

CALFED Bay-Delta Program

Levee System Integrity Program Plan Year 9 (State FY 2008-2009; Federal FY 2009)

Implementing Agencies:

Department of Water Resources
Department of Fish and Game
United States Army Corps of Engineers

May 2008

Introduction

This Levee System Integrity Program Plan identifies the CALFED Program activities that are scheduled to be completed during State Fiscal Year (FY) 2008-2009 and Federal FY 2009. The Plan also describes progress made to date on the previous year's program plan. As appropriate, the Program Plan and activities will be adjusted during the year to reflect, for example, changes in priorities, funding, policies or program direction.

Priorities

The priorities established for the Levee System Integrity Program (LSIP) are designed to respond to the CALFED objectives and Records of Decision (ROD). Generally, existing programs will continue and will be modified as additional funding comes through; however, changes will be made to better meet the objectives of the program. The ROD goals for LSIP are provided below followed by a discussion of the program's relationship to the Finance Plan. A summary of LSIP targets to meet the program's priorities are provided at the end of this section.

The LSIP goals and objectives are to protect life, infrastructure, and properties; they are to reduce the risk to land use and associated economic activities, water supply, infrastructure, and ecosystem from catastrophic breaching of Delta levees. Levee Program priorities focus primarily on the legal Delta as defined in the Section 12220 of California Water Code. The goal is to provide long-term protection for multiple Delta resources by maintaining and improving the integrity of the Delta levee system. In addition, the Levee Program integrates ecosystem restoration and Delta conveyance actions with levee improvement activities.

A similar program is also proposed for Suisun Marsh whereby the protection of resources and integration of ecosystem restoration would be applied to the Suisun Marsh levee system to the extent it is eligible for funding and included in the Levee System Integrity Program. Currently, the Habitat Management, Preservation and Restoration Plan for the Suisun Marsh (Suisun Marsh Plan) is under development. The actions in the Suisun Marsh Plan will include components of the CALFED Ecosystem Restoration Program, Water Quality Program, and the Levee System Integrity Program to achieve a common goal of providing long-term protection of the water supply and ecosystem benefits.

Achieving the Suisun Marsh goals and objectives listed above is being undertaken through a cooperative effort among the Department of Water Resources (DWR), the Department of Fish and Game (DFG), U.S. Army Corps of Engineers (USACE), participating local maintaining agencies (LMA) and Suisun Resource Conservation District (SRCD). Achieving these goals within a restricted resources means that significant effort is required to prioritize projects to meet as many of the objectives possible.

Progress Report

The following is the highlights of the program accomplishments made in State FY-07/08 and Federal FY 08. It lists each of the activities accomplished in the current year and describes the progress made or expected to be made through the end of the fiscal year.

Activity undertaken related to CALFED Goals and Objectives and status of that activity.

Provide Base Level Protection – Levee Maintenance

The Delta Levee Maintenance Subventions Program (Subventions Program) was funded at \$25 million in FY 07-08 and the Delta Levee Special Flood Control Projects (Special Projects) was funded at \$25 million in FY 07-08. During Fiscal Year 2007-08 the program continued to work cooperatively with levee maintaining agencies in the Delta to preserve more than 650 miles of eligible project and non-project levees in the Sacramento – San Joaquin Delta. Maintenance includes routine annual maintenance, habitat mitigation, emergency response, repairs to restore the levee crest, slope protection, levee patrolling, repair of slips and scarps, and the associated engineering and construction costs. Unavoidable impacts to habitat were fully mitigated or formal agreements were made to do so.

Provide Base Level Protection – Levee Improvement

Through cooperative effort among local, state, and federal interests the program has improved more than 45 levee miles for stability and overtopping since Year 1. Improvements during FY 2006 -07 include rehabilitating selected sections of levee crest. Significant projects were undertaken on New Hope Tract and Bethel, Bradford, Jersey and Twitchell Islands. Continuing consolidation of the foundation will reduce the crest elevation of these levees over time and additional work will be required before the levee sections will stabilize at the upgraded standard. The electromagnetic anomaly survey of delta levees continued under a grant from FEMA/OES. A 50-acre habitat mitigation site on Bradford Island was planted with native species to offset impacts associated with levee improvement projects on the island. A significant amount of levee rehabilitation work was completed in the Suisun Marsh to repair levees damaged from the storms of December 2005 and January 2006.

