

California Bay-Delta Program

Levee System Integrity Program Multi-Year Program Plan (Years 5-8)

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

July 2004



Goals, Objectives, and Targets

Goals and Objectives:

The goal of the Levee System Integrity Program is to reduce risk to land use and associated economic activities, water supply, infrastructure, and ecosystem from catastrophic breaching of Delta levees. The program is committed to achieving long-term protection of life and property, water quality for in-Delta and export uses, agriculture, recreation, and the environment. This program is implemented by the Department of Water Resources in cooperation with the Department of Fish and Game, the United States Army Corps of Engineers, and more than 60 levee maintaining agencies.

Levee system integrity accomplishments and activities are grouped into the five categories outlined in the Record of Decision:

1. **Provide Base Level Protection** – Base level protection includes actions to understand and reduce the risk of catastrophic levee failure. These actions provide funding to help levee maintaining agencies preserve existing levees, and reconstruct all Delta levees to the PL84-99 Delta specific standard.
2. **Special Improvement Projects** – Special Improvement Project actions are those that will enhance flood protection beyond base level protection for certain islands protecting public benefits such as water quality, life and personal property, agricultural production, cultural resources, recreation, the ecosystem and local and statewide infrastructure. There is no action proposed under this portion of the program until accomplishing base level protection on the critical islands.
3. **Levee Subsidence Control Plan** – These are actions to develop best management practices to minimize the risk to levee integrity from land subsidence.
4. **Emergency Management and Response** - Emergency Management and Response actions are targeted to enhance the existing emergency management response capability of local, State, and Federal agencies to rapidly respond to levee emergencies.
5. **Program Management** – Program Management actions include monitoring, assessment, implementation commitments, and others necessary for program implementation.

Targets:

The CALFED ROD recognized that the goals of the Levee System Integrity Program, as well as other CALFED elements, could not be accomplished immediately. The ROD proposed a number of targets that should occur quickly and could be accomplished during the first seven years; these are the Stage 1 Actions. For Stage 1 the Levee System Integrity Program 1 targets are:

Levee System Integrity Program and Stage 1 Actions

Category		
	Stage 1 Action	Current Plan
Base Level Protection (PL84-99)	200 Additional Miles	Minimize Risk of Levee Failure
Special Improvements	None	Working on foundations as funding allows
Levee Subsidence Control Plan	None	Continuing multiple studies
Emergency Management and Response	Dec 2000	Plan is in place; work is continuing
Program Management	None listed	Program staff is developing tracking tools

The CALFED Finance Options Report - Ten Year Finance Plan proposes a funding stream that is cost shared among beneficiaries and proposes \$42 Million annually to the Levee System Integrity Program. This program plan is consistent with the Finance Options Plan and incorporates the plan in the Funding table. Beginning in 2006 legislation authorizing the Delta Levees Program will expire and must be renewed. Program staff will work to provide new language that includes initiatives for emergency response, cost sharing and other items necessary to provide a basis in the Water Code for achieving CALFED goals. Items below are some of the issues facing in the current program:

Program actions, using the current funding, are targeted at preserving the levee stability improvements achieved to date and minimizing the risk of future levee failure rather than achieving a set quantity of miles of levee that meet the PL84-99 Delta-specific standard. This approach of targeting the reduction of risk is the logical method of achieving the stated legislative intent to preserve the Delta as it exists while working toward the CBDA goal of reconstructing all Delta levees to a base level of protection.

- The local cost share required in the current program implementation is significantly different from the plan that was laid out in the 1999 Programmatic EIS/EIR Technical Appendix for the Levee System Integrity Program. Table 13 of that document shows the local share of construction costs was to be approximately 10%. Early planners recognized the financial limitations of the levee maintaining agencies and proposed achievable target contributions. Under the current program, the levee maintaining agencies are being asked to assume not less than 25% of the cost of construction and, with recent funding, most levee maintaining agencies have been paying more than 30% of the costs. This increase of local contribution has reduced participation on

many islands to a “maintenance only” program. Further, the current Levee System Integrity Program budget is insufficient to accomplish CALFED base level protection. With funding at current levels and the local cost share remaining at 30% or greater, the program will not achieve the Stage 1 goals.

