity: Improving the Upstream Ladder and Barrier Weir at Coleman National Fish Hatchery on Battle Creek The Fish Barrier Weir and Ladder Modification Project consists of adding a crest cap modification to the existing barrier weir and modifying the associated ladder facilities to improve fish passage, as well as blockage capabilities at the first in-creek structure encountered in Battle Creek. The Fish Barrier Weir and Ladder Modification Project at Coleman NFH is designed to support the Battle Creek Restoration Project.

Year 6 Activites: 100% design completed: January 2006; Environmental documents completed: Draft EA, April 2006; procurement planning: in progress.

Year 7 Activities: Construction is scheduled to be partially completed by end of Year 7.

Year 7 Projected Cost: $2,000,000

Funding Source: Bay-Delta Act re-appropriated

Agencies: USBR, USFWS

Milestones: 69, 72

Task Category: Implementation

Activity: Coleman Intake Screens. Water intake structures at the Coleman National Fish Hatchery are currently either unscreened or poorly screened and therefore do not meet current criteria for fish screening/protection as prescribed by NMFS and the California Department of Fish and Game. Properly screening and/or modifying the intakes will avoid the loss of naturally-produced outmigrating salmon and steelhead juveniles through impingement or entrainment and is an important step in the overall restoration of Battle Creek.

Year 7 Projected Cost: $5,000,000

Funding Source: Prop. 50

Agencies: USBR, USFWS

Milestones: 69, 72

Task Category: Implementation

Activity: Butte Creek Spring-Run Chinook Salmon Life History Investigation (2004 Monitoring PSP). The project continues to monitor spring-run Chinook salmon and steelhead trout populations in Butte and Big Chico creeks to evaluate the effectiveness of many anadromous fish restoration projects in the two watersheds and to develop better information on these species' life histories.

Year 6 Activities: The California State University, Chico Research Foundation (Grantee) has been awarded funding pursuant to the Multi-Year Program Plan dated August, 2004, authorized by DFG and California Bay-Delta Authority for the Butte Creek Spring-Run Chinook Salmon Life History Investigation.

Year 7 Activities: This project has three major focus areas: (1) juvenile monitoring, (2) juvenile marking (coded-wire tagging), and (3) adult escapement. Specific objectives of this project are to:

- Monitor and document juvenile size at emigration;
- Develop a measure of juvenile relative abundance;
- Determine spawner escapement;
- Determine age at spawning;
- Determine contribution to, and impacts of, ocean and sport harvest
- Develop estimates of straying from and to other watersheds.

Year 7 Projected Cost: $513,281

Funding Source: Prop 50

Agencies: CSU Chico, DFG

Milestone(s): 112, 119

Task Category: Monitoring and Research - Reconsider if Revised (Implementation Year 6)

Activity: Clear Creek Anadromous Salmonid Monitoring Program (2004 Monitoring PSP) This project is a comprehensive salmonid monitoring program that will evaluate restoration actions and inform adaptive management of Clear Creek. The U.S Fish and Wildlife Service – Red Bluff will provide 5 of 12 elements of a Projected comprehensive salmonid monitoring program. This will provide feedback for the adaptive management and evaluation of restoration actions of the Clear Creek Restoration Program and B2 Water Program.

Year 6 Activities: Contract negotiations and execution

Year 7 Activities: In addition to program management, this project includes 4 fisheries monitoring tasks: (1) annual escapement estimates, spawning area mapping, and installation, operation and monitoring of a picket weir; (2) estimates of juvenile salmonid production and condition factor of salmonids; (3) habitat use by juvenile Chinook salmon of restoration project, and (4) habitat preferences of juvenile salmonids.

Year 7 Projected Cost: $ 1,974,068

Funding Source: Prop 50

Agencies: USFWS

Milestone(s): 112, 119

Task Category: Monitoring and Research - Reconsider if Revised (Implementation Year 6)

Activity: Lower Clear Creek Floodway Rehabilitation Project (Phase 3B) . Clear Creek restoration continues to implement Chinook salmon and steelhead habitat enhancement projects through partnerships with local landowners, public and private agencies, and universities. Restoration activities focus on channel restoration, adding spawning gravel, and erosion control. This project is two projects combined from the Year 6 ERP MYPP (FY 2005-06): Clear Creek Restoration for $3,800,000 and Clear Creek Headcut Only for $1,500,000. Together they are the "Phase 3B" project for a reduced amount of $3,482,451. Phase 3B includes project implementation - channel modification, revegetation, and monitoring of project success. Phase 3B was modified and reduced from the original budget by removing the fish monitoring and removing/modifying some of the other tasks (such as mercury monitoring, which was completely removed).

Year 6 Activities: Grant is pending signatures.

Year 7 Activities: (1) Re-establish an alternate bar morphology in the Mining Reach, including riffles, exposed gravel bars, and deep pools; (2) Design the channel dimensions allowing coarse sediment to route through the reach; (3) Design floodplains to begin to allow fine sediments transported in suspension to deposit on floodplain surfaces; (4) Promote natural channel migration across the floodway; (5) Re-create floodplain micro-topography. (6) Revegetate selected channels with native riparian vegetation; and (7) Monitor geomorphology, fisheries, riparian vegetation and avian species to determine project success.

Year 7 Projected Cost: $3,482,451

Funding Source: Prop 204, Ch 7, Prop 50

Agencies: DFG, USFWS

Milestone(s): 54, 58, 62, 64

Task Category: Implementation

Activity: Status and Trends/Baseline (Salmonids): NMFS and USFWS reinitiation of consultation efforts concerning the efficacy of the EWA and progress toward achieving milestones for the CALFED Bay-Delta Program (September 2004) recommended the CALFED program develop a Central Valley-wide comprehensive status and trends/baseline monitoring program, in coordination with existing monitoring programs, for all salmonids. A comprehensive monitoring program is needed to insure coordinated monitoring efforts, maximize monitoring opportunities, and avoid duplication of effort. Baseline and status and trends monitoring is necessary to measure, assess, and document the effects of CALFED restoration actions contributing toward the recovery of listed species and in achieving the milestones. This program would provide the oversight and guidance necessary to coordinate comprehensive monitoring efforts in the Central Valley for salmonids, including plans and pilot projects that would contribute to this effort, such as DFG's Adult Chinook Salmon Escapement Monitoring Plan and the Central Valley Steelhead Comprehensive Monitoring Plan. Reinitiation of FESA consultation with NMFS also identified a need for scientifically sound performance measures to describe and evaluate the benefits of the CALFED program on listed salmonids. This work element would contribute significantly to developing relevant performance measures and provide information used in adaptively managing methods for achieving program goals.

This project title was changed to: Interim Adult Central Valley Steelhead Monitoring Project.

Activity: Interim Adult Central Valley Steelhead Monitoring Project. The project scope is intended to describe a critically needed population assessment regarding the Central Valley steelhead ESU. The goal of this effort is to obtain a snapshot of adult Central Valley steelhead abundance, spatial distribution, and age composition during the 2007 and 2008 sampling seasons to provide baseline abundance information prior to implementation of Central Valley-wide salmonid monitoring efforts funded by ERP in the future. In addition, this effort will be comparable to trends documented by Hallock *et al*. (1957) and used to evaluate relative population abundance changes since his work in the early-1950s.

Year 7 Activities: Activities in 2007 will start with site reconnaissance and sampling design, wire fyke trap construction, capture and release, and scale collection and aging. A final report and data set will be delivered at project's end.

Year 7 Projected Cost: $514,000

Funding Source: Prop 50

Agencies: DFG, NMFS, USFWS

Milestone(s): 112, 119
Task Category: Monitoring and Research

Activity: The M&T/Llano Seco Pumping and Fish Screen Project. This project involves developing a long-term solution for protecting operations of the M&T/Llano Seco diversion pumps. River meander and sediment deposition continues to threaten operations and safety of the pumping facility, which supplies water to farmland and USFWS and CDFG refuge lands. This funding will support studies to develop a long-term solution.

Year 7 Activities: Initiate studies and work to develop and reach consensus on preferred alternatives and solution for river meander at the site. Sediment deposition causes ineffective operation of the ERP-funded fish screen facility.

Year 7 Projected Cost: $500,000

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 112, 119

Task Category: Planning

Activity: San Joaquin Basin Monitoring. Monitor status and trends of salmonids in Stanislaus, Tuolumne and Merced rivers.

Year 7 Activities: This project will monitor salmonids in three rivers. The scope for this project is currently under development.

Year 7 Projected Cost: $2,250,000

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 119

Task Category: Monitoring and Research

Activity: Rim Dam Fish Passage Evaluation (NMFS). Evaluate salmonid passage feasibility above the rim dams of the Central Valley.

Year 7 Activities: Assess the structure, type, as well as governing authorities of all Central Valley dams. Assess existing passage structures.

Year 7 Projected Cost Year 7 $1,000,000;

Funding Source: Unknown

Agencies: NMFS

Milestone(s): 67, 72

Task Category: Planning

Activity: Constant Fractional Marking. Implementation of a Constant Fractional Marking (CFM) Program for fall-run Chinook salmon at Central Valley hatcheries. CFM plan developed by the IEP Central Valley Salmonid Project Work Team. Equipment purchase could be accomplished through a Purchase option.

Year 6 Activities: Grant ready for signature.

Year 7 Activities: Procure equipment and build tagging trailers. Mark and tag salmon.

Year 7 Projected Cost: $6,775,918

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 112, 119

Task Category: Implementation

Activity: Salmon and Steelhead (Combined) Comprehensive Monitoring Plan. The Central Valley Chinook Salmon and Steelhead Escapement Monitoring Plan will be a long-term comprehensive plan designed to estimate population status and trends in abundance of adult Central Valley salmon in a statistically valid manner. Development of the plan will include review of existing monitoring programs, and development of revised programs including escapement estimation, coded-wire tag recovery, aging programs, and a coordinated data management and reporting system. The Central Valley Steelhead Monitoring Plan will be a comprehensive plan for steelhead population monitoring that, when implemented, will provide the data necessary to assess whether or not restoration and recovery goals are being achieved, and to improve management of the species. This activity represents the combination of two different projects: Development of a Comprehensive Central Valley Adult Chinook Salmon Monitoring Plan and Development of a Comprehensive Central Valley Steelhead Escapement Monitoring Plan.

Year 6 Activities: Contract ready for signature.

Year 7 Activities: Review existing programs to determine data gaps. Complete coded wire tag recovery. Develop revised monitoring plans and cost estimates.

Year 7 Projected Cost: $741,238

Funding Source: Prop 50

Agencies: DFG, NMFS, Pacific States Marine Fisheries Commission, USFWS

Milestone(s): 112, 119

Task Category: Monitoring and Research - Directed Action

Activity: Upper Sacramento River Basin Chinook Salmon Escapement Monitoring Program (2004 Monitoring PSP). This proposal will continue monitoring of the annual abundance, migration timing, and distribution of adult winter, spring, late-fall Chinook salmon returning to spawn in the Upper Sacramento River basin for the next three years. Streams and species/runs to be monitored include: Sacramento River - winter, fall, and late fall-run Chinook; Clear Creek -fall-run Chinook; Battle Creek - fall-run Chinook; Mill Creek -fall and spring-run Chinook; Deer Creek - fall and spring-run Chinook; Beegum Creek - spring-run Chinook; Antelope Creek - spring-run Chinook.

Year 6 Activities: Contract is executed.

Year 7 Activities: Staff will be completing carcass studies in upper watersheds. Research will be continued to determine escapement in upper watershed. Data will be compiled to determine escapement totals.

Year 7 Projected Cost: $444,924

Funding Source: Prop 50
Agencies: DFG, Pacific States Marine Fisheries Commission
Milestone(s): 112, 119
Task Category: Monitoring and Research - Directed Action

Activity: Sacramento River Juvenile Winter Chinook Salmon Abundance Estimates with Comparisons to Adult Escapement. The project, selected through the 2004 Monitoring PSP, will monitor juvenile winter-run Chinook passing the Red Bluff Diversion Dam to obtain juvenile winter-run Chinook production indices and to correlate these indices with estimated escapement of these fish.

Year 6 Activities: There was a request for a time extension request : (1) allow continued rotary trap sampling while DFG contract issues are resolved and funding is made available, and (2) to use unspent funds from the current contract after June 30, 2006, to complete the final report. DFG awarded a contract to fund Red Bluff FWO Mainstem Juvenile Monitoring Program's rotary trap sampling operations for an additional three years.

Year 7 Activities: Rotary trap sampling at Red Bluff Diversion Dam; annual report production
Year 7 Projected Cost: $ 2,067,266
Funding Source: Prop. 50
Agencies: DFG, USFWS
Milestone(s): 112, 119
Task Category: Monitoring

Activity: Juvenile Outmigrant Sampling. Juvenile outmigrant sampling needs include additional monitoring on the mainstem Sacramento River, discussed in meetings of the Interagency Ecological Program (IEP) Upper Sacramento River Monitoring and Juvenile Monitoring Project Work Teams. Monitoring will improve understanding of winter and spring-run Chinook salmon migration through the Sacramento River prior to entering the Delta.

Year 6 Activities: Monitoring on the Sacramento River

Year 7 Activities: Continue monitoring on the Sacramento River

Year 7 Projected Cost: $300,000

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 112, 119

Task Category: Monitoring and Research

Activity: Juvenile Anadromous Salmonid Emigration Monitoring on the Sacramento River at the Glenn-Colusa Irrigation District (GCID) Fish Screen Bypass Channel (2004 Monitoring PSP). This project will continue an existing California Department of Fish and Game juvenile salmonid monitoring project located at the Glenn Colusa Irrigation District (GCID) diversion on the Sacramento River near Hamilton.

Year 6 Activities: Executed.

Year 7 Activities: Staff will be operating and monitoring rotary screw traps.

Year 7 Projected Cost: Project was funded in Year 6.

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 112, 119

Task Category: Monitoring and Research - Directed Action

Activity: Real Time Flow Monitoring in the Sacramento River System. Continue operation and maintenance of stations that monitor stream flows and water quality in four eastside Sacramento River tributaries where the CVPIA has purchased water to maintain instream flows for salmonids: Big Chico, Butte, Deer, and Mill creeks.. Long-term goals for this project include obtaining reach-specific flow and temperature measurements for each tributary and will: (1) provide a basis for current and future flow acquisitions and flow management, and (2) contribute to the recovery and future survival of anadromous fish populations in said tributaries. Measures of future success will include: (1) representation of flows using real-time telemetry and summarized in long-term database, (2) use of telemetry time series data for future flow acquisitions, and (3) spring-run Chinook salmon and steelhead populations in each tributary have recovered and long-term survival is insured.

Year 6 Activities: Contract submitted for signature

Year 7 Activities: This project will operate and maintain 13 flow-monitoring stations with temperature sensors. The stations will monitor dedicated instream base flows for spring-run Chinook salmon and steelhead in 4 eastside Sacramento tributaries (Big Chico, Butte, Deer and Mill creeks) and provide a basis for additional future dedicated instream flow acquisitions.

Year 7 Projected Cost: $330,000

Funding Source: Prop 50
Agencies: DFG, DWR

Milestone(s): 66, 115
Task Category: Monitoring and Research - Directed Action

Activity: San Joaquin Basin-wide temperature model DFG will collect, store and manage water temperature and meteorological data in support of Tri-Dam Project's original approved ERP grant to develop a Water Temperature Model on the Stanislaus River; included in this task is expanded sampling on the Tuolumne and Merced rivers to develop a Basin-Wide Water Temperature Model.

Year 6 Activities: This Directed Action represents an expansion of tasks for Tri-Dam's existing ERP project number ERP-02-P28 to support model development. Finalizing project proposal and scope. Peer and public review was completed.

Year 7 Activities: This year will include a new contract for work with Tri-Dam. A model for San Joaquin basin temperatures will be developed. Temperature collection protocols will be developed, temperature probes installed, and data collected.

Year 7 Projected Cost: $940,000

Funding Source: Prop 50
Agencies: DFG
Milestone(s): 84
Task Category: Monitoring and Planning

Activity: Tuolumne River restoration monitoring (2004 Monitoring PSP). This project will monitor the effects on geomorphology, salmonids, and streamside habitats of four Tuolumne River restoration activities: gravel mining restoration, Special Run Pool 9 restoration, fine sediment management, and coarse sediment management.

Year 6 Activities: Scope under revision to include hypothesis-based monitoring, links to conceptual models, and post-project adaptive management. Implementation will occur in Year 7.

Year 7 Activities: Project implementation includes monitoring of restoration activities and data collection.

Year 7 Projected Cost: $1,263,900

Funding Source: Prop 50
Agencies: DFG, Turlock Irrigation District

Milestone(s): 112, 119
Task Category: Monitoring and Research

Activity: EWP (Environmental Water Program). The goal of the Environmental Water Program is to acquire water in support of the ERP to 1) enhance instream flows that are biologically and ecologically significant; 2) improve the state of scientific knowledge related to the effects of instream flows; and 3) gain knowledge regarding the institutional and social constraints facing environmental water acquisitions.

Year 6 Activities: Clear Creek: (1) working with local stakeholders to develop a large-scale adaptive management experiment designed to release flows of sufficient magnitude, duration and frequency to reactivate fluvial geomorphic processes; (2) contracting with U.S. Bureau of Reclamation to analyze hydrologic feasibility, dam safety and flood routing risks; and (3) continuing work on a water management plan, water acquisition plan and an adaptive management and monitoring plan. Butte Creek: working on acquiring the Amaral Ranch water right, on the west borrow pit of the Sutter Bypass (Butte Creek); upon approval of the agreement by ERP, DFG, Ducks Unlimited and the seller, and Department of General Services' approval of the appraisal, the National Fish and Wildlife Foundation will transfer grant funds to Ducks Unlimited to complete the transaction. Tuolumne River: No progress has been made on the Tuolumne River.

Year 7 Activities: USFWS will identify a new EWP program manager in FY2007. DFG will conduct public outreach activities in the Deer Creek watershed in an effort to gain landowner support and participation for expanded creek by-pass flow opportunities to support salmon passage.

Year 7 Projected Cost: $130,000

Funding Source: Bay-Delta Act re-appropriated

Agencies: DFG, NMFS, USFWS

Milestone(s): 57, 66, 96

Task Category: Implementation

Activity: RD108 Fish Screen. This project represents completion of the five-phase project to design and construct a state-of-the-art fish screen at Reclamation District 108's Wilkins Slough diversion facility on the Yuba River. The project entails consolidating three unscreened diversion facilities into one screened diversion. Currently, the three diversions total about 377 cfs; however, the consolidation will result in a more efficient land side irrigation system, thereby, requiring a maximum diversion rate of only 300 cfs to service the existing agricultural area. Construction of the project will eliminate entrainment of anadromous fish from the existing RD 108 diversions.

Year 6 Activities: Final engineering design completed and environmental compliance documentation completed.

Year 7 Activities: Initiation of construction of the RD108 Consolidation Fish Screen Project is anticipated in FY2007. Construction will continue through 2007 and 2008.

Year 7 Projected Cost: $14,250,000

Funding Source: Prop 50

Agencies: RD108

Milestone(s): 67, 72

Task Category: Implementation

Non-Native Invasive Species

Activity: Lake Davis Pike Containment Project DWR, under the direction of the DFG, will plan, design, construct, operate and maintain a new containment structure downstream of the outlet for Lake Davis.

Year 6 Activities: The DWR prepared a project plan totaling $4.26 million. $260,000 in support services were provided from the FPIP while another $2 million was provided by DWR using SWP funds. These matched the $2 million provided by ERP Prop 50 funds. The DWR completed the following in Year 6: (1) Preliminary plans and specifications, (2) Engineering peer review of plans and specifications, (3) Environmental documentation, (4) Permit applications, and (5) Prepared and submitted bid packages for construction

Access the following website for more detailed project information:
http://calwater.ca.gov/Programs/EcosystemRestoration/2006_DirectedActions/Northern_Pike_Containment_System_at_Lake_Davis.pdf

Year 7 Activities: Using funds encumbered in FY 06, contractors to construct and operate and maintain the containment structure will be selected in Year 7. Construction is scheduled to be completed by the end of 2007 and operation and maintenance will begin at that time.

Year 7 Projected Cost: Funds required were encumbered in FY 06

Funding Source: Prop 50

Agencies: DWR

Milestone(s): 30

Task Category: Implementation

Activity: Lake Davis Pike Eradication Project- Implementation DFG, in collaboration with the USFS, stakeholders and other agencies, will implement the proposed Lake Davis Pike Eradication Project. If a decision is made to proceed, implementation would start at the beginning of 2007.

Year 6 Activities: Not applicable; new project for Year 7. Access the following website for more detailed project information: http://www.dfg.ca.gov/northernpike/

Year 7 Activities: If a decision is made to use rotenone to eradicate pike from Lake Davis, implementation would start at the beginning of 2007 with the gradual reduction in Lake Davis water levels so that the target lake level is achieved by fall 2007.