Special Improvement Projects – Levee Improvement

Special improvement projects are projects which will raise the levee crest above the PL 84-99 standard. This is to be completed only on islands with broad statewide significance. The Department of Water Resources has completed no projects of this nature and is currently giving a high priority to funding projects that raise deficient levees on critical islands to more modest standards.

Net Habitat Enhancement

The cooperative efforts of the LSIP have resulted in the creation of approximately 33 acres of riparian and wetland habitat along with 16,000 linear feet of Shaded Riverine Aquatic habitat in the Delta. Islands where this habitat enhancement has occurred include Decker, Twitchell, Webb Tract, and McCormack Williamson Tract. The Program has other significant habitat enhancement projects under development at Meins Landing, Dutch Slough, and Sherman Island. Purchase of Meins landing was finalized in 2005 and will eventually provide tidal estuary habitat in Suisun Marsh and help to offset impacts of levee projects on Van Sickle Island. The restoration at Meins landing is being coordinated with the Suisun Marsh Plan. The administrative draft EIR for enhancement at Dutch Slough was initiated in 2006 and is expected to be completed in 2008. Dutch Slough, which encompasses 1,166 acres, will restore a large contiguous area of intertidal habitat. A project to continue to create setback levees on Sherman Island and to concurrently restore about 2000 linear feet of tidal lands and SRA along this reach was permitted in 2007 and is under construction.

Subsidence Control Plan/Beneficial Reuse of Dredged Material

Subsidence and the methods leading to its reversal have been studied for several years on Twitchell and Sherman Islands under grants from the CALFED Levee System Integrity Program. These studies have shown that it is possible to stop subsidence by shallow flooding and that it is possible to begin reversing its effects by growing aquatic plants. As part of the DRMS work, both farm-size rice growing project and carbon sequestration project are planned to be studied. The rice growing project is being evaluated by CALFED Independent Science Board; however, the carbon sequestration is too costly to implement. Additional studies in-progress show promise for further increases in land surface elevation through dispersing silts and soils over the fallen aquatic plants.

While these methods may hold some promise for the future, there is a continuing loss of 35,000 cubic yards of peat soils daily resulting from business as usual, including pumping the islands to keep them dry. However, the Department of Water Resources recognizes the ongoing problem of subsidence and will establish a leadership role in its control and reversal on islands and in areas they own.

Larger scale subsidence control and subsidence reversal demonstration projects will provide real opportunities to determine suitable best management practices to minimize the loss of organic soils and reverse the subsidence trend. Commencing in 2006, the Department embarked on a cooperative effort with Ducks Unlimited, Reclamation District 341 to modify management of an existing duck club on Sherman Island to maximize subsidence reversal. In addition, the Department continued working with the USGS on a demonstration project on Twitchell Island to determine relationships among biomass accumulation, sediment deposition, and water management and to delineate priority areas on the island for subsidence control.

The Department continued its efforts associated with the beneficial use of dredged material. Bradford Island received 56,000 cubic yards of dredged material. To date, about 1.4 million cubic yards of dredged materials has been obtained for beneficial uses

Emergency Management and Response Plan

The Department of Water Resources implemented emergency response activities for the flooding associated with the storms of December 2005 and January 2006. Flood fight efforts in the Delta were affected through activation of the emergency response plan developed within the Delta Levees Program. The Department participated in emergency actions in various parts of the state. LSIP participated in emergency actions in the Delta on Bacon, Bethel, Bouldin, Bradford, Jersey, Sherman, and Twitchell Islands, and Hotchkiss Tract in the Delta and Simmons- Wheeler, Honker Bay and Van Sickle Island in the Suisun Marsh. Overtopping of islands in the Marsh occurred. No levees were lost in the western Delta; however, the program spent nearly one half of its Special Project's budget on flood damage repair. Program staff continues to work with local levee maintaining agencies to provide funds and technical support for emergency measures necessary to prevent overtopping, erosion, and flooding of Delta and some Suisun Marsh islands. FOC is formulating a comprehensive plan addressing preparedness and response in the event of a catastrophic levee failure.