- A subsidence control program remains an important goal. However, the contracting problems have delayed one ongoing study and threaten another. A set of best management practices remains several years in the future.
- The Delta Levees Seismic Risk Analysis contract was signed and study commenced in October 2003. This study will develop a risk model for Delta levee failure and the associated risk to the Delta water export facility. The study will provide insight that could be used to assess funding priorities for the most important areas of the Delta to Statewide interests.
- The Department of Water Resources continues with development of an emergency plan to refine and improve its emergency response capability. Emergency response and preparedness is an ongoing activity that must be sustained and strengthened to be effective. One part of preparedness is authorization to commit significant funding necessary to respond to emergency situation. The Department will pursue authorization to commit up to \$10 million, annually to respond to Delta emergencies.

The Resources Agency’s Delta Levees and Habitat Committee and the CBDA Levees and Habitat Subcommittee continue to be effective forums for incorporating public comment into the Levee System Integrity Program.

Once adequate, consistent funding is in place, and mechanisms to establish the appropriate local agency share are enacted, it will still require a number of years to consolidate the foundation of the Delta levees before the objectives of CBDA for Stage 1 can be accomplished.

Accomplishments (Cumulative Since Year 1)

Program accomplishments include a significant quantity of necessary maintenance, inspection, repair, and restoration of levees along with development of habitat improvements. A summary of activities is listed below:

Provide Base Level Protection

Completed Actions:

Levee Stability Improvements: A total of 43 levee miles of Delta levee, including projects on Sherman, Bradford, and Jersey Islands and Webb Tract were improved. Additional significant levee improvement work was performed on Twitchell Island and Hotchkiss Tract where some segments were brought to the PL 84-99 standard; however, consolidation of the foundation and continuing subsidence will reduce the levee height over time.

Beneficial Reuse of Dredged Material: Projects within the Levee System Integrity Program have reused more than 900,000 cubic yards of suitable dredged material to increase levee stability and to develop enhancements to terrestrial and aquatic habitat within the Delta.

Habitat Enhancement: During Stage 1 the program has removed the overburden from 26 acres of land on Decker Island and built various types of aquatic habitat from land that once was a star thistle-infested pile of sand. Another notable habitat enhancement project is the Twitchell Island Setback Levee. With this project, the Department stabilized a section of unsafe levee and created a reach of shaded riverine aquatic habitat in the tidal zone between the original levee and the newly stabilized portion. Additional land is in development on Bradford Island, at Grizzly Slough, on Sherman Island, Hotchkiss Tract and elsewhere in the Delta and in the Suisun Marsh.

Seismic Risk Study: The Delta levees protect many assets of statewide significance including the water supply for 23 million Californians and 7 million acres of productive agricultural lands. The levees are built of weak soils on top of a weak foundation. They are under continual assault by many natural forces. Perhaps the most critical natural force is seismic shaking which has the potential to cause several simultaneous levee failures. Recent levee fragility studies show that the islands critical for protecting water quality are the most vulnerable to failure due to seismic activity. The program has initiated a study that will establish the processes and develop a probabilistic model to quantify the risk posed to the State's water supply system as a result of multiple seismic levee failures. The final study results will also help to identify opportunities to minimize damage and provide the basis for additional studies of risk due to other caused of levee failure.

Levee Subsidence Control Plan

Completed Actions:

Subsidence Study: The program provided funding for the US Geological Survey to study the causes of Delta subsidence on Twitchell Island. The Department has managed the efforts to advance the scientific understanding of subsidence and developed demonstration projects for establishing best management practices to slow and, ultimately, reverse Delta subsidence.

Subsidence Reversal Demonstration: This project, also on Twitchell Island, has built a learning laboratory and will demonstrate methods to reverse subsidence through plantings and disbursal of sediment. The goal is to determine cost effective methods to slow and reverse Delta subsidence. These studies provide necessary data that contributes to development of best management practices for subsidence reversal.

Implement a Levee Emergency Management and Response Plan

Completed Actions:

SEMS Template: The program has produced a template for levee maintaining agencies to use in tailoring their own emergency plan to use in the initial response to a Delta flood emergency. Where adopted, this template will assure emergency plans will be SEMS compatible to the greatest extent possible.

Delta Wide Asset Management: Program staff works closely with the six Delta County Offices of Emergency Services to promote interoperability among levee maintaining agencies, the counties, and the Department of Water Resources to provide a coordinated and effective flood fight. One of the major efforts is working with the counties to establish policy in managing flood fight assets across political boundaries. This effort is well under way and must continue on an annual basis in order to be effective when needed.