Year 7 Projected Cost: $7,000,000

Funding Source: Prop 50

Agencies: DFG, USFS

Milestone(s): 22

Task Category: Implementation

Activity: Lake Davis Pike Eradication Project- Planning Feasibility Phase. DFG, in collaboration with the USFS, stakeholders and other agencies, is conducting the planning, completing the environmental documentation, and obtaining the permits needed to implement the Projected Lake Davis Pike Eradication Project. Other planning related activities include public outreach and enforcement will also be conducted. If a decision is made to proceed, implementation would start at the beginning of 2007.

Year 6 Activities: The DFG prepared a project plan totaling approximately $6.6 million. $50,000 in support services were provided from the FPIP while another $961,134 was provided by DFG using General Funds allocated to the control and containment of northern pike at Lake Davis. These matched the $5.6 million provided by ERP Prop 50 funds. The DFG completed the following in Year 6: (1) Developed alternatives, (2) Completed an initial study, filed a Notice of Preparation, and conducted public scooping, (3) Secured an EIR/EIS consultant, (4) Prepared an administrative draft EIR/EIS, (5) Prepared permit applications.

Access the following website for more detailed project information: http://www.dfg.ca.gov/northernpike/

Year 7 Activities: Using funds encumbered in FY 06, DFG will complete a draft and final EIR/EIS, obtain the necessary permits, and complete a NOD and ROD by early 2007 so that, if a decision is made to proceed, implementation can begin in early 2007.

Year 7 Projected Cost: Funds required were encumbered in FY 06

Funding Source: General Fund, Prop 50

Agencies: DFG, USFS

Milestone(s): 22

Task Category: Planning

Activity: Zebra Mussel Rapid Response. This project will build on established partnerships and leverage federal monies that were used to establish a rapid response plan for zebra mussels in California. The new action items would be to enhance the current plan and develop a working group that would implement the plan and begin working on addressing commitments and responses to the introduction of Zebra mussels into California waterways. The actions would be involvement of NISAC as short term Ad Hoc committee and the team would evolve to address other non-native invasive species (NIS) issues as the team builds capacity. These funds would not be competed. Request is for a total amount of $150,000 to be obligated over the next three years.

Year 6 Activities. Enhance current rapid response plan and develop a working group to address plan implementation.

Year 7 Activities: Continue Year 6 activities

Year 7 Projected Cost: $50,000

Funding Source: Prop 50

Agencies: USFWS

Milestone(s): 22

Task Category: Implementation

Activity: Zebra Mussel Prevention. This project will build on established partnerships and leverage federal monies used to address the prevention of zebra mussels entering into California waterways. The new action items will build on USFWS projects that targeted pathways for zebra mussels by surveying trailered boats and enhance traveler awareness by expanding these surveys as well as implementing Traveler Information Systems (TIS) in California. This two-prong approach will assist with targeting areas where the California TIS systems will need to be placed as well as integrating with the current TIS that the 100th Meridian Group (USFWS) has in the Western United States. These funds would be competed (grants.gov). Request is for a total amount of $200,000 to be obligated over the next three years.

Year 6 Activities: Conduct surveys of trailered boats. Implement Traveler Information Systems.

Year 7 Activities: Continue Year 6 actions

Year 7 Projected Cost: $67,000

Funding Source: Prop 50

Agencies: USFWS

Milestone(s): 22

Task Category: Implementation

Activity: Monitoring for Invasive Spartina Control in the San Francisco Estuary. Invasive Spartina control monitoring in the San Francisco Estuary The Projected project will monitor marsh areas treated to control Atlantic cordgrass and its approved monitoring grant hybrids to determine if treatment was effective. Annual regional surveys for nonnative cordgrasses in the San Francisco Estuary will also be included.

Year 6 Activities: The monitoring project is pending contract development although some monitoring is being done for the ongoing treatment of the phase II eradication contract. Much of the area sprayed in Years 5 and 6 with glyphosate showed regrowth. A new herbicide with proven effectiveness, imazapyr, has been substituted and most areas have been or will be resprayed for year 6.

Year 7 Activities: Develop eradication and eradication success measurement protocols. Continued eradications within the 22,000 acre focus area.

Year 7 Projected Cost: $1,234,396

Funding Source: Prop 50, WCB

Agencies: CSCC and numerous local agencies and districts

Milestones: 39, 11

Task Category: Implementation

Actvity: Arundo donax Eradication and Coordination Program: Monitoring and Evaluation This project will develop a protocol and data collection system to determine the success of Arundo eradication in northern California. The project is coordinating the eradication efforts of 10 participating regional entities and working with The Nature Conservancy on data collection and management for non native invasions.

Year 6 Activities: Updated Weed Information Management System database. Coordinated eradications in Sacramento Valley, coastal and other regions. Trained users in field data collection methods.

Year 7 Activities: Develop eradication and eradication success measurement protocols

Year 7 Projected Cost: $111,000

Funding Source: Prop 50

Agencies: Sonoma Ecology Center, The Nature Conservancy

Milestones: 22, 38, 62

Task Category: Implementation

Delta Pelagic Fishes

Activity: Comprehensive Pelagic Fish Monitoring (CMARP Phase 3). Expansion of existing IEP aquatic monitoring activities necessary to measure indicators and performance measures to assess the effectiveness of the ERP on restoring aquatic resources. This will supplement the POD efforts described in the Pelagic Fish Species Scientific Investigations project.

Year 7 Activities: The Comprehensive Monitoring Program indicators and performace measures are currently under development. The San Francisco Estuary Institute will provide research assistance to Interagency Ecological Program Coordinators for the development of a long-term ecological monitoring program based on past work (e.g., Comprehensive Monitoring Assessment and Research Program (CMARP)) and existing monitoring programs to implement the CALFED Bay-Delta Program's aquatic monitoring mandates.

Year 7 Projected Cost: $5,000,00

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 112, 119

Task Category: Monitoring and Research

Activity: Blacklock Tidal Marsh Habitat Restoration Project. Restore tidal action to a 70 acre parcel of Blacklock Ranch in Suisun Marsh. Restore the Blacklock property to self-sustaining functioning brackish tidal marsh by restoring tidal action, reversing subsidence, and promoting establishment of native vegetation and a tidal marsh channel network appropriate to this location within the San Francisco Estuary. This project will contribute to CALFED's ERPP goal of restoring 5,000-7000 acres of tidal wetlands in Suisun Marsh.

Year 7 Activities: This project is funding parts of a DWR restoration project. Property purchase will be initiated. Restoration plans will be prepared. Restoration activities will continue to restore tidal action. In fall 2007, levee breaching will be initiated. Monitoring restoration areas for vegetation, salmonids, mercury and sediment will also continue.

Year 7 Projected Cost: $1,100,000
Funding Source: Unknown
Agencies: DFG, DWR, USFWS
Milestone(s): 39, 40, 41, 42
Task Category: Implementation

Activity: Restoration of Cullinan Ranch. Restoration of tidal marshes and sloughs.

Year 7 Activities: Project activities to be defined in further detail in 2007.
Year 7 Projected Cost: $3,500,000
Funding Source: Unknown
Agencies: Unknown
Milestone(s): 39, 40, 41, 42
Task Category: Implementation

Activity: Suisun Marsh Property Acquisition and Habitat Restoration. Acquisition of lands in the Suisun Marsh suitable for tidal restoration. Approved through the 2002 Proposal Solicitation Process.

Year 6 Activities. Interagency agreements being finalized at this time.

Year 7 Activities: Identify properties available for purchase. Complete appraisal process with advisory team. Initiate purchasing process.

Year 7 Projected Cost: $1,046,400

Funding Source: Prop 50
Agencies: DFG
Milestone(s): 38, 39, 42
Task Category: Implementation

Activity: Pelagic Organism Decline Scientific Investigations. The Pelagic Organism Decline Scientific Investigation (POD) is an elaborate research program initiated in response to several IEP abundance indices showing marked declines of pelagic species. The POD studies focus on illuminating the mechanisms causing the widespread decline currently facing the Delta. The work plan supports a variety of projects including expansion of existing IEP monitoring studies, analyses of existing data, new studies, and ongoing studies that are investigating whether there are new or multiple threats impairing the pelagic environment.

Year 6 Activities: The Year 6 work plan included the following accomplishments: (1) Successful implementation of the 2006 POD work plan, (2) Development of the 2007 work plan, (3) Completion of a CALFED-sponsored peer review of the Pelagic Organism Decline 2005 Synthesis Report and 2006 work plan, and (4) A technical session devoted to POD results during the annual IEP workshop.

Year 7 Activities: Planning will continue on the activities identified above as well as the following monitoring and special studies categories.

IEP monitoring activities focus on aquatic habitats and living resources in the San Francisco Estuary, Sacramento River, and San Joaquin River. (1) Environmental monitoring, (2) Hydrodynamics monitoring, (3) Fish and macroinvertebrate monitoring, and (4) Operations monitoring.

IEP special studies provide mechanistic understanding of the physical, chemical and ecological processes and evaluate current and new technology, sampling methodology and overall study design. These studies will provide additional information on how alterations of physical conditions and ecological interactions (e.g., predator-prey interactions) affect native and resident fishes in the estuary. (1) Resident species, (2) Ecological processes, (3) Estuarine monitoring, (4) Contaminants.

Year 7 Projected Cost: $3,679,000

Funding Source: DWR and USBR

Agencies: DFG, DWR, USBR, UCD, USGS, SFSU, USEPA, CBDA, USFWS, NMFS

Milestone(s): 112, 119

Linkages to other elements: POD research is part of the IEP and closely linked to the Science Program and linked to the ERP, Levees and Water Quality programs.

Activity: Monitoring Responses Of The Delta Smelt Population To Multiple Restoration Actions The San Francisco Estuary. This project will monitor delta smelt to discern how environmental conditions, including access to restored habitats, affect survival and population abundance.

The project will collaborate with the bay/delta-wide monitoring by the IEP and with local monitoring efforts at restoration sites to collect and archive delta smelt for analysis of vital characteristics affecting smelt distribution and abundance.

Year 6 Activities: Scoping for the upcoming contract

Year 7 Activities : Fish Sampling, growth analysis, histopathology, otolith analysis, bioassays, plankton sampling, gut analysis, reporting

Year 7 Projected Cost: $2,658,648

Funding Source: Prop 50

Agencies: IEP, DWR, DFG

Milestone(s):112, 119

Task Category: Monitoring and Research - Reconsider if Revised (Implementation Year 6)

Activity: Delta Regional Ecosystem Restoration Implementation Plan (DRERIP). The DRERIP is the first of four regional plans envisioned in the ERP Strategic Plan, and will refine the ERP planning foundation specific to the Delta region. Funding is for federal implementing agency and consultant support.

Year 6 Activities: (1) Created a new website for web-based products www.delta.dfg.ca.gov/erp and added infrastructure to the various land use layers, (2) Developed Conceptual Models for several species affected by the Pelagic Organism Decline (POD), (3) Re-constituted the Science Advisors for the AMPT

Year 7 Activities: Complete the priority ecosystem element related to POD species; prioritize actions, complete scientific vetting of the ERP-related actions and complete DRERIP by summer 2007.

Year 7 Projected Cost: $900,000
Funding Source: Prop 50,
Agencies: CBDA, DFG, NMFS, USFWS
Milestone(s): 1 – 37
Task Category: Planning - DFG Implementation and Program Support

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Activity: Hamilton Airfield/Bel Marin Keys (BMK) Wetland Restoration. Restore San Pablo Bay tidal creeks and marshes by implementing the Hamilton Air Force Base - Bel Marin Keys Wetlands Restoration Plan. MSCS fish and wildlife will benefit from these habitats. The project will restore the former military airfield and adjacent California State Lands Commission areas to tidal wetlands and tributary habitats.

Year 6 Activities: Received permits for wetland construction. Completed containment levees for seasonal wetland, completed the test levee validating levee construction and continuing site preparation through plans and specifications of N2 Levee, South Levee, and intertidal berms.

Year 7 Activities : The project initially planned to utilize dredge material to raise subsided areas to an elevation more conducive to colonization by emergent vegetation. However this strategy is being reevaluated due to the cost and availability of dredge material. FY 07 activities include awarding a bulk fill contract for seasonal wetland, continue site preparation through construction of South Levee and tidal wetland containment cells.

Year 7 Projected Cost: $13,000,000

Funding Source: Federal

Agencies: USACOE, SCC

Milestones: 39, 41, 42

Task Category: Implementation

Activity: Napa Salt Ponds Restoration. This project would implement the Napa salt marsh restoration project by restoring 10,000 acres of tidal creeks, marshes and managed ponds to this property to support anadromous and resident estuarine fish and wildlife, including endangered species, waterfowl, and shorebirds.

Year 6 Activities: Pilot channels are being excavated in Ponds 4 and 5. Levee lowering has occurred on Pond 5. Full tidal exchange is on track for years 6 and 7. Monitoring for impacts due to salinity and inundation has begun.

Year 7 Activities : Restore tidal exchange to Ponds 4 and 5. Continue monitoring impacts related to the restoration of tidal flows, redistribution of sediments and passive conversion to wetland habitat types.

Year 7 Projected Cost: $266,000

Funding Source: Prop 50, WCB

Agencies: DFG, USACOE, CSCC

Milestones: 39, 40, 41, 42

Task Category: Implementation

Activity: Napa Salt Ponds Monitoring. This project would monitor the 10,000 acre Napa Salt Marsh Restoration projects effects on fish, wildlife and the Napa River estuary.

Year 6 Activities: No activity in Year 6 due to funding priorities.

Year 7 Activities: The monitoring project is on hold due to short term funding shortfall and long term restoration timeframe

Year 7 Projected Cost: $2,000,000

Funding Source: Prop 50

Agencies: DFG, USACOE

Milestones: 39, 40, 41, 42

Task Category: Monitoring

Activity: Tidal Restoration of Hill Slough Parcel in Suisun Marsh. This Project will restore tidal habitat to approximately 507 acres of diked seasonal wetlands in Suisun Marsh. The Project will re-introduce tidal action to the site, restoring a transition of perennial aquatic habitat in the deepest areas, low intertidal marsh, high intertidal marsh, and lowland alluvial habitat. The outcome will be a self-sustaining marsh ecosystem created through restoration of natural hydrologic and sedimentation processes and reliance on natural abiotic and biological succession processes.

Year 7 Activities: This project will fund the elevation of Grizzly Island Road from the Hill Slough bridge to Highway 12 to allow diked seasonal wetlands to the west and east of the road to be restored to tidal influence, breaches two levees on Suisun Slough, and breaches one levee on Hill Slough. This project will contribute to CALFED's ERPP goal of restoring 5,000-7,000 acres of tidal wetlands in Suisun Marsh.

Year 7 Projected Costs: $5,000,000
Funding Source: Prop.50
Agencies: WCB, DFG
Milestone(s): 39, 40, 41, 42
Task Category: Implementation

Multiple Species

Activity: Additional Milestones Projects for Other At-Risk Species Affected by Water Projects Operations, Based on Annual Milestones Assessments. Projects that could be considered under this item include Science Program PSP recommendations for projects seeking future funds relevant to ERP goals and objectives such as the "Determination of Age Structure of Central Valley Salmon" analysis and the BREACH III effort.

Year 7 Activities: To be determined

Year 7 Projected Cost: $5,000,000

Funding Source: Prop 50

Agencies: CBDA, DFG, NMFS, USFWS

Milestone(s): 1, 2, 3, 17, 18, 21, 23, 24, 25, 33, 34, 36, 37, 44, 49, 50, 52, 53, 55, 57, 66, 67, 68, 69, 70, 71, 72, 74, 75, 78, 80, 81, 82, 83, 112, 119

Task Category Implementation

Activity: Sacramento River - Chico Landing Subreach Habitat Restoration. This project will implement restoration planning and research on three sites within the Chico Landing Sub-reach (RM 178-206) in preparation for future restoration, and in a set of reference sites that were previously restored by a contractor 5-13 years ago. All sites are located within a portion of the Sacramento River Conservation Area.

Year 6 Activities. CEQA document completed

Year 7 Activities:

Year 7 Projected Cost: $3,500,000

Funding Source: Prop 204, Ch 7

Agencies: CBDA

Milestone(s): 59, 60, 62

Task Category: Implementation

Activity: Sacramento River Riparian Monitoring and Assessment Consolidated Projects (2004 Monitoring PSP). This project will measure a range of physical and biological indicators for ERP and AFRP-funded projects within the Sacramento River Ecological Management Zone between Red Bluff and Colusa and compare them to previous conditions and reference systems to test whether restoration actions have improved riparian forest conditions and forest interactions with aquatic processes.

Year 6 Activities. Revise proposal and update scope of work

Year 7 Activities: Tasks and program elements to be focused and revised. A narrowing of the scope of work may result in a decrease in the overall budget.

Year 7 Projected Cost: $1,264,691

Funding Source: Prop 50

Agencies: CSU Chico, DFG, River Partners, The Nature Conservancy

Milestone(s): 58, 60

Task Category: Monitoring and Research - Reconsider if Revised

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Activity: Sacramento River Conservation Area Forum Base Funding. As part of its commitment to protect and restore the Sacramento River meander corridor, ERP set as a Stage 1 priority assistance to the Sacramento River Conservation Area Forum. The forum provides essential and critical stakeholder involvement in the restoration efforts along the Sacramento River.

Year 7 Activities: Support stakeholder involvement and staff activities in planning restoration activities in Sacramento River Conservation Area. Provide support for base operating costs.

Year 7 Projected Cost : $300,000

Year 7 and Funding Source: Prop 50

Agencies: Unknown

Milestone(s): 59, 60, 61, 62, 63, 64, 112

Task Category: Planning

Activity: The Cosumnes-Yolo Terrestrial-Aquatic Ecotone Project ("COYOTE Project"); A Unified Approach to Monitoring Floodplain and Freshwater Tidal Marsh Restoration in the Cosumnes Preserve and Yolo Bypass (2004 Monitoring PSP). This project was modified and combined with the BREACH III proposal to minimize duplication of efforts. The modifications included dropping of the Cosumnes River and Upper Yolo Bypass components and focusing efforts on the Lower Yolo Bypass. It was further recommended that the principles work directly with the BREACH III principles and develop a revised scope and project that included coordination to complete the tasks associated with the aquatic environment. The revised budget for the combined projects was $2,400,000 and is now referred to as the Liberty Island Restoration Monitoring Program described below.

Activity: BREACH III: Evaluating and Predicting 'Restoration Thresholds' in Evolving Freshwater-Tidal Marshes (2004 Science Program PSP). This project was developed in the Science Program PSP but is of significant interest to the ERP. The objective of the project is to provide a predictive level of understanding about abiotic and biotic controls on vegetation colonization and expansion in restoring wetland, and the ecological responses of native fish and wildlife species. At the completion of this research [focused on Liberty Island], the critical thresholds that trigger vegetation colonization, tidal channel development, and other landscape changes that affect species of concern and other fish and wildlife species will be identified, and provide a framework for predicting the evolution of freshwater tidal marsh ecosystems in the Delta. This will reduce the present uncertainty about the controls and rates on the evolution of CALFED's wetland restoration in the Delta, and will also provide a predictive approach and tool to assess the effects of habitat change across restoring landscapes.

Year 6 Activities: It was decided that this project would be modified and combined with the COYOTE proposal to minimize duplication of efforts. The modifications included dropping of the terrestrial components and focusing on the Lower Yolo Bypass. It was further recommended that the principles work directly with the COYOTE principles and develop a revised scope and project that included coordination to complete the tasks associated with the aquatic environment. The revised budget for the combined projects was $2,400,000 and is now referred to as the Liberty Island Restoration Monitoring Program described below.

Activity: Liberty Island Restoration Monitoring. Lower Yolo Bypass technical site evaluation, monitoring, research, and feasibility assessment. Several issues need to be addressed to assess long-term ownership, restoration potential, and management of publicly-owned properties in the Lower Yolo Bypass. The combined approaches of the BREACH III and COYOTE proposals will address both the physical and environmental processes occurring on the sites and greatly improve our understanding of the aquatic species response to tidal wetland restoration.

Year 6 Activities: Staff are working with principals from the two respective proposals on a revised scope for a combined effort. The results should be a comprehensive monitoring and research approach that is closely coordinated with the stakeholder planning process. The technical approach should also greatly improve abilities to make sound decisions in regards to future management, restoration potential, and its relationship to flood control needs in the lower bypass.

Year 7 Activities: Ongoing

Year 7 Projected Cost: $2,400,000

Funding Source: Prop 50

Agencies: DFG, NMFS, USFWS

Milestone(s): 1, 2, 3, 6, 7, 8, 9, 11, 13, 16, 17, 18, 21, 23, 24, 25, 31, 33, 34, 36, 37, 44, 49, 50, 52, 53, 55, 57, 66, 67, 68, 69, 70, 71, 72, 74, 75, 78, 80, 81, 82, 83, 112, 119

Task Category: Implementation, Monitoring and Research

Activity: Yolo Bypass Strategic Plan support. Collaborative process to resolve Lower Yolo Bypass management concerns. Using a consensus-seeking, formal collaborative process, facilitated by the Center for Collaborative Policy, local stakeholders will develop their recommendations regarding future management, actions, responsibilities, oversight, monitoring, public access, potential liabilities, funding and regulatory needs of the Lower Yolo Bypass. Participants will include local landowners, reclamation districts, and local, state and federal agencies. This effort will be closely collaborated with the monitoring and research conducted under the Liberty Island Restoration Monitoring project in order improve the collective understanding regarding any technical issues associated with land use, long term management, or conservation of the lower bypass.