Delta Levee Risk Assessment

The ROD presented its Preferred Program Alternative that described actions, studies, and conditional decisions to help fix the Delta. Included in the Preferred Program Alternative Stage 1 implementation was the completion of a Delta Risk Management Strategy (DRMS) study that would assess major risks to the Delta resources from floods, seepage, subsidence and earthquakes. DRMS would also evaluate the consequences and develop recommendations to manage the associated risk. Based on this need a Request for Qualifications was advertised in November 2005 and URS Corporation of Oakland, California was the successful applicant. The contract with URS is for a three year period from February 2006 to January 2009

Levee Maintenance and Levee Improvement

The Stage 1 goals for Levee System Integrity are described under the Priorities section. Each of the actions, except beneficial reuse, is significantly behind schedule. Though contracting difficulties can account for some of the delay in certain elements, it is the absence of adequate, sustained matching funds from the State and federal government sources that is the primary cause for this program's delay.

The current progress toward achieving Base Level Protection is falling behind because the available funding is used for maintenance, in an effort to preserve the levees for future enlargement. Over the past 5 years the local agencies have been spending their funds that were available for levee improvements to pay the pro-rata charge and cost share on maintenance.

Where the program has obtained significant levee improvements, many of these improvements were obtained in great extent through local funds. When taken in the aggregate, Levee System Integrity has provided only about 50% of the cost of achieving the maintenance and improvements to the levee system. By supporting local districts at the 50% rate, rather than at the 75% rate specified in CALFED documents, the program is less able to achieve the goals stated in the ROD.

Activity

Major activities for LSIP include Levee Maintenance, Levee Improvement and Other Components listed previously. These activities are all carried out through a cooperative effort of DWR, DFG and the Delta maintaining agencies, using local funds and additional funds provided by the state and federal governments through the program. These additional program funds provide the means for accomplishing the major levee work, environmental mitigation, conducting the studies, paying for development of emergency response functions, and other program attributes. The funding for LSIP should be consistent, at a level that provides incremental improvement; however, it has varied significantly over the years. The ROD provided a theoretical budget and corresponding targets that would allow the program to achieve base level protection for 200 additional miles of Delta levee and accomplish other goals. The historic funding received within the program is approximately 30% of the ROD targets. This funding level has preserved the Delta, but denied it the improvements promised in the ROD. The uncertainty in program funding has required that some goals be revised downwards and schedules be extended.

Proposition 50 (approved by the voters in 2002) provided \$70 million for Delta Levees. Currently, funding associated with Prop 50 is running out. Proposals for significant increases in funds for flood protection included in the Governor's proposed Bond measure were approved in November 2006 as Propositions 1E and 84. Delta program has requested an additional \$275 million for Delta flood control projects. This

means the LSIP must plan for uncertainty. Additional funding will result in significant change in the program. There is also an opportunity for the Corps of Engineers to assume a greater role in the Delta levees program if money associated with the Delta Long-Term Management Strategy and the Delta Island Feasibility Study are approved by Congress.

In Year 9 (State fiscal year 2008-09) the program will continue to follow well established priorities, although there will be a significant increase in local assistance available.

Levee Maintenance

The Subventions Program will provide funding for maintenance activities to preserve the existing levees, protect individual islands, provide mitigation for habitat impacts, and provide a base upon which to build when funding is increased.

The Special Projects Program funding will be used to make improvements to critical levee stability, and to fund the "Other Components" portion of the CALFED LSIP. This funding assures habitat mitigation for project impacts, habitat enhancement for both Subventions and Special Projects, implementation of beneficial reuse projects, and improvements to the emergency response.

DWR is trying to formulate an ability to pay criteria and methodology for use by the districts. The methodology is expected to be applied to both Subventions Program and Special Projects program.

Levee Improvements

Though some improvements are obtained with local funding only, program funding for levee improvements above the PL84-99 standard will wait until the critical levee needs are resolved through DRMS and the Delta Vision Process.

Other Components

State operations funding will allow researchers to continue the ongoing study of subsidence and economical methods to reverse it.

FOC Staff and local agencies will continue making improvements in supplies, planning, coordination effort and other means to make improvements to the emergency response system.

Current year funding available for Beneficial Reuse of Dredged Material will come from the Special Projects Program budget and is limited to participation in a Delta Long-Term Management Strategy for beneficial reuse of dredged material and other activities that are economically justified.

Special Projects funding will continue to be used to provide net habitat enhancement benefits as required by law.

Staff from DWR and DFG has begun a comprehensive assessment of the Suisun Marsh levee system and associated habitat mitigation and enhancement projects as a component of the SMP using funding provided by the involved departments.

The table below describes specific activities under each program component scheduled for Year 9.

Activity: Provide Base Level Protection – Levee Maintenance

The CALFED Program element of Base Level Protection is implemented incrementally with significant planning, coordination, contracting, scientific investigation, and cost sharing with local agencies. The Subventions Program works closely with these agencies and other local interests to provide regular levee inspections by qualified private engineering firms, timely repairs, re-establishment of crest elevation lost to consolidation, and incremental enhancements to stability that will, over time, result in attaining the CALFED goals, provided that there is adequate, consistent, and timely funding.

Subventions Program – Continue to provide financial assistance to local agencies for preservation and rehabilitation of non-project Delta levees and project levees within the primary zone consistent with no net habitat loss and long-term net habitat improvement. Achievement of Base Level Protection is possible over time with sufficient program funding.

Local support is strong for the Subventions Program as evidenced by the historic cost sharing of 50% and not less than 25%.

Expected Deliverables: The Subventions Program will provide reimbursement for approximately 67 reclamation districts for levee maintenance and stability improvements.

Schedule: This is an annually recurring program and will continue for the duration of available funding to support the work. The ROD schedule is significantly delayed by funding shortfalls, limitations on local cost share funding, shortage of materials, and other problems.

Cost: There is up to \$25 million available for the Subventions Program in FY 07-08 and up to \$25 million in FY 08-09.

Suisun Marsh Levee Maintenance – Work with interested parties to define funding needs and work within CALFED to obtain baseline allocations that will begin to provide financial assistance to local agencies for preservation and rehabilitation of Suisun Marsh levees consistent with no net habitat loss and long-term habitat improvement. Achievement of Base Level Protection is possible over time with sufficient program funding.

Schedule: Ongoing

Activity: Implement Special Improvement Projects – Levee Improvements

USACE Studies: - CALFED Levee Stability Program: PL 108-361 authorizes a total of \$90 million for support of Levee System Integrity. Delta interests responded to the USACE request for levee stability proposals by submitting 54 potential projects totaling more than \$1 billion in estimated costs. The USACE evaluated the proposals and prioritized potential projects according to USACE environmental, economic, and other implementation criteria. In May 2006, USACE completed a Report to Congress with the priority list identifying levee stability projects in the Delta. There has been no decision by the Congress to determine future actions and appropriations.

Schedule: Ongoing

Activity: Implement a Levee Subsidence Control Plan/ Beneficial Reuse of Dredged Material

Subsidence reversal has been studied for several years on Twitchell Island under the CALFED Levee System Integrity Program. Studies have shown that it is possible to reverse subsidence by shallow flooding. However, problems associated with taking land out of agriculture, poor quality of the resulting young "peat soil", and production of Tri Halo Methane precursors (carcinogenic substances) require additional study before recommending a specific subsidence reversal plan. This study of peat growth continues with support from the program for maintenance of the ponds.

An additional study on dispersing silts and soils on fallen aquatic plants continues to be stalled due to contracting difficulties. The DWR is working to restore these contracts and continue this study.

Ultimately, subsidence reversal best management practices must reflect the outstanding scientific investigations that lead to the best practicable alternatives that can be applied directly adjacent to levees as fully coordinated with the outcome of the risk assessment study and cost sharing with local agencies.

Deliverables: The CALFED-DWR was completed in December 2007. Deliverables were received from the Subcontractors. Studies are ongoing to determine methods of subsidence reversal that are compatible with existing Delta activities. DWR is also working with Ducks Unlimited and RD 341 to design and rebuild an existing Duck Club on Sherman Island to alter the hydrology to permanent wetlands. The site will be monitored to evaluate the change in hydrology on waterfowl. Current methods for subsidence reversal preclude much of the agriculture in the Delta and create water quality problems with THMs.

Suisun Marsh Levee Subsidence Control – Continue to work with interested parties to obtain funding for pilot projects in the Suisun Marsh such as tidal wetlands restoration, muted-tidal, or alternative seasonal diked wetlands management strategies to assess subsidence reversal. Also, the program will continue economically justified reuse of dredge material in the Suisun Marsh.