Year 6 Activities: We have been working with the project proponents to ensure the project scope includes the coordination and collaboration necessary to take advantage of previous and current investments in the Lower Bypass in order to ensure the most current available information is being used in the discussions.

Year 7 Activities: Continue coordination activities from Year 6

Year 7 Projected Cost: $300,000

Funding Source: Prop 50

Agencies: DFG, NMFS, USFWS, Delta Protection Commission, Yolo Basin Foundation

Milestone(s): 1, 6, 7, 8, 9, 13, 16, 31, 78

Task Category: Planning

Activity: Suisun Marsh Plan (SMP). The ERP Implementing Agencies as well as DWR, USBR, Suisun Resource Conservation District (SRCD), and the CBDA continue to participate in preparing the Habitat Management, Preservation, and Restoration Plan for Suisun Marsh (SMP) for the Suisun Marsh Ecological Management Zone.

Year 6 Activities: Participated in developing a regional plan for the Suisun Marsh Ecological Management Zone. Staff are working on developing alternatives. A consultant has been hired to assist with conducting the impact analysis and writing the Programmatic EIR/EIS for the Suisun Marsh.

Year 7 Activities: Continue working on SMP development

Year 7 Projected Cost: $1,528,000

Funding Source: Bay-Delta Act reappropriated, Prop 50

Agencies: , DFG, NMFS, USFWS, USBR

Milestone(s): encompasses all the Bay Region milestones as they apply to Suisun Marsh (38-53)

Task Category: Planning - DFG Implementation and Program Support

Activity: Wetland Response to Modified Hydrology with Respect to Salinity Management. DFG, Grassland Water District, UC Merced, and CSU-Fresno Foundation, will collect water quality data in the Grassland Basin and San Joaquin River to further characterize outflow from managed wetlands, determine and compare productivity of differently managed wetlands in the basin, and monitor waterbird use of differently managed wetlands. This project will assess the feasibility of developing wetland operations that maximize Grasslands' wildlife habitat and improve water quality in the Grasslands Basin and San Joaquin River. This activity helps address water quality stressors of concern in the San Joaquin River and follows up on the previously funded Grassland Water District project titled Adaptive Real-Time Management of Seasonal Wetlands in the Grassland Water District to Improve Water Quality in the San Joaquin River, CALFED Contract No. ERP-00-FC-B05.

Year 7 Activities: Determine and compare productivity of differently managed wetlands. Collect water quality data. Conduct monitoring for waterbird use. Conduct habitat mapping and collect vegetation samples.

Year 7 Projected Cost: $260,000

Funding Source: Prop 50

Agencies: DFG, GWD, CSU-Fresno Foundation, DWR, USBR, Lawrence Berkeley National Laboratory, UCD, UC Merced

Milestone(s): 96, 101, 102, 104, 105, 107, 108

Task Category: Implementation

Activity: Coordinated Monitoring and Indicator/Performance Measure Strategy Project. DFG will lead an interagency team to develop a coordinated monitoring and indicator/performance measure strategy for the ERP and begin implementation of that strategy. This project will work to integrate a large number of competing and uncoordinated efforts in the ERP focus area.

Year 6 Activities: Not applicable; new project for Year 7

Year 7 Activities: Provide funding to an interagency team led by DFG to develop a coordinated monitoring and indicator/performance measure strategy for the ERP. DFG and the team, with consultant support, will:

- Coordinate with the Comprehensive Wildlife Conservation Strategy (CWCS) completed as part of the California Wildlife Action Plan. Visit its website for more information: http://www.dfg.ca.gov/habitats/wdp/index.html
- Integrate other efforts currently underway such as CMARP Phase 3, the Science Program, and the CALFED Leadership Council's Interagency Committee on Performance Measures. For more information on the Science Program's efforts visit its website at: http://science.calwater.ca.gov/monitoring/monitoring.shtml#
- Coordinate with entities currently conducting monitoring in the ERP focus area such as the DFG's Resource Assessment Program (RAP) To obtain more information on RAP visit its website at: http://www.dfg.ca.gov/habitats/RAP/default.html
- Coordinate with regional planning efforts such as DRERIP and SMP to ensure the completion of the conceptual models needed to assist in selecting indicators
- Integrate with comprehensive monitoring plans being developed for steelhead and adult Chinook salmon
- Confirm the use of interim indicators such as Chinook salmon adult escapement
- Acquire the necessary equipment such as a replacement aircraft for DFG's air services unit to ensure that the DFG can continue to conduct critical monitoring activities related to species and grant projects.
- Integrate data collection efforts for various monitoring using the BIOS system; http://bios.dfg.ca.gov/

Year 7 Projected Cost: $2,000,000

Funding Source: Prop 50

Agencies: DFG, USGS, USFWS, NMFS, DWR

Milestone(s): 1 – 119
Task Category: Planning

Activity: Conduct Comprehensive Terrestrial Monitoring. Terrestrial monitoring necessary to measure the indicators and develop the performance measures to assess the effectiveness of the ERP on restoring terrestrial resources.

Year 7 Activities: Begin developing indicators and performance measures

Year 7 Projected Cost : $1,500,000

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 112
Task Category: Monitoring

Activity: Petaluma Marsh Expansion Project This project monitors effects of restoring tidal wetlands adjacent to Petaluma Marsh for MSCS fish and wildlife - secondary test site for the Integrated Regional Wetland Monitoring Project (IRWM)

Year 6 Activities: Construct the design plan - commenced January 2004
Year 7 Activities: Post-construction monitoring will begin when construction is completed in fall 2006. Project construction is now underway, but was delayed to relocate and redesign levees.
Year 7 Projected Cost: $235,000
Funding Source: Prop 50, Caltrans
Agencies: Marin Audubon Society
Milestones: 39, 41, 42
Task Category: Monitoring

Activity: Llano Seco Ranch. The Wildlife Conservation Board (WCB) agreed to complete the acquisition of a conservation easement on approximately 4,235 acres of real property (known as the Llano Seco Ranch Conservation Area) located in Butte County, CA. The DFG is a funding cooperator for this project and will be dispersing Proposition 50 funds. The purpose of the acquisition is to purchase the easement area, comprising of lands that have significant agricultural values, both present and potential, including rangeland, grasslands, grazing land and agricultural lands. These lands provide value for migratory, foraging and breeding bird habitat, native plant species, natural communities, open space and scenic resources.

Year 6 Activities: The project was approved by California Bay Delta Authority (CBDA) on November 10, 2005 and is consistent with the Year 6-9 Multi-Year Program Plan. The conservation easement was purchased in Year 6.

Year 7 Activities: None. This project was completed in Year 6.

Funding Source: Prop 50

Agencies: DFG, WCB

Milestone(s): 61, 62, 65

Task Category: Implementation

Mandated Programs

Activity: Central Valley Project Improvement Act (CVPIA) Contribution According to the ROD, approximately $15 million of CVPIA restoration funds will be used for the purpose of protecting, restoring, and enhancing special-status species and their habitats in areas directly or indirectly affected by the Central Valley Project. CVPIA programs that contribute to ERP goals and objectives include: Anadromous Fish Restoration Program, Dedicated Project Yield, Restoration of Riparian Habitat and Spawning Gravel, Clear Creek Restoration, Anadromous Fish Screen Program, & Water Acquisition programs. This Program Plan includes only highlights of CVPIA accomplishments and activities.

Year 6 Accomplishments: The Anadromous Fish Restoration Program [Section 3406 (b)(1)]: 1) implemented Lovers leap spawning gravel augmentation on 23 riffles on the Stanislaus River; and 2) developed final engineering designs for construction of Iron Canyon Fish Ladder on Big Chico Creek. Dedicated Project Yield [Section 3406 (b)(2)] implemented upstream fish actions on three CVP-controlled streams to improve habitat conditions. Restoration of Riparian Habitat and Spawning Gravel [Section 3406(b)(13)] added 7,500 tons of spawning gravel to the Sacramento River to help maintain Chinook salmon spawning habitat below Keswick Dam and added 1,250 tons of gravel to the Stanislaus River to improve and maintain Chinook salmon spawning habitat below Goodwin Dam. Anadromous Fish Screen Program [Section 3406(b)(21)] continued construction through 2006 on the Sutter Mutual Water Company Fish Screen Project and Water Acquisition [Section 3406 (d)(2)] acquired 84,410 acre feet of water acquired for Refuge Level 4 water supplies; and [Section 3406 (g)] acquired 148,500 acre feet of water acquired for the VAMP and the San Joaquin River Agreement.

Year 7 Activities: The Anadromous Fish Restoration Program constructed Iron Canyon Fish Ladder on Big Chico Creek and constructed a fish bypass barrier to protect downstream migrating juvenile salmonids at Orwick Diversion on Battle Creek. Dedicated Project Yield anticipates continued use of 800,000 AF of (b)(2) per year to improve instream conditions and habitat for anadromous fish and to help protect salmonids and delta smelt in the Delta in cooperation with the EWA. The Restoration of Riparian Habitat and Spawning Gravel will continue with gravel introductions on all three rivers as budget permits. The Anadromous Fish Screen Program will initiate a field monitoring and assessment effort of unscreened diversions on the Sacramento River to quantify fish losses at unscreened diversions and initiate of fish screen construction of the unscreened municipal diversion for Yuba City on the Feather River. More information on CVPIA programs can be found at: http://www.usbr.gov/mp/cvpia/.

Year 7 Projected Cost: $15,000,000
Funding Source: CVPIA Restoration Fund
Agencies: USFWS
Milestone(s): 12, 13, 18, 21, 23, 44, 54, 62, 67, 68, 69, 70, 71, 72, 90, 94, 95, 97, 98, 99
Task Category: Implementation

Activity: South Delta Habitat. This item is to ensure that funding allocated in Proposition 204 related to the permanent barriers element of the South Delta Improvements Program (SDIP) contributes effectively to ERP implementation in support of the Delta Improvements Package actions related to water project operations in the Delta that will result in increased water supply reliability, improved water quality, environmental protection, ecosystem restoration, protection of the Delta Levee system, and analyses and evaluation to support improved real-time and long-term management.

Year 6 Activities: SDIP CEQA/NEPA document was circulated for public review.

Year 7 Activities: Upon project approval, funds would be available for restoration.

Year 7 Projected Cost: $9,500,000

Funding Source: Prop 204, Ch 4, article 5

Agencies: DWR, DFG

Milestone(s): 1, 13, 17, 18, 23, 24

Task Category: Implementation

Assistance to Farmers Integrating Agricultural Activities with Ecosystem Restoration

Activity: Assistance to Farmers in Integrating Agricultural Activities with Ecosystem Restoration (AFI).

ERP's Draft Stage One Implementation Plan established multi-regional priorities for a coordinated ERP effort to support "wildlife friendly agriculture". Chapter 7 of Proposition 50, which provided funds to the ERP, states that "not less than $20 million shall be allocated for projects that assist farmers in integrating agricultural activities with ecosystem restoration." Funds in this category have been dedicated to focused solicitation and directed actions to implement projects that benefit fish, GGS and other MSCS species on agricultural lands. In addition, a portion of the funds in this category have been allocated to support technical assistance partnerships to assist landowners in implementing agricultural activities benefiting MSCS wildlife and fish, and provide a linkage between state and federal programs to benefit farmers and wildlife.

Year 6 Activities

- ERP developed and released a focused Proposal Solicitation Package (PSP) that made $9 million available for "projects that assist farmers in integrating agricultural activities with ecosystem restoration," in October 2005. Proposals were submitted in December of 2005 and are under review. See solicitation website for more detailed information: http://www.calwater.ca.gov/Solicitation/ERP_Solicitation.shtml
- ERP funded a directed action to protect working lands and integrate agricultural activities with ecosystem restoration through a dedication of $2,570,000 to the Department of Conservation to fund an easement on Llano Seco Ranch. For more information, see: http://www.calwater.ca.gov/Programs/EcosystemRestoration/2005_DirectedActions/Llano_Seco/Llano_Seco_DirectedAction.pdf

Year 7 Activities: (1) DFG will fund proposals and directed actions including those generated by the 2005 PSP, and (2) DFG will develop, execute, and coordinate technical assistance partnerships to integrate agricultural activities with ecosystem restoration.

Year 7 Projected Cost (1): $15,330,000 (2) $500,000

Funding source: Prop 50 AFI

Agencies: CDFA, DFG, DOC, NRCS, USFWS, USGS

Milestone(s): 6, 61, 91

Task Category: Implementation

Mine Remediation and San Joaquin River Dissolved Oxygen Projects

Activity: Mine Remediation Projects. Prop.13 provides $15 million for mine remediation projects. Priorities will include process studies that can assist with understanding resource management actions that can reduce methylmercury production and mine remediation projects. Highest priority will be given to projects that can provide improvements in water quality in areas of interest for restoration or habitat for key species.

Year 6 Activities: In 2004, a multi-year grant was funded to provide information on the sources and loads of mercury in the Bay Delta watershed and the transport, cycling, and transformation that occurs to mercury and methylmercury within the watershed to better direct remediation priorities. Work continued on this project in year 2005. Mid-project results were presented at the CALFED Mercury Project External Peer Review Workshop in fall 2005. Work Remaining: The project is approximately 75% completed. In addition, the data has raised the question on whether methylmercury is being transported conservatively in the watershed. Funding is being sought to evaluate this question.

Year 7 Activities: In 2006, the primary Year 7 activities are to continue progress on the existing studies. Additionally, funding is being sought to evaluate the hypothesis that methylmercury is being transported conservatively in the major rivers in the watershed. It is anticipated that either Prop. 204 or Prop.13 could be used to support this work effort.

Year 7 Projected Cost: $3,880,000 project total: $1.21 million from Proposition 13 and $2.67 million from Proposition 204. A $380,000 amendment has been approved for this project.

Funding Source: Prop 13 and Prop. 204

Agencies: CBDA, DFG, CVRWQCB

Milestones: 31, 78

Task Category: Implementation

Activity: San Joaquin River Dissolved Oxygen (DO) Issues. Prop. 13 provides $40 million to improve dissolved oxygen in the Stockton Deep Water Ship Channel (DWSC) in the SJR. Since 1999, significant progress has been made towards better defining the sources and causes of low dissolved oxygen in the DWSC. Further studies and demonstration projects are needed to determine a final long-term solution to the SJR dissolved oxygen problem. Proposition 13 requires that funds be spent on construction of demonstration projects and other projects to solve the problem. Completion of studies and projects in Year 7 and 8 will be critical to determining a final solution. These tasks include various studies and pilot demonstration projects designed to study sources, causes, and methods to correct dissolved oxygen depletion in the Stockton Deep Water Shipping Channel.

Year 6 Activities: Completion of San Joaquin River Depletion Modeling Study, Completion of RWQCB Basin Plan Amendment for Dissolved Oxygen TMDL, Completion of the Aeration Demonstration Feasibility Study and 90% Construction of Aeration Demonstration Project. Other accomplishments include completion of draft conceptual models for dissolved oxygen.

Year 7 Activities: The primary Year 7 activities will be continued progress on existing studies and start of the aeration demonstration project. The aeration demonstration project is expected to begin in January 07 and run for 1-2 years. Other activities include support for the Technical Workgroup and coordination with agencies and stakeholders.

Year 7 Projected Cost: $6,000,000

Funding Source: Prop 13

Milestones: 26, 100

Agencies: USBR, USFWS, DWR, CVRWQCB

Task Category: Implementation

Other

Activity: Additional Milestones Projects Based on Annual Milestones Assessment. Milestones are a list of ERP, Multi-Species Conservation Strategy (MSCS), and Water Quality Program actions the CALFED Program will implement in Stage 1 to address covered species. The MSCS-ERP Milestones represent the ERP Agencies' objectives for ERP implementation that would allow covered species to make significant progress toward restoration and recovery. As stated in the ROD, the ERP Agencies will revise the milestones as necessary. This project will meet that requirement.

Year 7 Activities: Projects may be funded that address priority milestones

Year 7 Projected Cost: $5,000,000

Funding Source: Prop 50

Agencies: DFG, NMFS, USFWS

Milestone(s): 1 - 119

Task Category: Implementation

Staff

Activity: ERP Coordination and Support. Funding for CALFED Program ERP staff (formerly CBDA) assigned to coordinate and support ERP implementation and associated administrative costs.

Year 6 Activities: Coordinated ERP activities among ERP agencies and others. Particular effort focused on providing support and information to Department of Finance (DOF) and Little Hoover Commission review processes. Supported Ecosystem Restoration Subcommittee. Managed 200+ active ERP grants and deliverables for past and active grants. Coordinated QA/QC of ERP project information and system development. Completed transition of 87 ongoing grants to DFG beginning 07/01/06.

Year 7 Activities: Coordinate and support ERP activities such as annual report, milestones assessments (Year 6 and End of Stage 1), program plans, implementation of ecosystem water quality, Delta Vision Process, and regional planning. Support Ecosystem Restoration Subcommittee. Assist with managing 87 ongoing grants transferred to DFG beginning 07/01/06.

Year 7 Projected Cost: $1,546,000

Funding Source: General Fund, Prop. 50

Agencies: DFG

Milestones: 1-119

Task Category: Oversight and Coordination

Activity: CALFED Bay-Delta Program Internal Contracts. CALFED Program contracts with various entities to carry out activities associated with the ERP.

Year 6 Activities: Jones and Stokes Master Services Agreement was used to support coordination of the PSP for projects to assist farmers in integrating ecosystem restoration in agriculture; for management of deliverables from all ERP grants, and support of digital collaboration tools. UC Merced was contracted to develop and support an on-line grant submittal system. UC Davis was under contract to conduct technical reviews of proposals, key project outcomes, and conceptual models. Pacific States Marine Fisheries Commission provided key data management staff to capture and coordinate ERP project information and project deliverables.

Year 7 Activities: These types of agreements will be used to enhance coordination and service for ERP agencies. The UC Davis contract will continue to be administered by CBDA for PSP and science review support. The UC Merced contract will complete the migration of the on-line submittal system to the Science Program. If the Jones and Stokes Master Services Agreement is extended, this capacity may be used at the discretion of the ERP Implementing Agencies.

Year 7 Projected Cost: up to $250,000 for new actions identified by ERP

Funding Source: Prop 204 (Resources Agency) re-programmed funds

Agencies: USFWS, DFG, NMFS

Milestones: 1-119

Task Category: Oversight and Coordination

Activity: Working Lands Coordinator. CBDA contracted with the Resources Legacy Fund to provided staff to support development of key strategies to optimize opportunities to integrate ERP activities with agricultural assistance programs, and wildlife friendly agriculture projects.

Year 6 Activities: In coordination with DFG, assisted with coordinating the AFI PSP, and provided staff support to the Working Landscapes Subcommittee.

Year 7 Activities: This activity will continue until December 31, 2006.

Year 7 Projected Cost: $35,351

Funding Source: Prop 50 - AFI

Agencies: Resources Agency

Milestones: 6, 61, 91

Task Category: Oversight and Coordination

Activity: Aquatic Restoration Planning and Implementation Section (ARPI). ARPI was established in DWR to support the ERP by developing habitat enhancement and fish passage improvement in the Yolo Bypass. ARPI collaborates with the Yolo Basin Foundation and other local groups to identify, study, and carry out projects on public or private land with willing participants; these efforts create regionally significant improvement in riparian, tidal marsh, and seasonal floodplain habitats in the bypass. This effort is compatible with maintaining or improving seasonal flood flow capacity of the bypass while improving habitat diversity and quality.

Year 6 Activities: ARPI conducted the following: (1) evaluated fish passage and aquatic habitat, and studied sediment erosion and accretion; (2) developed 1-D and 2-D flow model; (3) conducted flow and stages monitoring; (4) designed potential restoration actions in lower Putah Creek; (5) evaluated Lisbon Weir fish passage improvement options; (6) evaluated options to integrate bypass-scale restoration into the Sacramento Area Flood Control Agency's Lower Sacramento River Regional Project. The ARPI website for detailed project information is http://wwwdes.water.ca.gov/ecological_studies_branch/arpi_section/index.cfm

The ERP Implementing Agencies met with ARPI staff to identify high priority needs in the Yolo Bypass, such as assessing sturgeon passage issues, and to articulate how ARPI could assist in addressing those needs. The goal was to develop an annual work plan that could be approved by the ERP Implementing Agency managers; to date, those efforts have been unsuccessful.

Year 7 Activities: ARPI will provide the engineering and scientific support needed for the highest priorities identified for the ERP.