Schedule: Ongoing

Reuse of Dredge Material – The continued reuse of dredge material to increase levee stability and for habitat enhancement has

become more restrictive due to increasingly more stringent water quality criteria. Costs have increased and the reuse of dredged material for levee stability or habitat improvements is limited. Costs for acquiring and reusing dredged material exceed the cost of purchasing commercial borrow for Levee System Integrity Program projects. Continuation of this portion of the program is being reevaluated to determine if it is cost effective for the program.

Deliverable: DWR continues to participate in the Delta Long Term Management Strategy (LTMS) and reuse clean dredged material for levee rehabilitation.

Schedule: Ongoing - This element is on schedule achieving approximately 70% of the ROD commitment. The program remains committed to use available dredged material to strengthen levees wherever it is allowed and proves to be cost effective.

Activity: Implement a Levee Emergency Management and Response Plan

Emergency Response - The FOC will lead in emergency response and the LSIP Program will fulfill in obligations under Water Code Section 12994.

Activity: Delta Risk Management Strategy

Delta Risk Management Strategy: The Delta Risk Assessment contract was awarded in 2003 and Phase 1 work has been completed. Preliminary results of this study have shown the state to be at significantly elevated risk from specific multiple failure scenarios. To better understand the nature and magnitude of this risk the original study has been revised into the Delta Risk Management Strategy. This new contract was awarded in the fall of 2005. This 3-year contract was approved by DGS on 6 March 2006 to URS Corporation. It will incorporate the results of Phase 1 of the Delta Risk Assessment and expand that report to provide a comprehensive understanding of Delta hydrodynamics, risks associated with seismicity, emergency response capabilities, operational constraints, benefits and impacts of alternative actions on the Delta ecosystem, and other aspects associated with catastrophic levee failure. The results of this study will be used to form the basis of multiple agency support for specific actions in the Delta to reduce the controllable risk from levee failure and support ecosystem health. It will quantify resulting consequences, articulate a strategy to manage the risk and will become a component of Delta Vision Process (DVP). The scope of this contract will consider the Suisun Marsh levees to determine the consequences of failure. Agencies involved with the Suisun Marsh will use information from this study to develop recommendations for the disposition of Marsh levees, and assess strategies to minimize the threat.

Upon completion, the DVP and results of the DRMS study will play a significant role in the planning and implementation of the LSIP.

Schedule: Inventory of Assets/Trends – December 2006 (Delta Vision Process Assessment Report)

Risks & Consequences – (Final Phase 1 Report) July 2008

Risk reduction Strategies and Recommendations – (Final Phase 2 Report) November 2008

Special Improvement Projects- Levee Improvements

Levee Improvement: A significant portion of the budget (\$3.2 million) for Special Projects was used to fund major levee rehabilitation projects on the eight western delta islands (Bethel, Bradford, Jersey, Sherman and Twitchell islands and the Suisun Marsh. Large engineering studies were also funded on New Hope Tract, Webb Tract, and Holland Tracts, Hotchkiss and Twitchell Islands. Special Projects will continue to fund those levee rehabilitation projects on the eight western delta islands and other areas consistent with the legislative mandates of AB 360 that appear to pose the most significant risk until an alternate strategy is developed in the DRMS and DVP process.

Habitat Mitigation and Enhancement: The LSIP provides significant improvements to Delta habitat. The program has restored a portion of Decker Island to tidal marsh and has active projects on Bradford, Medford, Sherman, Twitchell, and Jersey Islands within the Delta and on Miens Landing in the Suisun Marsh. Planning is ongoing for habitat mitigation and improvement projects on Bradford Island, McCormack Island and at Grizzly Slough. The LSIP works cooperatively with local agencies to achieve habitat mitigation and enhancement which helps develop the sites at reasonable prices. The LSIP also embarked on a program to restore critical Shaded Riverine Aquatic Habitat (SRAH).

Schedule: Ongoing

Potential Problems: Future funding of the LSIP will be provided by bond funds from Proposition 84, via annual appropriations. The new policy of the USCOE to strictly enforce a 50-year-old policy with regard to vegetation on levees will be extremely problematic for LSIP habitat mitigation and enhancement programs