Year 7 Projected Cost: $1,000,000

Funding Source: Prop. 50

Agencies: DWR

Milestones: 6, 8, 13, 17, 54, 62, 70

Task Category: Planning and Implementation

Activity: ERP Grant Management. Funding for eleven permanent DFG staff assigned to coordinate ERP implementation with other restoration activities such as CVPIA and associated administrative costs.

Year 6 Activities: Continued staff support ERP grant management

Year 7 Activities: Continue staff support ERP grant management

Year 7 Projected Cost: $2,700,000

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 1 - 119

Task Category: Implementation -DFG Implementation and Program Support

Activity: ERP Database Strategy Development and Implementation. Continued support for the ERP database, web based interface, GIS digitizing support, and data entry.

Year 6 Activities:

- By December 2006, an ERP projects electronic library will be up and running with DFG as the keeper of the information previously housed in the E-Room.
- Query Reports are available for existing information in the ERP Database (Limited in scope and are prepackaged in format and content).
- User Guide developed with directions on how to access and utilize the Database and its query tools.
- Development of an on-line viewer Ecosystem Restoration Program Information Network (ERPIN Viewer) and selected project level information sorted by Project Type, Ecosystem Region, or Funding Agency.

Year 7 Activities: A web-based query tool will be developed that allows all users to search and produce ERP Project Reports. Full integration of ERP Database with seamless connection to E-Library will be implemented.

Year 7 Projected Cost $250,000

Funding Source: Prop. 50

Agencies: DFG (lead) with review from other ERP Implementing Agencies (USFWS and NMFS)

Milestone(s): 1 - 119

Task Category: Implementation - DFG Implementation and Program Support

Activity: Fish and Wildlife Planning. USFWS, as an ERP Implementing Agency, will continue ERP planning efforts in collaboration with NMFS, CDFG and CBDA. Comprehensive efforts are currently underway to develop regional ecosystem restoration plans for areas such as Suisun Marsh and the Delta. USFWS, through an interagency process, is also involved in planning and developing the format and guidelines for preparing Action Specific Implementation Plans (ASIPs) for all CALFED projects in order to meet the requirement of FESA, CESA, and NCCPA. USFWS will continue planning efforts regarding the ERP PSP process. The USFWS continues to manage existing CALFED contracts that meet ERP goals and objectives. USFWS will continue efforts for the annual milestones assessments and other annual reporting requirements including the Multi-Year Program Plan.

Year 6 Activities: FWS collaborated on several planning and implementation efforts, including: (1) Annual Program Plan, (2) Annual accomplishments report, (3) State audit of the CALFED Program, (4) Draft ASIP Guidebook, (5) Assisting Farmers PSP, (6) ERP Contract review and amendments, (7) ERP performance measures, (8) AMPT and DRERIP, (9) Other CALFED elements, such as Watershed Management and Science Program, and (10) CALFED Program environmental compliance needs.

Year 7 Activities: Will continue ERP planning and implementation efforts, including: (1) End of Stage 1 decisions, (2) End of Stage 1Milestone Assessment, (3) Conservation Plans for CALFED Program, (4) ERP performance measures , (5) Annual Program Plan, (6) CALFED Program environmental compliance needs, (7) BDPAC and BDPAC ERP Subcommittee, (8) ERP contract review, (9) AMPT and DRERIP, (10) Other CALFED elements, such as Watershed Management and Science Program.

Year 7 Projected Cost: $1,292,000

Funding Source (year 7): Federal CALFED

Agencies: USFWS

Milestone(s): 1 – 119

Task Category: Planning

Activity: Fish Passage Improvement Program (FPIP) Staff. The Fish Passage Improvement Program (FPIP) team studies and evaluates constructed structures that impede anadromous fish migration and assists with engineering and environmental evaluations for migration barrier structure removal or modification within the ERP focus area. The FPIP team is guided by an annual work plan developed by an Interagency Review Team (IRT) that includes representatives from the ERP Implementing Agencies and FPIP and approved by the ERP Implementing Agency managers. The work plan identifies and addresses high priority fish passage issues and other engineering support requirements for ecosystem restoration that may be highlighted in ERP regional restoration plans.

Year 6 Activities: Work continued on: (1) Big Chico Creek—Iron Canyon Fish Passage Project; (2) Calaveras River Migration Barriers Assessment 2005 Interim Report; (3) Daguerre Point Dam Fish Passage Improvement project; (4) Upper Yuba River Studies Program; (5) engineering and bathymetry information for the Lake Davis Pike Eradication Project Planning—Feasibility Phase; (6) Lower Butte Creek projects. The FPIP website provides detailed information: http://www.watershedrestoration.water.ca.gov/fishpassage/projects.

Year 7 Activities: Planning will continue on the above identified activities.

Year 7 Projected Cost: $1,114,000

Funding Source: Prop. 50

Agencies: DWR

Milestones: 18, 21, 44, 67, 69, 70, 71, 72, 97, 99

Task Category: Planning

Activity: Genetic/Scale Tissue Archive. Funding for continued development and coordination of historic Central Valley genetics/scale tissue archive and database. Historic scale/tissue collections in Arcata, Fresno, and other locations will be cataloged, entered into a database, and made part of the existing DFG Central Valley genetics tissue archive. Collections will be provided for research purposes according to standard protocols.

Year 6 Activities: Year 6 continued work on the following: (1) support genetic monitoring at state and federal fish facilities, (2) identify spring run species, (3) Central Valley-wide survey of Chinook salmon, (4) Tissue and scale collections at fish hatcheries, and (5) support comprehensive steelhead monitoring program

Year 7 Activities: Work will continue on the activities listed above.

Year 7 Projected Cost: $344,000
Funding Source: Prop 50
Agencies: DFG
Milestone(s): 112, 118, 119
Task Category: Implementation -DFG Implementation and Program Support

Activity: Non-Native Invasive Species Program (USFWS).The Stockton Fish and Wildlife Office provides coordination and leadership to the Bay-Delta Authority ERP Non-native Invasive Species Program (NISP). USFWS will continue to work with the NIS agency and stakeholder teams to implement and administer the NIS Program, as developed and documented in the NIS Strategic and Implementation plans.

Year 6 Activities: Accomplishments included (1) provided technical assistance and coordinated zebra mussel prevention and response activities (e.g., partnering with DFG and DFA on the California Zebra Mussel Work Group, Zebra Mussel Rapid Response Plan), (2) coordinated and facilitated activities for NISAC and CINIPC, New Zealand Mud Snail surveys, (3) coordinated with partners to provide technical assistance for HACCP in CALFED focus area, (4) coordinated NISP actions with 100th Meridian and Western Regional Panel activities, (5) and providing outreach materials and technical guidance to watershed and other groups.

Year 7 Activities: Activities will focus on continuing work in the areas listed above. The NIS also would like to develop the process by which to access the ERP-CHRPD database and be included in reviewing and providing guidance and coordination on the technical aspects of NIS projects funded by CALFED ERP.

Year 7 Projected Cost: $200,000

Funding Source: Bay-Delta Act Re-appropriated

Agencies: USFWS

Milestones: 20, 22

Task Category: Implementation

Activity: Non-native Invasive Species (DFG). DFG will work with the USFWS NIS Agency and Stakeholder Teams to implement and administer the NIS program, as developed and documented in the NIS Strategic and Implementation Plans.

Year 6 Activities: (1) A Senior Biologist was hired to coordinate invasive species activities in the CALFED area, (2) Developed a preliminary workplan for 2006 and 2007, (3) Purchased necessary equipment and supplies, (4) Presented portions of the Plan to public meetings, and (6) Participated in statewide invasive species coordination meetings.

Year 7 Activities: Continue to plan and implement actions for CALFED described in the State Aquatic Invasive Species Plan and the ERP Multi-year Program Plan. Complete a Rapid Response Plan for Aquatic Invasive Species, establishing priorities for terrestrial weed actions in the CALFED area, recommending new regulations for restricting the importation of invasive species and serving as the co-chair to the CALFED Non-Native Invasive Species Advisory Committee

Year 7 Projected Cost: $100,000

Funding Source: Prop 50

Agencies: DFG

Milestone(s): 20,22

Task Category: Implementation -DFG Implementation and Program Support

Activity: Regional Implementation Coordination. Funding is provided for 5.25 permanent DFG staff assigned to assist in implementing the ERP grant management program, coordinate AFRP activities with the ERP, and support regional planning in the Delta. Funding in Year 6 was provided through an interagency agreement with CBDA funded with Prop 204 funds. That agreement expires at the end of June, 2006.

Year 6 Activities: In Year 6, progress was made on the following high priorities: (1) Coordination of projects on Clear Creek, Battle Creek, Deer Creek, the Tuolumne River, and Upper Yuba River and in the Yolo Bypass; (2) Coordination with AFRP projects on tributaries to the Sacramento and San Joaquin rivers; (3) Support of the Delta Risk Management Study; (4) Supervision of the Delta Levee Program and coordination with the DRERIP and SMP; (5) Grant management support for the Battle Creek and Lake Davis projects; (6) Non-native invasive plant assessments; and (7) Completion of the Delta-wide vegetation mapping effort.

Year 7 Activities: Coordination and implementation support will continue on the activities and projects identified above.

Year 7 Projected Cost: $835,358

Funding Source: Prop 50

Agencies: DFG, USFWS, NMFS

Milestone(s): 1 – 119

Task Category: Implementation -DFG Implementation and Program Support

Activity: Technical Assistance Partnerships to Integrate Agricultural Activities with Ecosystem Restoration. ERP will increase its cooperative efforts with organizations such as USDA's Natural Resources Conservation Service (NRCS), Resource Conservation Districts, and other technical non-profit agencies to provide technical assistance to landowners to implement agricultural activities benefiting MSCS wildlife and fish. This effort will provide a linkage between state and federal programs and help develop the institutional capacity of implementing agencies and cooperators to support agricultural activities benefiting wildlife and fish.

Year 7 Activities: Develop and execute technical assistance partnerships to integrate agricultural activities with ecosystem restoration.

Year 7 Projected Cost: $300,000

Funding Source: Prop 50 - AFI

Agencies: DFG, DOC, NRCS, USFWS

Milestones: 6, 61, 91

Activity: Regional Planning and Implementation Support. Funding for twelve permanent DFG staff assigned to prepare and maintain regional ERP implementation plans and to support ongoing implementation activities. This includes staff support for initiating work on the Sacramento River Regional Ecosystem Restoration Implementation Plan and the San Joaquin River Regional Ecosystem Restoration Implementation Plan and to continue work on DRERIP and SMP. These staff will assist in developing conservation strategies for regional HCP/NCCPs and provide support for developing comprehensive monitoring plans and indicators and performance measures through conceptual models.

Year 6 Activities: Work continued on DRERIP and SMP and work began on the San Joaquin River Regional Ecosystem Implementation Plan (SJRREIP), and Big Chico Creek-Iron Canyon Fish Passage Project.

Year 7 Activities: Planning will continue on the above identified activities.

Year 7 Projected Cost: $1,114,000

Funding Source: Prop. 50

Agencies: DFG

Milestones: 1-119

Task Category: Implementation

Activity: Restoration, Screens, etc. NMFS' supports the ERP goals and efforts by providing expertise regarding restoration and fish screen projects.

Year 6 Activities: Continuing activities supporting restoration and fish screen projects.

Year 7 Activities: Continuation of Year 6 activities.

Year 7 Projected Cost: $800,000

Funding Source: Federal

Agencies: NMFS

Milestone(s): 1 - 119

Task Category: Planning

Activity: CA Dept of Food and Agriculture The California Department of Food and Agriculture will provide staffing to support implementation of exotic species control measures, agriculture related water quality improvement measures, and wildlife friendly agriculture projects.

Year 7 Activities: CDFA is assisting with coordination of the BDPAC Working Landscapes Subcommittee and multiple aspects of the PSP for projects to assist farmers in integrating ecosystem restoration in agriculture.

Year 7 Projected Cost: $100,000

Funding Source: Prop. 50

Agencies: CDFA

Milestone(s): 1-119

Task Category: Planning

Activity: Data Integration on Water and Sediment Quality and Fish Contamination. DWR leads a multi-agency coordinated effort to develop and implement a database for reporting water, sediment and tissue data to facilitate data sharing and web-based availability. Funds were provided in Year 6 to continue that effort.

Year 6 Activities: DWR continued to enter water, sediment, and tissue data into its current database.

Year 7 Activities: DWR and DFG will coordinate linking the existing data into a refined web-based database being developed for ERP; DFG will manage this database. The integrated database will follow a format similar to that of BIOS (please visit http://bios.dfg.ca.gov). DWR will convert the existing data sets into the new format for the refined database, and it is expected to be completed in Year 7. Linking this data will assist with developing indicators and performance measures for ERP.

Year 7 Projected Cost: $150,000

Funding Source: Prop. 50

Agencies: DWR, DFG

Milestones: 1-119

Task Category: Implementation

Table 2 lists the types and number of projects funded by the ERP through Year 6. Specific information about any specific project may be found at the ERP website: http://www.delta.dfg.ca.gov/erp/

Table 2. Types and Number of Restoration Projects Funded by the ERP Through Year 6

Type of Restoration Project	Amount Approved	Project Count
Fish Screens	$95,410,279.30	65
Ecosystem Water and Sediment Quality	$73,453,790.32	63
Shallow Water and Marsh Habitat	$62,787,107.74	48
Upland Habitat and Wildlife Friendly Agriculture	$53,555,209.20	13
Lowland Floodplains and Bypasses	$52,213,439.00	34
Fish Passage	$42,637,832.00	14
Riparian Habitat	$41,904,250.87	32
At-Risk Species Assessment	$37,736,616.33	38
Hydrodynamics, Sediment Transport, and Flow Regimes	$36,724,241.12	30
River Channel Restoration	$35,594,032.58	16
Non-Native Invasive Species	$18,515,246.09	32
Local Watershed Stewardship	$17,872,486.83	52
Administrative or Program Support	$7,413,463.00	13
Environmental Education	$7,123,828.60	34
Environmental Water Management	$6,991,925.00	6
Harvestable Species Assessment	$2,173,095.74	9
Mine Remediation	$1,860,121.00	4
Estuary Foodweb Productivity	$1,815,662.00	3
X2 Relationships (Freshwater-Seawater Interface)	$509,222.00	1

Schedule of Anticipated Funding Needs

CALFED MYPP -- PROJECT LIST	Year 6	Year 7	Year 8	Year 9	Year10
At-Risk Delta Dependent Fish Species					
Determination of Age Structure of Central Valley Chinook Salmon					
Battle Creek Habitat Restoration Project					
Improving the Upstream Ladder and Barrier Weir at Coleman National Fish Hatchery on Battle Creek					
Coleman Intake Screens					
Butte Creek Spring-Run Chinook Salmon Life History Investigation [1]					
Clear Creek Anadromous Salmonid Monitoring Program [1]					
Lower Clear Creek Floodway Rehabilitation Project (Phase 3B)					
Interim Adult Central Valley Steelhead Monitoring Project					
The M&T/Llano Seco Pumping and Fish Screen Project					
San Joaquin Basin Monitoring					
Rim Dam Fish Passage Evaluation (NMFS)					
Constant Fractional Marking					
Salmon and Steelhead (Combined) Comp. Monitoring Plan					
Upper Sacramento River Basin Chinook Salmon Escapement Monitoring Program [1]					
Sacramento River Juvenile Winter Chinook Salmon Abundance Estimates with Comparisons to Adult Escapement					
Juvenile Outmigrant Sampling					
Juvenile Anadromous Salmonid Emigration Monitoring on the Sacramento River at the Glenn-Colusa Irrigation District (GCID) Fish Screen Bypass Channel [1]					
Real Time Flow Monitoring in the Sacramento River System					
San Joaquin Basin-wide Temperature Model					
Tuolumne River Restoration Monitoring [1]					
EWP (Environmental Water Program)					
RD108 Fish Screen					

CALFED MYPP -- PROJECT LIST	Year 6	Year 7	Year 8	Year 9	Year10
Non-Native Invasive Species					
Lake Davis Pike Containment Project					
Lake Davis Pike Eradication Project- Implementation					
Lake Davis Pike Eradication Project- Planning Feasibility Phase					
Zebra Mussel Rapid Response					
Zebra Mussel Prevention					
Monitoring for Invasive Spartina Control in the San Francisco Estuary					
Arundo Donax Eradication and Coordination Program: Monitoring and Evaluation					
Delta Pelagic Fishes					
Pelagic Fish Species Scientific Investigations (CMARP Phase 3)					
Blacklock Tidal Marsh Habitat Restoration Project					
Restoration of Cullinan Ranch					
Suisun Marsh Property Acquisition and Habitat Restoration					
Pelagic Organism Decline Scientific Investigations					
Monitoring Responses Of The Delta Smelt Population To Multiple Restoration Actions The San Francisco Estuary [1]					
Delta Regional Ecosystem Restoration Implementation Plan (DRERIP)					
Hamilton Airfield/Bel Marin Keys (BMK) Wetland Restoration					
Napa Salt Ponds Restoration					
Napa Salt Ponds Monitoring					
Tidal Restoration of Hill Slough Parcel in Suisun Marsh					
Multiple Species					
Additional Milestones Projects for Other At-Risk Species Affected by Water Projects Operations, Based on Annual Milestones Assessments					
Sacramento River - Chico Landing Subreach Habitat Restoration					
Sacramento River Riparian Monitoring and Assessment Consolidated Projects [1]					
Sacramento River Conservation Area Forum Base Funding					

CALFED MYPP -- PROJECT LIST	Year 6	Year 7	Year 8	Year 9	Year10
Liberty Island Restoration Monitoring					
Yolo Bypass Strategic Plan Support					
Suisun Marsh Plan (SMP)					
Wetland Response to Modified Hydrology with Respect to Salinity Management					
Coordinated Monitoring and Indicator/Performance Measure Strategy Project					
Conduct Comprehensive Terrestrial Monitoring					
Petaluma Marsh Expansion Project					
Llano Seco Ranch					
Mandated Programs					
CVPIA Contribution (Anadromous Fish Restoration Program b(1) Anadromous Fish Screen Program b(21) and Other Category A Programs)					
South Delta Habitat					
Assistance to Farmers Integrating Agricultural Activities with Ecosystem Restoration					
Assistance to Farmers in Integrating Agricultural Activities with Ecosystem Restoration					
Mine Remediation and San Joaquin River Dissolved Oxygen Projects					
Mine Remediation Projects					
San Joaquin River Dissolved Oxygen (DO) Issues					
Other					
Additional Milestones Projects Based on Annual Milestones Assessment					

CALFED MYPP -- PROJECT LIST	Year 6	Year 7	Year 8	Year 9	Year10
Staff					
ERP Coordination and Support					
CALFED Bay-Delta Program Internal Contracts					
Working Lands Coordinator					
Aquatic Restoration Planning and Implementation Section (ARPI)					
ERP Grant Management					
ERP Database Strategy Development and Implementation					
Fish and Wildlife Planning					
Fish Passage Improvement Program (FPIP) Staff					
Genetic/Scale Tissue Archive					
Non-Native Invasive Species Program (USFWS)					
Non-native Invasive Species (DFG)					
Regional Implementation Coordination					
Technical Assistance Partnerships to Integrate Agricultural Activites with Ecological Restoration					
Regional Planning and Implementation Support					
Restoration, Screens, etc.					
CA Dept of Food and Agriculture					
Data Integration on Water and Sediment Quality and Fish Contamination					

[1] (2004 Monitoring PSP)

Funding

Ecosystem Restoration ($ in millions)	Yr 6	Yr 7	Yr 8	Yr 9	Grand Total
State [1]	$119.0	$ 33.8	$ 0.1	$ 0.1	$ 152.9
Federal [2]	$ 21.7				$ 21.7
Water User [3]	$ 24.5	$ 4.0	$ 4.0	$ 4.0	$ 36.5
Available Funding Total	$165.2	$ 37.8	$ 4.1	$ 4.1	$ 211.1

1. State funds include $13.9 million from the final enacted budget in Year 6 (FY 05-06) for the California Bay-Delta Authority (Authority), Department of Water Resources (DWR), and the Department of Fish and Game (DFG), Resources Agency (RA) and the Wildlife Conservation Board (WCB) and available funding from prior years of $105.1 million. The State budget includes the $13.9 million described here as State funding and the State Water Project Water User Funding amount of $4.4 million for a total of $ 18.3 million.

2. Federal funds are the President's Budget for the US Army Corps of Engineers (USACE), US Fish and Wildlife Service (USFW), and the National Marine Fisheries Service (NMFS). Federal appropriations beyond Year 6 are unknown.

3. Water user funding includes State Water Project funds and CVPIA Restoration funds that are collected from state water contractors and Central Valley Water Project water users, but are budgeted and appropriated through the federal and state governments.

Attachment 1: Milestones Assessment

CALFED Bay-Delta Program

Ecosystem Restoration Program 2005 Compliance Report: Assessing Milestones Progress

Implementing Agencies:
California Department of Fish and Game
National Marine Fisheries Service
U.S. Fish and Wildlife Service

March 2006
Version 1.0

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Introduction

In 2004, the CALFED Bay-Delta Program (CALFED) completed a mid-Stage 1 assessment of progress towards achieving the milestones, a discrete set of Ecosystem Restoration Program (ERP) actions focused on contributing to recovery of endangered and threatened species. The U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the California Department of Fish and Game (CDFG) determined that CALFED was making sufficient progress towards achieving the milestones and agreed to extend both the Environmental Water Account (EWA) and programmatic biological opinions (USFWS 2000; NMFS 2000) and the Conservation agreement regarding the CALFED Bay-Delta Program Multi-Species Conservation Strategy (Conservation Agreement) (CALFED 2000a) to the end of Stage 1 (December 31, 2007).

In their letters to CALFED, both USFWS and NMFS listed milestones and other issues that they would like to see additional work during the remainder of Stage 1. The agencies also requested that CALFED report annually about the continued progress toward achieving the milestones and addressing the other issues. This report responds to those requests and focuses specifically on those points regarding the milestones that USFWS and NMFS specified as needing additional work. This report is not comprehensive and does not address every milestone; in Section 2 only ERP actions under contracts that were started or completed during Year 5 of Stage 1 (July 1, 2004 to June 30, 2005) are reviewed for their contribution towards achieving the milestones. A summary of EWA actions for Year 5 is also included in this report.

Milestones Context. CALFED's 30-year plan for restoring the health of the Sacramento-San Joaquin Delta and the San Francisco Bay is articulated in its Programmatic Environmental Impact Statement/Report (PEIS/R) (CALFED 2000b) and Record of Decision (ROD) (CALFED 2000c), completed in 2000. The 119 milestones are derived from the following PEIS/R's technical appendices: the Ecosystem Restoration Program Plan (ERPP) (CALFED 2000d), the Multi-Species Conservation Strategy (MSCS) (CALFED 2000e) and the Water Quality Program Plan (WQPP) (CALFED 2000f). These milestones are listed in the ROD, the programmatic biological opinions and Natural Community Conservation Plan (CDFG 2000) approval. The milestones are intended to be achieved during CALFED's first 7 years of the 30-year program. The USFWS, NMFS, and CDFG developed the milestones to ensure that the MSCS, ERPP and Water Quality Program are carried out in a manner and level adequate to sustain programmatic Federal Endangered Species Act (ESA), Natural Community Conservation Planning Act (NCCPA), and California Endangered Species Act (CESA) compliance for all CALFED Program elements.

In the ROD, the USFWS, NMFS, and CDFG committed to reinitiating ESA section 7 consultation no later than 180 days before September 30, 2004, to evaluate progress toward achieving milestones and the efficacy of the EWA. This commitment was

reiterated in USFWS' August 2000 opinion as a reinitiation statement. Therefore, in September 2004, reinitiated formal consultation was completed on CALFED to evaluate the efficacy of the EWA and progress toward achieving the milestones.

As a result of the reinitiation, USFWS and NMFS presented their recommendations in their letters responding to reinitiation dated September 22, 2004 and September 24, 2004, respectively. In their letters of response, USFWS and NMFS summarized the progress towards achieving milestones and efficacy of the EWA, and determined that CALFED implementation has been consistent with the project description contained within the August 2000 biological opinions and ROD. The letters identified milestones which are behind schedule and it is those milestones to which ERP should give first priority in the future.

Assessment Review Process. USFWS, NMFS, and CDFG (the Implementing Agencies for the ERP) coordinate with the California Bay-Delta Authority (CBDA) to carry out the ERP. The responsibilities of implementing agencies for CALFED program elements are defined in the California Bay-Delta Authority Act of 2003.

Section 2 of this annual milestone assessment reviews two sets of ERP contract information: the ERP contracts that were issued since the last assessment (September 2004) and the contracts that were completed since September 2004. Reviewing completed contracts will determine whether new information relevant to milestone actions would affect the results of the September 2004 progress assessments and require them to be updated for the affected milestones. The process for reviewing each contract's contribution to the milestones is the same as described in Section 2 of the September 2004 assessment document (http://www.delta.dfg.ca.gov/envcomp/milestones.asp). Each milestone contains a brief description of project(s) that contribute to the milestone. Project reference numbers are found at the end of each summary description. Additional information can be found in Appendix A using the project reference number. There are five projects that have been completed since the last review that do not address any milestones. Four of the five projects are educational projects and the fifth project is outside the CALFED focus area.

Section 3 provides an update regarding the EWA activities in 2005. Unlike the previous report, this assessment does not evaluate the efficacy of the EWA.

Section 4 reviews management activities and processes that address issues the USFWS and NMFS articulated in their letters of response to the reinitiation request. Many of the management actions taken by the Implementing Agencies contribute to the progress toward achieving milestones, for example, the directed actions for salmon escapement monitoring and the regional planning processes. These are not contracts yet contribute to the overall ERP goals and objectives.

Milestones Synthesis by Region

Delta Region and Eastside Tributaries Region (Delta Region)

Milestone 1. Develop a methodology for evaluating delta flow and hydrodynamic patterns and begin implementation of an ecologically based plan to restore conditions in the rivers and sloughs of the Delta sufficient to support targets for the restoration of aquatic resources.

Status: There have been two projects that have developed models. Model development and calibration has been completed for the three flooded islands, Franks Tract, Big Break, and Lower Sherman Lake. Modeling and data collection suggest that modifications at Franks Tract have a high potential for beneficial water quality effects (Project Reference Number 12). Monitoring sedimentation in the Sacramento-San Joaquin Delta has been completed. This project described the movement of sediments affecting habitats in the Delta and described the availability of sediments needed for habitat Restoration (Project Reference Number 13). In addition, two other projects were completed prior to the last milestone review but were reported as ongoing. One project built upon an earlier CALFED category III project that supported research in the Sacramento-San Joaquin Delta and this project refined the conceptual model developed for the Delta and extended conceptual model development to Suisun Bay and San Pablo/North Bay (Project Reference Number 4). The other project developed a geomorphic model that will allow simulation and demonstration of the response of riverine systems to levee removal and setbacks (Project Reference Number 7).

Progress: Remains on schedule

Next Steps: Next steps still required for meeting the milestone should include developing a synthesis of all existing information and compiling it into a comprehensive, ecologically-based plan designed to restore conditions in the rivers and sloughs of the Delta Region sufficient to support restoration of aquatic resources. The synthesis should include an analysis of gaps to guide future research and modeling efforts.

Milestone 4. Complete a fluvial geomorphic assessment of coarse sediment supply needs and sources to maintain, improve, or supplement gravel recruitment and natural sediment transport processes linked to stream channel maintenance, erosion and deposition, maintenance of fish spawning areas, and the regeneration of riparian vegetation. Develop and implement a program to reduce erosion and maintain gravel recruitment on at least one tributary within the Eastside Delta Tributaries EMZ.

Status: Geomorphic and geologic mapping for restoration planning for the Delta and Eastside Tributaries has been completed. This research plan investigated the lower reach of the Sacramento River, in an area extending from north of Hood, across Liberty Island, back to the Sacramento River at Rio Vista, to near Collinsville and Brown Island, easterly to McDonald Island, then northerly and mostly west of Interstate 5, across Terminous and Bract Tract, across Canal Ranch and New Hope Tracts, and along Snodgrass Slough back to Hood.. Results of this study provided a regionally consistent GIS dataset for multiple applications that address restoration priorities for the Delta and Eastside Tributaries Region (Project Reference Number 28).

Progress: Remains on schedule

Next Steps: Progress resulting from the newly referenced GIS dataset provides baseline geomorphic mapping and the potential to implement a program along at least one tributary in the Eastside Delta Tributaries EMZ to fulfill Milestone 4. Future information obtained from the Mokelumne River effort may still be informative and assist in achieving this objective.

Milestone 22. Develop and begin implementation of a demonstration program to reduce invasive non-native plant abundance within at least one EMU in the Delta.

Status: The Nonnative Invasive Species Advisory Council has been established. This Council is responsible for the coordination and implementation of activities/projects that address the issues of nonnative invasive species in the CALFED area of concern (Project Reference Number 5). Two new contracts were awarded to address purple loosestrife and arundo infestations. At least one thorough survey for purple loosestrife will occur in the Sacramento-San Joaquin River Delta each year. The surveys will be primarily from boats, but road surveys will be included where appropriate. The location and delimitation of each infestation will be determined using the global positioning system and standard mapping techniques. Visual estimates or measurements of the density of purple loosestrife adults and seedlings will be made using appropriate counting or sampling techniques. Photo points will be established and photos will be taken recording the history of each site during the project. All purple loosestrife infestations will be treated in some fashion, if feasible (Project Reference Number 30). Phase 2 of the *Arundo donax* Eradication and Coordination has begun. This project will monitor and follow up treatments on Phase I projects and will add five new partners. This is a full-scale restoration project, developing a coordinated program to control arundo in the CALFED regions and eliminate further invasion impacts (Project Reference Number 33). Another project that has been approved by the authority for funding, but the contract remains to be executed, will address perennial pepperweed on the Consumnes River Preserve. The project will map all infestations, conduct

pre-treatment monitoring, herbicide treatment and follow up monitoring (Project Reference Number 31).

Progress: Milestone 22 is technically **complete** because it has been implemented in at least one Delta EMU.

Next Steps: Actions implemented to achieve this milestone should be sustained and expanded. Monitoring and adaptive management must be instituted to make this an operational program that can be expanded to achieve the objectives over a wider geographic scope as resources and need dictate.

Milestone 31. Conduct the following mercury evaluation and abatement work in the Cache Creek watershed (from Phase II Report):

- Support development and implementation of TMDL for mercury
- Determine bioaccumulation effects in creek and Delta
- Source, transport, inventory, mapping and speciation of mercury
- Participate in Stage 1 remediation (drainage control) of mercury mines as appropriate
- Determine sources of high levels of bioavailable mercury

Status: A new integrated monitoring and outreach program to evaluate fish contamination issues has been funded. This project will monitor mercury levels in sport fish and biosentinel indicators for three years throughout the watershed. The monitoring will evaluate spatio-temporal variability, gather information needed for advisories, and develop baseline data at sites for potential habitat restoration sites of mine cleanup sites (Project Reference Number 32).

Progress: Remains on schedule

Next Steps:

- Develop implementation plan for the mercury strategy document. Provide a framework for coordination and communication for existing mercury research groups.
- Solicit additional projects to implement the mercury strategy, emphasizing the effects of restoration on mercury availability, and evaluating ecological affects of mercury contamination.
- Solicit for mine remediation projects

Milestone 32. Conduct the following mercury evaluation and abatement work in the Delta (from Phase II Report):

- Determine methylization (part of bioaccumulation) process in Delta
- Determine sediment mercury concentration in areas that would be dredged during levee maintenance or conveyance work

- Determine potential impact of ecosystem restoration work on methyl mercury levels in lower and higher trophic level organisms+

Status: A new integrated monitoring and outreach program to evaluate fish contamination issues has been funded. This project will monitor mercury levels in sport fish and biosentinel indicators for three years throughout the watershed. The monitoring will evaluate spatio-temporal variability, gather information needed for advisories, and develop baseline data at sites for potential habitat restoration sites of mine cleanup sites (Project Reference Number 32).

Progress: Remains on schedule.

Next Steps:

- Develop implementation plan for the mercury strategy document. Provide a framework for coordination and communication for existing mercury research groups.
- Solicit additional projects to implement the mercury strategy, emphasizing the impact of ecosystem restoration work on mercury levels, and evaluating the ecological affects of mercury contamination.

Suisun Marsh and North San Francisco Bay Region (Bay Region)

Milestone 39. In the Suisun Marsh/ North San Francisco Bay EMZ, restore a minimum of 7,000 acres of saline emergent wetland by restoring tidal action in the Suisun Bay and Marsh Ecological Management Unit (including 200 acres of muted tidal marsh along the Contra Costa shoreline) and a cumulative total of 1,000 acres in the Napa River, Sonoma Creek, Petaluma River, and San Pablo Bay Ecological Management Unit. Restore high marsh and high-marsh upland transition habitat in conjunction with restoration of saline emergent wetland. Develop cooperative programs to acquire, in fee-title or through a conservation easement, the land need for tidal restoration, and complete the needed steps to restore the wetland to tidal action. Begin aggressive program of control of non-native plant species that are threatening the known population of Suisun thistle, Suisun Marsh aster, soft bird's beak, and Point Reyes bird's beak.

- Bring into protection at least 25% of currently occupied, but unprotected Suisun Marsh aster habitat, spread throughout the North, East, South Delta and Napa River Ecological Units, and ensure appropriate management.
- Expand suitable tidal slough habitat for Suisun Marsh aster by 25 linear miles.
- Identify at least three protected and managed sites for introduction of at least three additional populations of Suisun thistle; increase overall population size at least threefold.
- Establish at least one new population of soft bird's beak with high likelihood of success in restored habitat in each of the Suisun Bay and Marsh EMU, the Napa River EMU, and the Petaluma River EMU.

- Establish at least one new Point Reyes bird's beak population in the Petaluma River

Status: Construction work will begin on Ponds 3, 4, and 5 in the Napa-Sonoma Marsh. This project will restore three commercial salt ponds along the Napa River, totaling approximately 3,000 acres. Restoration of Pond 3 will provide 1,300 acres of tidal habitats, and salinity reduction in preparation for tidal habitat restoration in Ponds 4 and 5 (1,700 acres) (Project Reference Number 36). Another project approved for funding by the authority, but for which a contract has not been executed, will acquire approximately 500 acres and conduct pre-project surveys and restoration in northwestern Suisun Marsh. The overall goal of this project is to restore tidal influence and re-create natural/historic elevations/topography, soil conditions, and plant communities throughout the entire elevational range to restore tidal marsh habitat (Project Reference Number 29).

Progress: On schedule

Next Steps:

- In Suisun Marsh, the completion of the Suisun Marsh Charter Group *Habitat Management, Preservation and Restoration Plan for Suisun Marsh* will guide restoration efforts. The completion of the plan and pilot scale restorations will direct larger scale marsh restoration. Previously planned marsh restoration projects on the Contra Costa shoreline should be finished.
- Monitoring and adaptive management of current restoration projects in North Bay tidal marshes should be supported
- Further assessment is needed to better understand marsh transitional zones. Research should provide more understanding of the ecology and distribution of the delta mudwort, delta tule pea, and Suisun Marsh aster.
- Inventories are needed to determine the areas of occupied and unprotected Suisun Marsh aster habitat, and to determine the extent of occupied acreage.
- Invasive *Spartina* control efforts should be completed and evaluated.

Sacramento River Basin Region (Sacramento Region)

Milestone 58. Complete fluvial geomorphic assessment of coarse sediment supply needs and sources to maintain, improve, or supplement gravel recruitment and natural sediment transport processes linked to stream channel maintenance, erosion and deposition, maintenance of fish spawning areas, and the regeneration of riparian vegetation. Develop and implement a program to reduce erosion and maintain gravel recruitment on at least one tributary within each EMZ in the Sacramento River Basin.

Status: An assessment of watershed conditions in the upper Battle Creek watershed and in the lands lying immediately upland of Battle Creek's restoration project reaches was completed. This project identified and prioritized high-risk erosion areas and developed a baseline (Project Reference Number 2). It also identified and prioritized sediment sources for future treatment.

Progress: On schedule

Next Steps: Develop and implement a plan to control erosion in identified high-risk areas. Work on this milestone should be assessed further to determine future steps.

Milestone 59. Develop floodplain management plans, including feasibility studies to construct setback levees, to restore and improve opportunities for rivers to inundate their floodplain on a seasonal basis for at least one tributary within each of the EMZs in the Sacramento River Basin. Among the areas to be included are the lower 10 miles of Clear Creek, Antelope Creek, and Deer Creek, and the lower reach of Cottonwood Creek.

Status: A feasibility study was completed for flood protection and ecosystem restoration at Hamilton City. The feasibility study identified constructing a setback levee about 6.8 miles long that would have varying heights. In order to accomplish ecosystem restoration within the project area, most of the existing "J" levee will be removed to reconnect the river to the floodplain, allowing overbank flooding and increasing capacity in the Sacramento River. Native vegetation would be restored on all project lands waterside of the new setback levee. Existing orchards in the proposed restoration areas would be removed and native vegetation planted. The native vegetation (total 1,480 acres) would be riparian species (1,000 acres), scrub (260 acres), oak savannah (150 acres) and grassland species (70 acres) (24). The next phase of this project has been approved by the authority for funding but the contract has not been executed. This next phase will include preconstruction, engineering and design for restoration (Project Reference Number 38).

Progress: Remains on schedule

Next Steps: Feasibility studies are largely complete. Continue restoration efforts (Project Reference Number 38) and funding until targets are attained.

Milestone 60. Protect 15,000 acres within the Inner River Zone areas between Red Bluff and Colusa reaches within identified the Sacramento River Conservation Area. Establish between three and five habitat preserves for bank

swallows along the upper reaches of the Sacramento River capable of supporting 5,000 bank swallow burrows between the towns of Colusa and Red Bluff.

Status: A feasibility study was completed for flood protection and ecosystem restoration at Hamilton City. The feasibility study identified constructing a setback levee about 6.8 miles long that would have varying heights. In order to accomplish ecosystem restoration within the project area, most of the existing "J" levee will be removed to reconnect the river to the floodplain, allowing overbank flooding and increasing capacity in the Sacramento River. Native vegetation would be restored on all project lands waterside of the new setback levee. Existing orchards in the proposed restoration areas would be removed and native vegetation planted. The native vegetation (total 1,480 acres) would be riparian species (1,000 acres), scrub (260 acres), oak savannah (150 acres) and grassland species (70 acres) (Project Reference Number 24). This project will protect a total of 2,600 acres within the Sacramento River Conservation Area which will provide habitat for Bank Swallows. The next phase of this project has been approved by the authority for funding but the contract has not been executed. This next phase will include preconstruction, engineering and design for restoration (Project Reference Number 38).

Progress: Remains on schedule

Next Steps: Planning efforts for protection of conservation areas are nearly complete. Work toward acquisition of property for protection should continue. Evaluation and monitoring of habitat types should be initiated, and progress and performance reporting should be established.

Milestone 62. Develop and implement a program to establish, restore, and maintain riparian habitat to improve floodplain habitat, salmonid shaded riverine aquatic habitat, and instream cover along at least one tributary within each of the following Ecological Management Zones: American River Basin, Butte Basin, Colusa Basin, Cottonwood Creek, Feather River/Sutter Basin, North Sacramento Valley, Sacramento River, and Yolo Basin. While restoring habitat conditions in the American River EMZ, maintain continuous corridors of suitable riparian habitat for valley elderberry longhorn beetle. Protect existing known occurrences of northern California black walnut native stands through conservation easements or purchase. Identify at least 3 protected and managed sites for introduction of additional populations of northern California walnut; begin introduction and monitor success. Population creation should be part of a broader effort to restore riparian areas which historically contained walnut.

Status: In the North Sacramento Valley EMZ, 2499 acres were acquired in the Battle Creek watershed. This acquisition will help maintain and enhance functional riparian habitat and streambank conditions and

minimize threats from human impacts by ensuring protection of the riparian habitat (Project Reference Number 14). In the Sacramento River EMZ, a feasibility study was completed for flood protection and ecosystem restoration for Hamilton City. The feasibility study identified constructing a setback levee about 6.8 miles long that would have varying heights. In order to accomplish ecosystem restoration within the project area, most of the existing "J" levee will be removed to reconnect the river to the floodplain, allowing overbank flooding and increasing capacity in the Sacramento River. Native vegetation would be restored on all project lands waterside of the new setback levee. Existing orchards in the proposed restoration areas would be removed and native vegetation planted. The native vegetation (total 1,480 acres) would be riparian species (1,000 acres), scrub (260 acres), oak savannah (150 acres) and grassland species (70 acres) (Project Reference Number 24). The next phase of this project has been approved by the authority for funding but the contract has not been executed. This next phase will include preconstruction, engineering and design for restoration (Project Reference Number 38). In the Yolo Basin EMZ, riparian-edge hedgerows were installed immediately adjacent to Union School Slough (Project Reference Number 15). Hedgerows were planted based on consultation with the landowner. Sites were planted with a mix of grasses, trees, shrubs, and herbaceous plants.

Progress: Remains on schedule

Next Steps: The need for protected or managed sites for introduction of additional populations of northern California black walnut should be guided by the results of the genetic testing noted above. Protection of the three known native northern California black walnut populations should be discussed with the land owners of these sites.

Milestone 67. Provide unimpeded upstream and downstream passage for salmon and steelhead on Sacramento River Basin tributaries.

Status: Phase 2 of the Red Bluff Diversion Dam fish passage improvement project has been completed. Preliminary designs for alternatives were identified, environmental documentation completed, and an implementation plan was developed. This project will improve the reliability of both fish passages and agricultural water deliveries. Currently, the Red Bluff Diversion Dam is a barrier to anadromous fish migration (Project Reference Number 23).

Progress: Remains on schedule

Next Steps: The accomplishments in fish passage should be assessed so that priorities for future actions can be established.

Milestone 72. Install positive barrier fish screens on all diversions greater than 250 cfs in all EMZs and 25% of all smaller unscreened diversions in the Sacramento River Basin. Among those diversions to be screened are the DWR Pumping Plants and 50% of small diversion located on east side of Sutter Bypass, the Bella Vista diversion in the upper Sacramento River near Redding, East-West Diversion Weir, Weir 5, Weir 3, Guisti Weir, and Weir 1 in the Sutter Bypass, White Mallard Dam, Morton Weir, Drivers Cut Outfall and Colusa Shooting/ Tarke Weir Outfall and associated diversion screens in the Butte Sink.

Status: Final design, environmental documentation and permitting have been completed for the Tisdale positive barrier fish screen pumping plants (Project Reference Number 25). Construction has now begun on the Tisdale diversion. This diversion is located 45 miles north of Sacramento on the Sacramento River and will eliminate entrainment losses, while maintaining Sutter Mutual Water Company's diversions (Project Reference Number 35). Construction for removing sediment from the Wilkins Slough positive barrier fish screen has been approved for funding by the authority but the contract has not been executed. This project will install a sediment removal system within the bays of the fish screen to meet the performance criteria (Project Reference Number 34).

Progress: Remains on schedule

Next steps: Screening projects should continue in coordination with the CVPIA AFSP. Screening needs to be completed on 50% of the 95 small diversions on the east side of Sutter Bypass and the Bella Vista diversion in the upper Sacramento River near Redding.

Milestone 74. Actions to minimize or eliminate inter-substrate low dissolved oxygen conditions in salmonid spawning and rearing habitat, especially in the Mokelumne, Consumnes, American, Merced, Tuolumne, and Stanislaus Rivers (from Phase II Report and Water Quality Program Plan):

- Develop inter-substrate DO testing for salmonid spawning and rearing habitat.
- Conduct comprehensive surveys to assess the extent and severity of inter-substrate low DO conditions.
- Develop and begin implementing appropriate best management practices (BMPs), including reducing anthropogenic fine sediment loads, to minimize or eliminate inter-substrate low DO conditions.

Status: A watershed assessment and treatment plan have been completed in the
Battle Creek watershed. The Battle Creek Watershed Conservancy has identified and prioritized high-risk erosion areas for future treatment (Project Reference Number 2).

Progress: Behind schedule. The management practices identified in Project Reference Number 2 should contribute indirectly to this milestone.

Next Steps:

- Summarize and evaluate projects, actions, and monitoring being done by other agencies and organizations related to DO conditions. This should include information on ecological effects and potential management actions to reduce fine sediment sources contributing to inter-substrate low dissolved oxygen.
- Work with other agencies to identify gaps and high-priority actions to reduce sediment inputs and ecological effects of inter-substrate low DO.
- Develop and implement plans to address high-risk erosion areas which have already been identified.

Milestone 75. Encourage regulatory activity to reduce discharge of oxygen reducing substances and nutrients by unpermitted dischargers. (Phase II report)

Status: A watershed improvement program for the lower portions of Union School Slough Watershed was completed. This project researched farm-management techniques. The project hypothesized that upland fallow land management techniques, such as conservation tillage and cover crops, will not only reduce winter runoff but also improve soil quality and decrease off-site nutrient loading to Delta waterways. The research found that greater soil disturbance resulted in greater in-field sediment loss and nitrate leaching. Even though conservation tillage soils had slower water infiltration, these soils had less loose soil particles on the soil surface subject to wind and water erosion. Sediment traps were effective in trapping soil sediment eroded from adjacent fields, and linked sediment-trap/farm-pond systems provided greater residence time for sediment fines to settle and for nutrient transformations to occur in the pond soils resulting in lower sediment and nutrient loads exiting these systems. Analysis of the silt traps showed suspended sediment concentrations on average was 6.8 times greater in water moving off the tilled field (CVT) than the conservation tilled field (CST/NG). Average dissolved organic carbon concentrations were similar between east and west silt traps but ON and nitrate-N concentrations, on average, were significantly greater for the west silt trap draining the NG/CST fields compared to the east silt trap. There are little data to conclusively say the sediment and nutrient levels changed in concentration as water flowed from the west silt trap to the pond (Project Reference Number 15).

Progress: On schedule

Next Steps:

- Summarize and evaluate project, actions, and monitoring being done by other agencies and organizations related to this issue. The ecological effects and potential regulatory or management actions to reduce oxygen –reducing substances and nutrients by unpermitted dischargers to the Sacramento River should be addressed.
- Work with other agencies and organizations to identify gaps and high-priority actions to limit oxygen-reducing substances and nutrients.
- Solicit additional projects that are consistent with the high-priority actions.

Milestone 76. Actions to reduce fine sediment loading to streams, especially Tuolumne, Merced, Stanislaus, Consumnes, Napa, and Petaluma Rivers, and Sonoma Creek, due to human activities (from Phase II Report and Water Quality Program Plan):

- Participate in implementation of USDA sediment reduction program.
- Implement sediment reduction BMPs in construction areas, on agricultural lands, for urban stormwater runoff, and other specific sites.
- Implement stream restoration and revegetation work.
- Quantify and determine ecological impacts of sediments in target watersheds, implement corrective actions.

Status: In the North Sacramento Valley EMZ, 2499 acres were acquired in the Battle Creek watershed. This acquisition will help maintain and enhance functional riparian habitat and streambank conditions and minimize threats from human impacts by ensuring protection of the riparian habitat. Also in the Battle Creek watershed (Project Reference Number 16), a watershed assessment and treatment plan has been completed. The Battle Creek Watershed Conservancy has identified and prioritized high-risk erosion areas for future treatment (Project Reference Number 14). An assessment of watershed conditions in the upper Battle Creek watershed and in the lands lying immediately upland of Battle Creek's restoration project reaches was completed. This project identified and prioritized high-risk erosion areas (Project Reference Number 2).

Progress: On schedule

Next Steps:

- Develop and implement plans to address high-risk erosion areas which have been identified.
- Summarize and evaluate projects, actions, and monitoring being done by other organizations related to this issue. The extent of ecological effects and potential regulatory and management actions to reduce fine sediment to the Sacramento River should be addressed.

Milestone 78. Conduct the following mercury evaluation and abatement work in the Cache Creek watershed (from Phase II Report):

- Support development and implementation of TMDL for mercury
- Determine bioaccumulation effects in creek and Delta
- Source, transport, inventory, mapping and speciation of mercury
- Participate in Stage 1 remediation (drainage control) of mercury mines as appropriate
- Determine sources of high levels of bioavailable mercury

Status: A new integrated monitoring and outreach program to evaluate fish contamination issues has been funded. This project will monitor mercury levels in sport fish and biosentinel indicators for three years throughout the watershed. The monitoring will evaluate spatio-temporal variability, gather information needed for advisories, and develop baseline data at sites for potential habitat restoration sites of mine cleanup sites (Project Reference Number 32).

Progress: Remains on schedule

Next Steps: Develop an implementation plan for the mercury strategy. Provide a framework for coordination and communication with existing mercury research groups.

Milestone 79. Conduct the following mercury evaluation and abatement work in the Sacramento River (from Phase II Report):

- Determine, inventory, and sources of high levels of bioavailable mercury
- Refine mercury models
- Participate in remedial activities

Status: A new integrated monitoring and outreach program to evaluate fish contamination issues has been funded. This project will monitor mercury levels in sport fish and biosentinel indicators for three years throughout the watershed. The monitoring will evaluate spatio-temporal variability, gather information needed for advisories, and develop baseline data at sites for potential habitat restoration sites of mine cleanup sites (Project Reference Number 32).

Progress: Remains on schedule

Next Steps:

- Develop an implementation plan for the mercury strategy, coordinating with other agencies and research groups.
- Solicit for additional projects to implement the mercury strategy, emphasizing the effects of restoration on mercury availability and evaluating ecological effects of mercury contamination.
- Solicit for mine remediation and other projects to control mercury sources.

San Joaquin River Basin Region (San Joaquin Region)

Milestone 85. Develop and implement a program to address the thermal impacts of irrigation return flows in the San Joaquin River Basin. The goal of the program should be achieve Basin Plan objectives for water temperature. The program should include provisions to: a) identify locations of irrigation return flows with thermal impacts; b) develop measures to avoid or eliminate thermal impacts from irrigation return flows; and c) prioritized problem sites based on impacts to Chinook salmon and steelhead. If feasible, proceed with implementation of some or all actions to address thermal impacts of irrigation return flows.

Status: The last milestone review reported the following project as ongoing but was actually completed. This project developed a monitoring system for measurement of wetland drainage flow and water quality parameters of concern, a multi-objective habitat evaluation and salinity management program to optimize wetland function and minimize water quality impacts on the San Joaquin River was developed, real-time electrical conductivity, flow and temperature sensors were installed, maintained, and operated, and a spreadsheet accounting model with a graphical user interface for estimation and forecasting of seasonal wetland salt loading to the San Joaquin River was developed (Project Reference Number 8).

Progress: Remains on schedule

Next Steps: Develop and implement a program which includes identifying and reducing irrigation return flows that exceed Basin Plan temperature objectives for salmonids. Assess effectiveness of monitoring projects.

Milestone 86. Complete a fluvial geomorphic assessment of coarse sediment supply needs and sources to maintain, improve, or supplement gravel recruitment and natural sediment transport processes linked to stream channel maintenance, erosion and deposition, maintenance of fish spawning areas, and the regeneration of riparian vegetation. Develop and implement a program to reduce erosion and maintain gravel recruitment on at least on tributary within each EMZ within the San Joaquin River Basin. In the East San Joaquin Basin EMZ, complete fluvial geomorphic assessments on all tributaries.

Status: The last milestone review reported restoration of 2.0 miles of the Robinson Ranch site along the Merced River between river mile 42 and 44 as ongoing but was actually completed. Approximately one million tons of material was moved in reconfiguring the project site. In addition, more than 10,000 feet of channel was created, improved, or modified and several ponds were eliminated. A monitoring plan is in place which

includes several cross-sections at which tracer gravel experiments and pebble counts are located. Between river mile 42 and 43.5, instream and riparian habitat were restored. Restoration work included filling/isolating deep pools, reconfiguring channel and floodplain characteristics, and increasing riparian habitat (Project Reference Number 11).

Progress: Remains on schedule

Next Steps: A science-based approach needs to be developed for this milestone. The contracts which are in place for this milestone need to be assessed to determine progress toward the milestone objectives. A long-term project monitoring and adaptive management maintenance program needs to be developed and implemented.

Milestone 87. Develop floodplain management plans, including feasibility studies to construct setback levees, to restore and improve opportunities for rivers to inundate their floodplain on a seasonal basis for at least one tributary within each of the EMZs in the San Joaquin River Basin. Among the areas to be included are at least 10 miles of stream channel in the West San Joaquin EMZ.

Status: Along the San Joaquin River mainstem between the Stanislaus and Tuolumne Rivers, an engineering and hydraulic analysis was conducted of the proposed non-structural flood control alternative within the San Joaquin River National Wildlife Refuge (SJRNWR). This project evaluated frequency, duration, and location of floodplain inundation and predicted potential benefits and impacts to anadromous fish. Information from the engineering analysis was incorporated with management objectives of the SJRNWR to develop additional floodplain management recommendations and manipulations that could potentially be implemented to benefit anadromous fish (Project Reference Number 1). The last milestone review reported restoration of 2.0 miles of the Robinson Ranch site along the Merced River between river mile 42 and 44 as ongoing but was actually completed. Approximately one million tons of material was moved in reconfiguring the project site. In addition, more than 10,000 feet of channel was created, improved, or modified and several ponds were eliminated. A monitoring plan is in place which includes several cross-sections at which tracer gravel experiments and pebble counts are located. Between river mile 42 and 43.5, instream and riparian habitat were restored. Restoration work included filling/isolating deep pools, reconfiguring channel and floodplain characteristics, and increasing riparian habitat (Project Reference Number 11).

Progress: Remains on schedule

Next Steps: Support ongoing maintenance and monitoring. The actions implemented by various organizations for this milestone should be

evaluated to determine what future priorities should be. This milestone may need to be revised to clarify whether the 10 miles of stream channel is for the San Joaquin River rather than the West San Joaquin EMZ.

Milestone 88. Develop a cooperative program to restore salmonid spawning and rearing habitat in Tuolumne, Stanislaus, and Merced Rivers that includes the following elements: (1) reconstructing channels at selected sites by isolating or filling inchannel gravel extraction areas; (2) increasing natural meander by removing riprap and relocating other structures that impair stream meander; and (3) restoring more natural channel configurations to reduce salmonid predator habitat and improve migration corridors.

Status: The last milestone review reported restoration of 2.0 miles of the Robinson Ranch site along the Merced River between river mile 42 and 44 as ongoing but was actually completed. Approximately one million tons of material was moved in reconfiguring the project site. In addition, more than 10,000 feet of channel was created, improved, or modified and several ponds were eliminated. A monitoring plan is in place which includes several cross-sections at which tracer gravel experiments and pebble counts are located. Between river mile 42 and 43.5, instream and riparian habitat were restored. Restoration work included filling/isolating deep pools, reconfiguring channel and floodplain characteristics, and increasing riparian habitat (Project Reference Number 11).

Progress: Remains on schedule

Next Steps: Continue monitoring and adaptive management actions on completed projects. Review and summarize accomplishments and define future actions for each tributary.

Milestone 94. Develop and implement a program to establish, restore, and maintain riparian habitat to improve floodplain habitat, salmonid shaded riverine aquatic habitat and instream cover along at least one tributary within the East San Joaquin and San Joaquin River EMZs.

Status: The last milestone review reported restoration of 2.0 miles of the Robinson Ranch site along the Merced River between river mile 42 and 44 as ongoing but was actually completed. Approximately one million tons of material was moved in reconfiguring the project site. In addition, more than 10,000 feet of channel was created, improved, or modified and several ponds were eliminated. A monitoring plan is in place which includes several cross-sections at which tracer gravel experiments and pebble counts are located. Between river mile 42 and 43.5, instream and riparian habitat were restored. Restoration work included filling/isolating deep pools, reconfiguring channel and floodplain characteristics, and increasing riparian habitat (Project Reference Number 11).

Progress: Remains on schedule

Next Steps: Implement feedback from Adaptive Management Forum. Coordinate multiple projects to establish linkages and partnerships. Continue restoration efforts and support monitoring and adaptive management of the newly created riparian habitat.

Milestone 102. Actions to minimize or eliminate inter-substrate low dissolved oxygen conditions in salmonid spawning and rearing habitat, especially in the Mokelumne, Consumnes, American, Merced, Tuolumne, and Stanislaus Rivers (from Phase II Report and Water Quality Program Plan):

- Develop inter-substrate DO testing for salmonid spawning and rearing habitat.
- Conduct comprehensive surveys to assess the extent and severity of inter-substrate low DO conditions.
- Develop and begin implementing appropriate best management practices (BMPs), including reducing anthropogenic fine sediment loads, to minimize or eliminate inter-substrate low DO conditions.

Status: A watershed management and action plan (MAP) was developed to guide and support stewardship of the natural resources in the Panoche/Silver Creek Watershed. The overall goal of the MAP is to provide system-wide ecological benefits by reducing contaminant loading in downstream flows. Reducing contaminant loads should reduce the bioavailability of contaminants, such as selenium, to the entire food chain in the San Joaquin River and the San Francisco Bay/Delta ecosystems. The MAP is designed to be synergistic with any project that improves water quality, or benefits from improved water quality, in the Bay/Delta system, including most fish and habitat restoration projects. This plan will provide a framework for reducing sediment and selenium contributions from the PSCW to the San Joaquin River system. This, in turn, will help facilitate the ecological/biological objective of this project which is to improve habitat for waterfowl and aquatic organisms by improving water quality in the San Joaquin River and San Francisco Bay/Delta ecosystems (Project Reference Number 10).

Progress: Behind schedule. Project Reference Number 10 does not directly address this milestone but contributes to its partial completion.

Next Steps:

- Evaluate results from previous projects to determine if gravel replenishment methodology should be required of similar projects in the future.
- Summarize and evaluate projects, actions, and monitoring being implemented by other organizations that may relate to this issue. This should include information on the ecological effects and

regulatory or management actions to reduce fine sediment sources contributing to inter-substrate low DO. Solicit projects to address the extent and severity of inter-substrate low DO conditions.

- Identify gaps and high priority actions to reduce sediment inputs and reduce sediment inputs and reduce ecological effects of inter-substrate low DO. Provide a plan to implement appropriate actions.

Milestone 108. Conduct the following selenium work:

- Conduct selenium research to fill data gaps in order to refine regulatory goals of source control actions; determine bioavailability of selenium under several scenarios (from Phase II Report)
- Evaluate and, if appropriate, implement real-time management of selenium discharges (from Phase II Report)
- Expand and implement source control, treatment, and reuse programs (from Phase II Report)
- Coordinate with other programs; e.g., recommendations of San Joaquin Valley Drainage Implementation Program, CVPIA for retirement of lands with drainage problems that are not subject to correction in other ways (from Phase II Report)
- Support development and implementation of TMDL for selenium in the San Joaquin River watershed (focus on grassland area)

Status: A full-scale demonstration project of agricultural drainage water recycling process using membrane technology was completed. This project conducted a pilot-system testing of a novel membrane desalination process (double-pass preferential precipitation reverse osmosis or DP^3RO^{TM}) to establish the feasibility of using the DP^3RO^{TM} process for recycling agricultural drainage and thus eliminating the adverse environmental impacts caused by the discharge of agricultural drainage on the Bay-Delta watershed, ecosystem and drinking water quality. Specific results and findings from this initial pilot-system testing of the DP^3RO^{TM} process are as follows:

- Mass balance analyses showed that the dissolved $CaSo^4$ in feed water was converted to solids and was removed by the hydrocyclone.
- After post-RO boron removal unit added to the pilot system, on-spec product water at a 90% recovery rate was produced from 9,000 mg/L drain water feed. This result validates the hypothesis that high quality irrigation water can be produced from high salinity drain water while generating only a <10% brine stream (Project Reference Number 27).

A watershed management and action plan (MAP) was developed to guide and support stewardship of the natural resources in the Panoche/Silver Creek Watershed. The overall goal of the MAP is to provide system-wide ecological benefits by reducing contaminant loading in downstream flows. Reducing contaminant loads should reduce the bioavailability of contaminants, such as selenium, to the entire food chain in the San

Joaquin River and the San Francisco Bay/Delta ecosystems. The MAP is designed to be synergistic with any project that improves water quality, or benefits from improved water quality, in the Bay/Delta system, including most fish and habitat restoration projects. This plan will provide a framework for reducing sediment and selenium contributions from the PSCW to the San Joaquin River system. This, in turn, will help facilitate the ecological/biological objective of this project which is to improve habitat for waterfowl and aquatic organisms by improving water quality in the San Joaquin River and San Francisco Bay/Delta ecosystems (Project Reference Number 10).

Progress: Remains on schedule

Next Steps:

- Summarize related projects and actions now being implemented. Identify data gaps and priorities. Implement high priority actions as appropriate.
- Solicit projects which determine the bioavailability of selenium under several scenarios
- Fund projects which support and refine regulatory goals of source control actions.
- Continue to evaluate projects to better understand and develop technologies to reduce impacts of irrigation drainage on the San Joaquin River and reduce transport of selenium and other contaminants to the Delta and Bay.

Research Milestones

Milestone 112. Develop and implement a comprehensive monitoring, assessment, and research program (CMARP) for terrestrial and aquatic habitats and species populations acceptable to the fish and wildlife agencies. Conduct range wide surveys for all “R” and “r” covered plants and animals in the MSCS focus area.

Status: Eight contracts have finished components of project-specific monitoring, assessment, or research on terrestrial and aquatic habitats and species identified in the ERP and MSCS. Progress is being made in gathering essential project-level monitoring data, however, these data and technical conclusions need to be synthesized and integrated into an adaptive management program designed to inform the CALFED Program decision-making process (Project References 2, 12, 13, 14, 16, 22, 26, 28,). Another four projects were completed prior to the last milestone review but were inadvertently reported as ongoing (Project References 3, 4, 8, 17).

Progress: Project-specific components for this milestone have been completed and are on schedule. Program-level progress is under evaluation

Next Steps:

- Data and technical conclusions from finished contracts should be synthesized and integrated into an adaptive management program in order to inform the CALFED decision-making process.
- Continue to implement and support monitoring efforts for "R" and "r" covered plants and animals in projects included in the MSCS focus area.
- Develop concept proposal for the development of a Comprehensive Long-term Monitoring Program. This framework would include an annual program budget, coordination with other organizations and agencies, and updated conceptual models for factors affecting the Bay-Delta region. The conceptual proposal would also include an implementation structure and identification of key research issues and performance measures. The concept should also be developed in coordination with existing and developing long-term management programs and monitoring plans.

Milestone 119. Through the use of existing, expanded, and new programs, monitor adult anadromous salmonid returns to each watershed within the MSCS focus area. Monitoring techniques, data compilation and analysis, and reporting should be standardized among researchers and watersheds to the greatest extent possible.

Status: A plan was developed to implement a Constant Fractional Marking (CFM) program that integrates traditional coded-wire tagging/fin marking and otolith thermal marking addressing central Chinook salmon and steelhead management questions regarding the relative contribution of hatchery and natural production to adult populations as represented by fisheries and to develop a means to implement selective fisheries (Project Reference Number 6).

Progress: Remains on schedule

Next Steps:

- Evaluate and modify monitoring techniques, data compilation, analysis and reporting mechanisms.
- Continue to implement and support monitoring efforts in ongoing projects
- Coordinate with ERP implementing agencies to develop and implement protocols to monitor adult anadromous salmonid returns
- Continue work toward development of the Comprehensive Long-term Monitoring Program (CMARP).

Environmental Water Account

The Implementing Agencies for the EWA are the California Department of Water Resources (DWR), the U.S. Bureau of Reclamation (Reclamation), CDFG, USFWS, and NMFS. The EWA was established to provide water to protect and recover at-risk fish species beyond water available through existing regulatory actions related to operating the State Water Project (SWP) and the Central Valley Project (CVP). This approach uses water either purchased from willing sellers or otherwise accrued by the EWA to modify exports, provide fishery benefits, and replace the regular water project supply interrupted by the changes to project operations for fish protection. Detailed information about the EWA can be viewed at http://http://calwater.ca.gov/Programs/EnvironmentalWaterAccount/EnvironmentalWaterAccount.shtml.

In water year 2005 (October 1, 2004 to September 30, 2005), the EWA agencies used water to improve or evaluate juvenile salmon survival in the Delta during winter (Delta Action 8) and spring (Vernalis Adaptive Management Program [VAMP]) and to reduce export pumping impacts to delta smelt. EWA actions in water year 2005 were:

Fish Action #1, December 6-15, 2004 (Delta Action 8): SWP pumping was curtailed from December 6-15 to evaluate survival of juvenile Chinook salmon emigrating through the Delta from the Sacramento River. The evaluation was of coded wire tagged salmon. Delta Action 8 used 4.2 thousand acre-feet (TAF) of EWA water.

Fish Action #2, February 2-7, 2005: Incidental take of pre-spawning adult delta smelt exceeded the concern level of 892 on January 24, 2005. On Friday, January 28, the Delta Smelt Working Group (DSWG) recommended an export reduction to 1,500 cfs (combined) for 7 days, to take effect as soon as possible. In making this recommendation, the group considered the elevated incidental take of pre-spawning adult delta along with results from the 2004 Fall Mid-Water Trawl index (the lowest on record) and preliminary results from the Spring Kodiak Trawl Survey, which indicated not only that overall numbers were very low but that about half the adults sampled were found in the south and central Delta, and the apparent proximity to the onset of spawning as indicated by Delta water temperatures of about 9^0C (most spawning is thought to occur between about 12^0 and 18^0C). The Water Operations Management Team (WOMT) initially accepted the recommendation, but later implemented 3,000 cfs combined exports for 7 days. After reviewing the available monitoring data on February 3, the DSWG recommended ramping up exports over three days. Daily take declined from a peak of 153 (combined) on January 27 to zero by middle-February.

Fish Action #3, April 17-30, 2005: Based upon information on gonadal development and water temperature from the Spring Kodiak Trawl Survey, the DSWG inferred that most delta smelt would have spawned by April 1. The DSWG requested Particle

Tracking Modeling (PTM) to inform the risk of larval entrainment in the April 1-14 (pre-VAMP) period. However, the VAMP technical committee determined that the VAMP experiment would not begin until May 1 due to high flows on the San Joaquin River. Based on the PTM results, the DSWG recommended a reduction in exports to 50 percent of the San Joaquin River flow at Vernalis to minimize the incidental take of larval delta smelt too small to be identified and counted at the export facilities.

Fish Action #4, May 1-31, 2005 (VAMP): Because of above-normal snow levels in the Sierra Nevada, flows on the San Joaquin River were well above the 5,000 cfs safety threshold established by DWR to install the Head-of-Old-River Barrier by April 15. However, the VAMP technical committee wanted to release and re-capture marked fish, and so moved the scheduled start of the VAMP experiment back to May 1, hoping that stable flows could be maintained on the San Joaquin tributaries by that time. On April 14 the CALFED Operations Group convened a special meeting to discuss the VAMP, and scenarios were proposed for export levels of 1,500 cfs and 3,000 cfs, given flows at Vernalis of 7,000 cfs, 8,000 cfs or 10,000 cfs. The VAMP technical committee emphasized the importance to the experiment's integrity of declaring a level of exports and maintaining those export levels to the extent practicable. On April 27 the WOMT discussed export levels of 1,500 cfs, 3,000 cfs, 4,000 cfs (based on 50 percent of the San Joaquin River flow) and 8,000 cfs (based on a 1:1 exports-to-flow ratio). On April 29 the WOMT agreed to a combined export level of 1,500 cfs for May 1-15, when it was thought that San Joaquin River tributaries would be most controllable, and 3,000 cfs for the May 16-31, so at least a portion of the VAMP would coincide with the low-exports and high-flows scenario proposed by the VAMP technical committee. On May 1 the State Water Project instituted its share of a 1,500 cfs export level, but the Central Valley Project did not. On May 3, after high-level discussions, the WOMT agreed to a combined export level of 2,250 for the entire VAMP period.

Fish Action #5, June 1-8, 2005: Because Chinook salmon smolts from the San Joaquin River continued to migrate into the southern Delta in June, the increase in export pumping to a baseline level (6,680 cfs at the SWP and about 4,300 cfs at the CVP) was made gradually over the first eight days in June. This action used 34.7 TAF at the SWP. Central Valley Project Improvement Act (CVPIA) (b) (2) water was used at the CVP.

Preliminary summary of fish actions using EWA assets in Water Year 2005

Action #	Dates	Facility	Amount in TAF	Species Benefited
1 (Delta Action 8)	Dec 6-15	SWP	4.2	WR Chinook
2	Feb 2-7	SWP, CVP	44.3	Delta Smelt
3	Apr 17-30	SWP	121.9	Delta Smelt
4	May 1-31	SWP	134.0	FR Chinook, Delta Smelt
5	Jun 1-8	SWP	34.7	FR Chinook, Delta Smelt
Total for WY 2005			339.1	

2004 Milestones Assessment Recommendations

This section describes how the Implementing Agencies are addressing the actions the USFWS and NMFS recommended in their letters of response to strengthen CALFED throughout the remainder of Stage 1. In addition to recommending that the ERP focus its attention on those milestones considered "behind schedule," the USFWS and NMFS recommended actions in the topic areas of monitoring and evaluation, performance measures, instream flows, and vetting ERP actions.

Monitoring Proposal Solicitation Package

In September 2004, the ERP released a Monitoring and Evaluation Proposal Solicitation Package (PSP). This PSP requested proposals to monitor previously-funded ecosystem restoration projects to evaluate outcomes and support adaptive management of those projects. Five projects were recommended for funding through the Selection Panel review process described in the PSP. The CBDA, at its August 2005 meeting, recommended to CDFG that it proceed with awarding the monitoring grants. The list of projects was forwarded to CDFG for additional review and final recommendation consistent with its role as an Implementing Agency.

Of those initial five projects, four were chosen for funding by CDFG; cost for those four projects total $5,207,845. This amount represents the upper limit of funding recommended by the Selection Panel for each respective project:

- ***Monitoring for Invasive Spartina Control in the San Francisco Estuary.*** This proposal is to conduct three annual regional surveys for non-native Spartina (cordgrass) in the San Francisco Estuary and outer coast marshes. Areas treated to control Spartina also will be monitored to determine if the treatment was effective. A $1,651,396 grant was awarded to the State Coastal Commission for this three-year project. This project contributes towards achievement of milestone numbers 39 and 112. It benefits the following MSCS species: All Central Valley salmonids, delta smelt, longfin smelt, Sacramento splittail, Suisun song sparrow, San Pablo song sparrow, California clapper rail, California black rail, Suisun thistle, soft bird's beak, Point Reyes bird's beak, salt marsh harvest mouse, Suisun ornate shrew, San Pablo California vole, Suisun aster, and common yellow throat.
- ***Petaluma Marsh Expansion Project-Monitoring and Secondary Test Site for the Integrated Regional Wetland Monitoring Project***. This proposal is to monitor and evaluate the ERP-funded Petaluma Marsh Expansion Project. The two parts of this proposal is to (1) evaluate the underlying management question about how ecosystem restoration efforts throughout the region

affect ecosystem processes at different scales and (2) prepare for subsequent longer-term monitoring using adaptive monitoring strategy concepts. A $235,000 grant was awarded to the Marin Audubon Society for this one-year project. This project contributes towards achievement of milestone numbers 39, 41 and 42. It benefits the following MSCS species: All Central Valley salmonids, delta smelt, longfin smelt, Sacramento splittail, Suisun song sparrow, San Pablo song sparrow, California clapper rail, California black rail, Suisun thistle, soft bird's beak, Point Reyes bird's beak, salt marsh harvest mouse, Suisun ornate shrew, San Pablo California vole, Suisun aster, and common yellow throat.

- ***Tuolumne River Restoration Monitoring.*** This proposal is to monitor the effectiveness of project specific monitoring for four restoration projects on the Tuolumne River. The proposal includes extending long-term, river-wide biological trend monitoring needed to interpret project-specific monitoring results within tributary and population-level contexts. Monitoring components include channel morphology, sediment transport, riparian vegetation, salmonid distribution and abundance, and salmonid habitat. A grant of $2,430,400 was awarded to the Turlock Irrigation District for this three-year project. This project contributes towards achievement of milestone numbers 112 and 119.
- ***Lower Clear Creek Monitoring Program.*** This proposal is to monitor the CALFED-funded Lower Clear Creek Floodway Restoration Project in three topic areas: (1) avian monitoring, (2) geomorphic monitoring, and (3) riparian habitat monitoring. A grant of $1,308,449 was awarded to the Western Shasta Resource Conservation District for this three-year project. This project contributes towards achievement of milestone numbers 112 and 119.

One Selection Panel recommended project, *Evaluation of the conservation value of lands purchased with CALFED funds for wintering Sandhill Cranes*, was not chosen for funding at this time because the ERP is concentrating on funding projects that address delta dependent fish species or water operations. This proposal focuses on a single species, sandhill cranes, and there is ongoing sandhill crane monitoring taking place in association with the Staten Island project.

The Selection Panel also identified six other proposals that were of high merit that should be considered for funding if these proposals are revised to address identified shortcomings. Resubmitted proposals will be reviewed by the ERP Implementing Agencies in coordination with CBDA-ERP staff. Successfully revised proposals will be forwarded to the Director of CDFG for a final funding decision.

Four additional monitoring proposals fulfill the ERP objectives and were identified during the selection process as candidates for the directed action process. In making this recommendation, the Selection Panel recognized that these projects have great utility in assessing status and trends of some priority salmon

populations in the upper Sacramento River basin and of the waters upon which they depend. (See Salmonid Monitoring Plan section.)

The complete Selection Panel's recommendations can be found on the ERP website at: http://calwater.ca.gov/Programs/EcosystemRestoration/2004_PSP/ERP_Selection_PanL_Final_9-04.pdf

Milestones Assessment Proposal Solicitation Package

In their September 2004 letters of response, the USFWS and NMFS recommended that milestones determined to be behind schedule should be given first priority by focusing a future proposal solicitation package (PSP) on gaps identified in the 2004 milestones assessment. However, the ERP Implementing Agencies in coordination with CDFG, USFWS, and NMFS agreed that funding is unavailable for a Milestones Assessment PSP nor is this CALFED's highest priority.

Although the CALFED Program has been successful in the last five years by increasing the state's overall water supply, and restoring fish and wildlife habitat in the Delta and its tributaries, the Program has had many obstacles. Projects and programs have been delayed; crises such as the decline of pelagic organisms in the Delta have continued to arise; and stable funding sources have not been identified. It has become clear that there is not enough money to fully fund all the actions originally envisioned in the CALFED ROD, therefore, focusing on a Milestones Assessment PSP is not a priority for the Program at this time. As a result of the Governor's direction, the Program is currently in the process of a refocusing effort that will address the highest priority issues associated with the conflicts in the Delta. A 10-Year Action Plan is being prepared that defines specific implementation actions over the next three years and lays out possible future directions of the Program based on various critical decisions to be made. It resets the schedules and milestones identified in the CALFED ROD and identifies near-term priority actions for the Program that result in balanced implementation of the Program's four primary objectives: ecosystem restoration, water supply reliability, water quality and levee system integrity.

Salmonid Monitoring Plan

NMFS recommended that the ERP describe the progress towards developing an enhanced baseline monitoring plan to assess ecosystem or species metrics. The baseline monitoring plan should focus on life history as well as status and trend information, particularly regarding Central Valley steelhead.

The ERP is developing and implementing comprehensive monitoring plans for Central Valley steelhead and Chinook salmon escapement. These plans include continued monitoring activities such as ladder counts, redd counts and carcass surveys that contribute toward achieving species recovery goals and ERP strategic goals and related objectives. To help develop this comprehensive monitoring program for Central Valley anadromous salmonid populations, the CALFED Science Program and the USFWS hosted a 3-day workshop in August 2005. The workshop fostered communication among those attending the workshop and the speakers and invited outside experts. A workshop summary and recommendations will be provided by the Science Program.

The ERP also continued to develop and assess monitoring indicators to eventually be used as guides for ecosystem assessment. The ERP solicited monitoring work through its Monitoring and Evaluation PSP (see Monitoring and Evaluation Package section). As part of the Selection Panel recommendations, four proposals are being considered for funding as directed actions; three of those projects sought funds for baseline monitoring of salmon populations' status and trends and would continue existing salmonid monitoring efforts.

The Science Program is working with the Interagency Ecological Program (IEP) to develop an enhanced monitoring program called "IEP plus." One ERP project titled "Development of a Comprehensive Implementation Plan for a Statistically-Designed Marking/Tagging and Recovery Program for Central Valley-Produced Chinook salmon and Steelhead" was completed in 2005. This project developed an implementation plan for a Constant Fractional Marking program that integrates traditional coded-wire tagging/fin marking and otolith thermal marking to address central Chinook salmon and steelhead management questions regarding the relative contribution of hatchery and natural production to adult populations.

Performance Measures for Environmental Water Account

Current work on Performance Measures includes counting the simple metrics and laying the technical and scientific groundwork that will allow us to perform more complex assessments later. The Science Program and EWA have been continuously working to design performance measures for the program. The Science Program has articulated the following three levels of Performance Measures. Examples of performance measures include: Level 1: simple administrative measures; Level 2: quantifiable accomplishments directly related to program actions; and Level 3: system-wide indicators.

The EWA Agencies (USFWS, NMFS, CDFG, Reclamation, and DWR) have identified preliminary Performance Measures for the EWA. Some key Level 1 and 2 Performance Measures include: science-based fish action decision making, increase water supply reliability for CVP and SWP contractors, timely and

successful completion of water purchase agreements, comprehensive and defensible environmental compliance documents, and a "balanced checkbook" regarding the ability of the EWA Agencies to obtain water assets and pay off debt owed to the Projects without incurring debt beyond that allowed (100 TAF) in the current EWA acquisition strategy. A crucial Level 3 Performance Measure yet to be adequately addressed is evidence of protection and recovery of at-risk native fish species. More information on EWA Performance Measures can be found at: http://calwater.ca.gov/Programs/EnvironmentalWaterAccount.

Instream Flow for Central Valley Rivers

NMFS recommended that the ERP describe the efforts made to evaluate, verify, and update data concerning instream flow needs, carryover storage options, temperature objectives, and methods of restoring the natural ecological processes of Central Valley Rivers and provide habitat for listed species. The USFWS, an ERP implementation agency, is leading the Environmental Water Program (EWP) efforts to acquire 100 TAF of water annually by the end of Stage 1. EWP planning is underway, incorporating science-based implementation and local involvement. Negotiations for specific blocks of water began in 2004 and are continuing. The Stanislaus River Temperature Modeling project was expanded in 2005 to include the mainstem San Joaquin, Merced, and Tuolumne rivers. The DWR and Reclamation developed a literature review of the effects of water temperature on Chinook salmon and steelhead, with particular emphasis on populations in the Central Valley of California. The report is available online at: http://www.sfei.org/modelingforum/.

One of the four proposals recommended for funding as a directed action was to continue real-time instream flow monitoring in four Sacramento River tributaries (Big Chico, Butte, Deer and Mill creeks).

Regional Planning: Vetting ERP Actions

The ERP is incorporating the adaptive management approach in its regional planning process. As outlined in the ERP Strategic Plan, the ERP is developing four regional ecosystem restoration implementation plans as part of the ongoing effort to refine understanding of and planning for ecosystem restoration of the San Francisco Bay and Sacramento-San Joaquin Delta and watersheds.

Delta Regional Planning

The first of these plans is the Delta Region Ecosystem Restoration Implementation Plan (DRERIP). The DRERIP enhances the planning

foundation specifically for the Delta, and will refine existing Delta-specific restoration actions and guide Delta-specific implementation, program tracking, performance evaluation and adaptive management feedback. DRERIP preparation is a collaborative effort involving the ERP Implementing Agencies as well as staff from the ERP and Science programs and members from the ERP Science Board. It is anticipated that much of the information developed in preparing DRERIP will be usable for the other regional ecosystem implementation plans as well.

Pertinent to the milestones assessment is the process, termed “vetting,” that DRERIP preparers are developing to scientifically-evaluate ERP Delta-related programmatic actions, targets and milestones. All previously identified Delta actions (including those from the ERPP Volumes I and II, ERP Strategic Plan, WQCP, Draft Stage 1 Implementation Plan and ROD [ERP-MSCS Milestones]) will be evaluated in light of the current state of knowledge and restoration projects implemented to date. Current knowledge of species life histories and how the system works (ecosystem processes, habitats, and stressors) will be captured in conceptual models, which serve as the tools for evaluating actions.

During the vetting process, actions may be modified to ensure that the action is based on the latest scientific information and that the intent of the action is clear. Actions will also be placed in the Adaptive Management context as described in the ERP Strategic Plan. Based on expected outcomes (both positive and negative), the certainly of those outcomes, reversibility and opportunity for learning, the actions will be evaluated for suitability for full-scale implementation, pilot project, or targeted research.

The vetting will be conducted by Action Teams comprised of scientists and technical experts with expertise in the appropriate areas. Every step in the process will be fully documented.

In Year 6 the DRERIP effort will focus on assembling and evaluating current scientific knowledge underlying proposed ERP actions that target the recovery of pelagic organisms; this focus is in response to the recent marked declines in several pelagic fish species (some of which are MSCS “R” species) and zooplankton in the upper San Francisco estuary (Delta and Suisun Bay). The goal of this evaluation is to quickly produce tools to assist with management needs to address this situation. Among the expected tools that this evaluation will create are conceptual models of the species and the ecosystem components upon which they depend as well as a list of scientifically-evaluated Delta ERP restoration and research actions. DRERIP benefits all Central Valley salmonids, green sturgeon, delta smelt, longfin smelt, Sacramento splittail, bank swallow, California yellow warbler, western yellow-billed cuckoo, Least Bell's vireo, valley elderberry longhorn beetle, Northern California black walnut, San Joaquin

Valley woodrat, greater sandhill crane, giant garter snake, Swainson's hawk, Sacramento perch, delta mudwort, delta tule pea, California black rail, bristly sedge, Mason's lilaeopsis, Lange's metalmark butterfly, Antioch dunes evening primrose, Contra Costa wallflower, riparian brush rabbit, little willow flycatcher, delta coyote thistle, California clapper rail, Suisun Marsh aster, salt marsh harvest mouse. It contributes towards achievement of milestone numbers 1 through 37.

Suisun Marsh Regional Planning

The ERP Implementing Agencies as well as DWR, Reclamation, Suisun Resource Conservation District (SRCD), and the CBDA (known as the Charter Group) continue to participate in developing the Habitat Management, Preservation, and Restoration Plan for the Suisun Marsh (Plan) would protect and enhance the Pacific Flyway, and existing wildlife values, endangered species, and water project supply quality. The Plan would be consistent with the goals and objectives of CALFED, and balance them with the Suisun Marsh Preservation Agreement, ESA, CESA, and other management and restoration programs within Suisun Marsh in a manner responsive to the concerns of stakeholders and based upon voluntary participation by private land owners. The Plan identified seven goals which address such topic areas as ecological processes, habitats, levee system integrity, non-native species, water and sediment quality, public use and waterfowl hunting, long-term funding, plan implementation, and regulatory reliability and efficiency.

The Charter Group continues to prepare a joint Programmatic Environmental Impact Statement and Environmental Impact Report (PEIS/R) that will analyze a range of alternatives as well as the beneficial and adverse effects of implementing the Plan on environmental resources. In 2005 representatives from each of the agencies compiled the list of preliminary actions. These actions were derived from CALFED documents such as the ERPP Volumes 1 & 2, ERP Strategic Plan, and the MSCS; relevant plans such as Central Valley Habitat Joint Venture, North American Waterfowl Management Plan, Goals Project; recovery plans such as Sacramento/San Joaquin Delta Native Fishes Recovery Plan; and Solano County Habitat Conservation Plan. These actions will be used to develop alternatives. The PEIS/R will analyze the beneficial and adverse effects of implementing a Suisun Marsh Plan. Additionally, conceptual models have been prepared and reviewed for tidal marsh, managed wetland, levees, methyl mercury, organic matter, and scalar transport to aide in the Plan development. More information of the Suisun Marsh Charter and Plan is available online at: http://www.delta.dfg.ca.gov/suisunmarsh/charter/index.asp." The Suisun Marsh Regional Planning effort benefits all Central Valley salmonids, Sacramento splittail, Valley elderberry long-horn beetle, riparian brush

rabbit, California yellow warbler, Least Bell's vireo, little willow flycatcher, delta smelt, longfin smelt, Suisun song sparrow, California clapper rail, California black rail, Suisun thistle, soft bird's beak, Point Reyes bird's beak, salt marsh harvest mouse, Suisun ornate shrew, San Pablo California vole, Suisun aster, salt marsh common yellow throat, Mason's lilaeopsis, delta mudwort, delta tule pea, Delta green ground beetle, Crampton's tuctoria, Alkali milk-vetch, all "R" and "r" covered fish, green sturgeon, giant garter snake. It contributes towards achievement of milestone numbers 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, and 53.

Report Summary

Thirty-eight contracts were completed during calendar year 2005 and a small number of projects deemed as ongoing during the 2004 Milestones Assessment were found to be complete. These completed contracts are incremental steps signifying progress toward completion of the 119 milestones, but did not change the status of individual milestone completion. Close to 50 contracts will be completed and others will be awarded during 2006 that will accomplish additional progress toward completion of the Stage 1 Implementation Plan.

Much work remains to be accomplished as the program moves toward the end of Stage 1 of implementation. The effort to refocus the Program, described in the 10-Year Action Plan, will determine specific implementation actions during the remainder of stage 1 and lay out possible future directions of the Program based on various critical decisions to be made. The Plan resets the schedules and milestones identified in the CALFED ROD and identifies near-term priority actions for the CALFED Program that result in balanced implementation of the Program's ecosystem restoration objective.

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Appendix A to the 2005 Milestones Assessment

ERP contracts issued since September 2004 and contracts completed since September 2004

Project Reference	Project ID	Title	Start Date	End Date	Award Amount	Milestone	Description
1	CVPIA-01-F03	Non-Structural Alternative at the San Joaquin River National Wildlife Refuge: Refinement for Habitat Enhancement	9/11/2000	3/31/2005	$312,451	87	Along the San Joaquin River mainstem between the Stanislaus and Tuolumne Rivers, an engineering and hydraulic analysis was conducted of the proposed non-structural flood control alternative within the San Joaquin River National Wildlife Refuge (SJRNWR). This project evaluated frequency, duration, and location of floodplain inundation and predicted potential benefits and impacts to anadromous fish. Information from the engineering analysis was incorporated with management objectives of the SJRNWR to develop additional floodplain management recommendations and manipulations that could potentially be implemented to benefit anadromous fish.
2	CVPIA-01-F05	Battle Creek Watershed Stewardship, Phase II	8/14/2001	12/1/2004	$268,817	58, 74, 76, 112	An assessment of watershed conditions in the upper watershed and in the lands lying immediately upland of Battle Creek's Restoration Project reaches was completed. The assessment documented existing stream conditions and developed a baseline against which future conditions may be compared and identified and prioritized for treatment sediment sources within Battle Creek.
3	CVPIA-01-F08	Using Molecular Techniques to Preserve Genetic Integrity of Endangered Salmon in a Supplemental Program	9/28/2001	6/30/2004	$400,000	112	This project evaluated and compared the genetic structure of the Central Valley steelhead populations. More information can be found in the report entitled "Genetic Analyses of Central Valley Trout Populations".
4	ERP-99-B13	Understanding Tidal Marsh Restoration Processes and Patterns	8/25/2000	6/30/2004	$1,142,246	1, 112	A project that built upon an earlier CALFED category III project that supported research in the Sacramento-San Joaquin Delta has been completed and this project refined the conceptual model developed for the Delta and extended conceptual model development to Suisun Bay and San Pablo/North Bay.
5	ERP-99-F05	Non-Native Invasive Species Advisory Council	8/20/1999	11/30/2004	$50,000	22	This project developed a NIS Advisory Council which will address issues to improve the efforts to prevent, control, and eradicate NIS.

Project Reference	Project ID	Title	Start Date	End Date	Award Amount	Milestone	Description
6	ERP-99-N13	Development of a Comprehensive Implementation Plan for Statistically-Designed Marking/Tagging and Recovery Program for CV Hatchery-Produced Chinook Salmon & Steelhead	4/1/2000	11/30/2004	$92,657	119	A planning project to implement a Constant Fractional Marking (CFM) program that integrates traditional coded-wire tagging/fin marking and otolith thermal marking addressing central Chinook salmon and steelhead management questions regarding the relative contribution of hatchery and natural production to adult populations as represented by fisheries and to develop a means to implement selective fisheries.
7	ERP-99-N18	Geomorphic Model for Demonstation and Feasibility Assessment of Setback Levees: Bay-Delta River Systems	10/8/2002	6/11/2004	$104,458	1	Project developed new components of a meander migration model, applied meander migration model to simulate levee setback scenarios, developed computer model for visualization of model output, prepared model simulations, and provided a report and recommendations.
8	ERP-00-B05	Adaptive Real-Time Water Quality Management of Seasonal Wetlands in the Grassland Water District	9/22/2000	6/30/2004	$697,330	85, 112	A monitoring system for measurement of wetland drainage flow and water quality parameters of concern was designed, a multi-objective habitat evaluation and salinity management program to optimize wetland function and minimize water quality impacts on the San Joaquin River was developed, real-time electrical conductivity, flow and temperature sensors were installed, maintained, and operated, and a spreadsheet accounting model with a graphical user interface for estimation and forecasting of seasonal wetland salt loading to the San Joaquin River was developed.
9	ERP-00-E01	Last Chance Creek Watershed Restoration Project - Ferris Meadow Reach - Feather River Coordinated Resource Management (FR-CRM)	8/20/2000	12/31/2004	$980,000	outside of the milestone area	This project implemented a large, landscape scale restoration project. The primary technique used in the project was natural channel restoration, using the pond and plug technique, to re-connect the channel/floodplain system in a nine-mile segment of the upper Last Chance Creek watershed, which had a major gully network system that effectively disconnected the channel from the historic floodplain.
10	ERP-00-E02	Panoche/Silver Creek Watershed Management and Action Plan	2/1/2001	6/30/2005	$868,600	102, 108	A watershed management and action plan (MAP) was developed to guide and support stewardship of the natural resources in the Panoche/Silver Creek Watershed. The overall goal of the MAP is to provide system-wide ecological benefits by reducing contaminant loading in downstream flows. Reducing contaminant loads should reduce the bioavailability of contaminants, such as selenium, to the entire food chain in the San Joaquin River and the San Francisco Bay/Delta ecosystems. The MAP is designed to be synergistic with any project that improves water quality, or benefits from improved water quality, in the Bay/Delta system, including most fish and habitat restoration projects. This plan will provide a framework for reducing sediment and selenium contributions from the PSCW to the San Joaquin River system.

Project Reference	Project ID	Title	Start Date	End Date	Award Amount	Milestone	Description
11	ERP-01-C03	Revised Phase 2 - Merced River Salmon Habitat Enhancement: River Mile 42 to 44 (Robinson Ranch Site)	1/18/2001	6/30/2004	$1,699,101	86, 87, 88, 94	Restoration of 2.0 miles of the Robinson Ranch site along the Merced River between river mile 42 and 44 has been completed. Approximately 1 million tons of material was moved in reconfiguring the project site. In addition, more than 10,000 feet of channel was created, improved, or modified and several ponds were eliminated. A monitoring plan is in place which includes several cross-sections at which tracer gravel experiments and pebble counts are located. Between river mile 42 and 43.5, instream and riparian habitat were restored. Restoration work included filling/isolating deep pools, reconfiguring channel and floodplain characteristics, and increasing riparian habitat.
12	ERP-01-C05	Feasibility Study of the Ecosystem & Water Quality Benefits Associated with Restoration of Franks Tract, Big Break, and Lower Sherman Lake	7/1/2002	6/30/2005	$1,218,105	1, 112	Model development and calibration has been completed for the three flooded islands, Franks Tract, Big Break, and Lower Sherman Lake. Modeling and data collection suggest that modifications at Franks Tract have a high potential for beneficial water quality effects.
13	ERP-01-C06	Sedimentation in the Delta and Suisun Bay	7/15/2001	6/14/2005	$1,630,390	1, 112	Monitoring sedimentation in the Sacramento-San Joaquin Delta has been completed. This project described the movement of sediments affecting habitats in the Delta and described the availability of sediments needed for habitat restoration.
14	ERP-01-N24	Battle Creek Conservation Easements Acquisitions, Management, and Restoration Planning	11/1/2001	10/31/2004	$1,000,000	62, 76, 112	2499 acres were acquired in the Battle Creek watershed. This acquisition will help maintain and enhance functional riparian habitat and streambank conditions and minimize threats from human impacts by ensuring protection of the riparian habitat.
15	ERP-01-N25	Sustaining Agriculture and Wildlife Beyond the Riparian Corridor	9/1/2001	6/30/2005	$1,464,167	62, 75	A watershed improvement program for the lower portions of Union School Slough Watershed were completed. This project researched farm-management techniques. Their objectives were to (a) determine the effectiveness of tail water capture systems in reducing sediment and nutrient load of water moving into Delta waterways from adjacent farmland and (b) determine the effectiveness of upland fallow land management techniques, such as conservation tillage and cover crops, in reducing winter and irrigation sediment runoff, improving soil quality, and reducing off-site nutrient loading to streams. The project hypothesized that upland fallow land management techniques, such as conservation tillage and cover crops, will not only reduce winter runoff but also improve soil quality and decrease off-site nutrient loading to Delta waterways. The research found that with greater soil disturbance came greater in-field sediment loss and nitrate leaching. Even though conservation tillage soils had slower water infiltration, these soils had less loose soil particles on the soil surface subject to wind and water erosion. Sediment traps were effective in trapping soil sediment eroded from adjacent fields, and linked sediment-trap/farm-pond systems provided greater residence time for sediment fines to settle and for nutrient transformations to occur in the pond soils resulting in lower sediment and nutrient loads exiting these systems. Analysis of the silt traps showed suspended sediment concentrations on average was 6.8 times greater in water moving of the tilled field (CVT) than the conservation tilled field (CST/NG). Average dissolved organic carbon concentrations were similar between east and west silt traps but ON and nitrate-N concentrations, on average, were significantly greater for the west silt trap draining the NG/CST fields compared to the east silt trap.

Project Reference	Project ID	Title	Start Date	End Date	Award Amount	Milestone	Description
16	ERP-01-N26	Lassen National Forest Watershed Stewardship within the Anadromous Watershed of Butte, Deer, and Mill Creeks	11/15/2001	11/15/2004	$849,845	76, 112	A watershed assessment and treatment plan has been completed. The Battle Creek Watershed Conservancy has identified and prioritized high-risk erosion areas for future treatment.
17	ERP-01-N29	Kirker Creek Watershed CRMP Program	5/17/2001	7/16/2004	$220,402	112	This project developed a community-based watershed management plan. Erosion and sedimentation studies, watershed surveys, stream inventories and water quality monitoring were completed.
18	ERP-01-N33	Watershed Education, Headwaters to the Ocean	6/1/2001	2/28/2005	$321,816	education project	This project provides funding for five different education outreach programs conducted by the Sacramento River Discovery Center aimed at educating citizens about natural systems.
19	ERP-01-N39	Adopt-A-Watershed Leadership Institute	2/1/2001	9/30/2004	$616,734	education project	Provided teacher training on environmental education and science focused on long-term restoration of the ecosystem; thus allowing teachers to provide classroom training/education for grades K-12.
20	ERP-01-N40	Discover the Flyway II	7/18/2001	8/1/2005	$197,987	education project	The Discover the Flyway program takes an ecosystem approach to educating teachers, students, and the general public about wetland ecosystems and habitats primarily in the Yolo Basin Ecological Management Zone.
21	ERP-01-N42	Educating Farmers and Landowners in Biological Resource Management	8/1/2001	12/31/2004	$1,066,593	education project	This project educated farmers and landowners about reducing chemical use to improve water quality and expanded on these efforts by including outreach/education regarding restoration activities and other environmentally beneficial management activities.
22	ERP-01-N50	Food Resources for Zooplankton in the Sacramento-San Joaquin River Delta	7/1/2001	3/31/2005	$576,422	112	This project assessed the quantity and quality of food resources for copepods in various habitats of the Sacramento-San Joaquin River Delta.
23	ERP-01-N58	Fish Passage Improvement Project at the Red Bluff Diversin Dam - Balance of Phase II Funding	12/1/2001	9/30/2004	$734,000	67	Preliminary designs for alternatives have been identified, environmental documentation completed, and an implementation plan has been developed. This project will improve the reliability of both fish passages and agricultural water deliveries. Currently, the Red Bluff Diversion Dam is a barrier to anadromous fish migration.
24	ERP-02-C05-D	Hamilton City Ecosystem Restoration and Flood Damage Reduction	7/1/2002	6/30/2005	$483,500	59, 60, 62	The feasibility study identified constructing a setback levee about 6.8 miles long that would have varying heights. In order to accomplish ecosystem restoration within the project area, most of the existing "J" levee will be removed to reconnect the river to the floodplain, allowing overbank flooding and increasing capacity in the Sacramento River. Native vegetation would be restored on all project lands waterside of the new setback levee. Existing orchards in the proposed restoration areas would be removed and native vegetation planted. The native vegetation (total 1,480 acres) would be riparian species (1,000 acres), scrub (260 acres), oak savannah (150 acres) and grassland species (70 acres).
25	ERP-02-P24	Sutter Mutual Water Company - Tisdale Positive Barrier Fish Screen and Pumping Plant	4/1/2003	5/31/2005	$1,270,000	72	Final design, environmental documentation and permitting has been completed for the Tisdale positive barrier fish screen pumping plants. Construction has now begun on the Tisdale diversion. This diversion is located 45 miles north of Sacramento on the Sacramento River and will eliminate entrainment losses, while maintaining Sutter Mutual Water Company's diversions.

Project Reference	Project ID	Title	Start Date	End Date	Award Amount	Milestone	Description
26	ERP-02-P35	Selenium Effects on Health & Reproduction of White Sturgeon in the Sacramento-San Joaquin Estuary	7/1/2003	11/30/2004	$150,047	112	This study provided information on current selenium tissue burden of the San Francisco Bay-Delta wild sturgeon and the experimental evidence for the unseen detrimental effect of selenium-enriched egg yolk on the development and survival of sturgeon embryos and larvae.
27	ERP-02-P44	Full-Scale Demonstration of Agricultural Drainage - Water Recycling Process Using Membrane Technology	7/1/2003	9/30/2004	$319,993	108	A full-scale demonstration project of agricultural drainage water recycling process using membrane technology was completed. This project conducted a pilot-system testing of a novel membrane desalination process (double-pass preferential precipitation reverse osmosis or DP3ROTM) to establish the feasibility of using the DP3ROTM process for recycling agricultural drainage and thus eliminating the adverse environmental impacts caused by the discharge of agricultural drainage on the Bay-Delta watershed, ecosystem and drinking water quality. Specific results and findings from this initial pilot-system testing of the DP3ROTM process are as follows: • Mass balance analyses showed that the dissolved CaSo4 in feedwater was converted to solids and was removed by the hydrocyclone. • After post-RO boron removal unit added to the pilot system, on-spec product water at a 90% recovery rate was produced from 9,000 mg/L drainwater feed. This result validates the hypothesis that high quality irrigation water can be produced from high salinity drainwater while generating only a <10% brine stream.
28	ERP-02-P45	Geomorphic and Geological Mapping for Restoration Planning, Sacramento-San Joaquin Delta Region	6/2/2003	6/1/2005	$120,000	4, 112	This research plan investigated the lower reach of the Sacramento River, in an area extending from north of Hood, across Liberty Island, back to the Sacramento River at Rio Vista, to near Collinsville and Brown Island, easterly to McDonald Island, then northerly and mostly west of Interstate 5, across Terminous and Bract Tract, across Canal Ranch and New Hope Tracts, and along Snodgrass Slough back to Hood. Results of this study provided a regionally consistent GIS dataset for multiple applications that address restoration priorities for the Delta and Eastside Tributaries Region.
29	ERP-02-P72	Suisun Marsh Land Acquisition and Tidal Marsh Restoration	not executed		$600,000	39	Acquire approximately 500 acres and conduct pre-project surveys and restoration in western/northern Suisun Marsh. The overall goal of this project is to restore tidal influence and re-create natural/historic elevations/topography, soil conditions, and plant communities throughout the entire elevational range to restore tidal marsh habitat.
30	ERP-02D-P64	Expanded Prevention, Detection, and Control of Purple Loosestrife in the California Bay-Delta Authority Watershed	7/1/2004	6/30/2007	$328,136	22	At least one thorough survey for purple loosestrife will occur in the Sacramento-San Joaquin River Delta each year. The surveys will be primarily from boats, but road surveys will be included where appropriate. The location and delimitation of each infestation will be determined using the global positioning system and standard mapping techniques. Visual estimates or measurements of the density of purple loosestrife adults and seedlings will be made using appropriate counting or sampling techniques. Photo points will be established and photos will be taken recording the history of each site during the project. All purple loosestrife infestations will be treated in some fashion, if feasible.
31	ERP-02D-P66	Cosumnes River Preserve Perennial Pepperweed (*Lepidium latifolium*) Control Project	not executed		$141,500	22	Control of perennial pepperweed has been implemented on the Consumnes River Preserve. This project will map all infestations, conduct pre-treatment monitoring, herbicide treatment and follow up monitoring.

Project Reference	Project ID	Title	Start Date	End Date	Award Amount	Milestone	Description
32	ERP-02D-P67	A Pilot Regional Monitoring Program for Mercury in Fish in the Bay-Delta Watershed	11/15/2004	11/14/2007	$4,513,819	31, 32, 78, 79	This project will monitor mercury level in sport fish and biosentinel indicators for three years throughout the watershed. The monitoring will evaluate spatio-temporal variability, gather information needed for advisories, and develop baseline data at sites for potential habitat restoration sites of mine cleanup sites.
33	ERP-02D-P68	*Arundo donax* Eradication and Coordination Program - Phase 2	3/15/2005	3/14/2008	$1,840,791	22	Funding has been provided for ongoing monitoring and follow up treatments for Phase I projects and adds five new partners. This is a full-scale restoration project, developing a coordinated program to control arundo in the CALFED regions and eliminate further invasion impacts.
34	ERP-02D-P69	Wilkins Slough Positive Barrier Fish Screen - Sediment Removal Project	not executed		$495,000	72	Reclamation District 108 has started construction for removing sediment from the Wilkins Slough positive barrier fish screen. This project will install a sediment removal system within the bays of the fish screen to meet the performance criteria.
35	ERP-02D-P70	Sutter Mutual Water Company - Tisdale Positive Barrier Fish Screen and Pumping Plant	2/1/2005	1/31/2008	$7,856,500	72	Final design, environmental documentation and permitting has been completed for the Tisdale positive barrier fish screen pumping plants. Construction has now begun on the Tisdale diversion. This diversion is located 45 miles north of Sacramento on the Sacramento River and will eliminate entrainment losses, while maintaining Sutter Mutual Water Company's diversions.
36	ERP-02D-P71	Napa-Sonoma Marsh Restoration Project: Construction Phase	2/24/2005	6/30/2007	$3,172,400	39	This project will begin construction work on Ponds 3, 4 and 5 in the Napa-Sonoma Marsh. This project will restore three commercial salt ponds along the Napa River, totaling approximately 3,000 acres. Restoration of Pond 3 will provide 1,300 acres of tidal habitats, and salinity reduction in preparation for tidal habitat restoration in Ponds 4 and 5 (1,700 acres).
37	ERP-03-C01	Research, Outreach, and Education on Fish Consumption in the Sacramento-San Joaquin Delta and its tributaries - Phase 1 Scoping Study	1/1/2003	9/30/2004	$82,610	education project	This project collected and analyzed existing information, designed a study of human consumption of fish and developed a strategy for public education and outreach on fish contamination issues in the watershed.
38	ERP-05D-C01	Hamilton City Flood Protection and Ecosystem Restoration Project	not executed		$1,020,100	59, 60, 62	This project will conduct preconstruction, engineering and design for restoration at Hamilton City.