Flood Fight Supplies: The first few hours of a flood fight are critical to saving an island from flooding. During those hours the flood fighters must have a ready supply of appropriate materials to be effective. The levees program is working to increase the availability of flood fight supplies by strategically placing stockpiles in critical locations in the Delta. Over time, a set of first response supplies adequate for one crew during the first 24 hours of flood fight will be stationed within 15 minutes driving time to all Delta islands.

Flood Fight Methods: Flood fight in the Delta has been a routine process employing well known methods over the last 100 years in the Delta. Recently new products and methods have been introduced to change the status quo. The levees program is participating with the U. S. Army Corps of Engineers and others to evaluate these methods and select those that offer the most promise for preserving the Delta.

Emergency Response: The levees program has the responsibility to support Delta levee maintaining agencies in preserving Delta islands. Since the beginning of Stage 1 the program has provided necessary assistance to respond to flood emergencies on three occasions to keep the islands from flooding. These emergencies occurred in the absence of a significant regional flood event in the Delta.

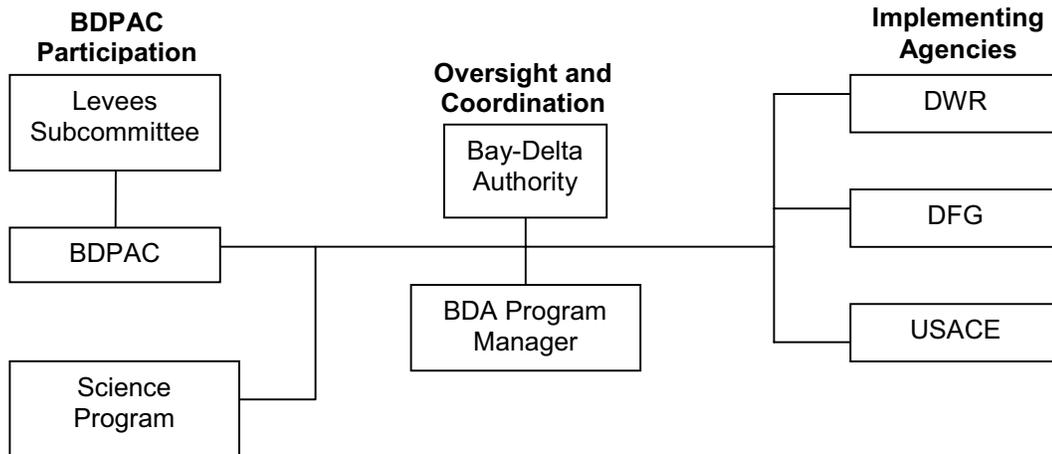
Program Management

Completed Actions:

Program Tracking: The levees program has developed conceptual measures to track progress toward accomplishing base level of protection and other CALFED goals. Working with USGS and others the program has conducted an aerial survey of major portions of the Delta to establish a baseline for determining progress. The program will continue working to refine its measures for determining success.

Implementation Actions: Program staff work closely with Delta levee maintaining agencies through the Delta Levees and Habitat Advisory Committee and the CALFED Delta Levees and Habitat Subcommittee. Through these forum the program discusses issues and seeks to develop consensus before raising them to higher levels within CALFED.

PROGRAM STRUCTURE



Agency	Roles and Responsibilities
Bay-Delta Authority	<ul style="list-style-type: none"> Oversight and coordination
Department of Water Resources	<ul style="list-style-type: none"> Program management Subventions Special projects Subsidence Emergency response Beneficial reuse Risk assessment Suisun Marsh
U.S. Army Corps of Engineers	<ul style="list-style-type: none"> Program management Base Level Protection and Special improvements Emergency response Beneficial reuse
Department of Fish and Game	<ul style="list-style-type: none"> Program management Subventions Special Projects Preserving Delta habitat Maintenance of Levees
Levee Maintaining Agency	<ul style="list-style-type: none"> Contracting Emergency Response Inspection Levee Security

Major Activities

Base Level Protection

Levee Improvements – One goal of CALFED is to raise the Delta levees to base level protection by enlarging the deficient levee cross sections to the PL84-99 Delta specific standard. Achieving this goal requires that the existing levee system, which now protects the Delta islands from daily tidal flooding, be preserved and then enlarged to the new standard. The Department's programs provide for inspection, maintenance, repair and restoration of more than 600 miles of Delta levees and includes improvements to levee stability to the PL84-99 Delta specific standard, or reducing the risk of levee failure to a level commensurate with statewide benefit. Both the levee preservation and the levee stability improvements directly contribute to levee system integrity, and provide significant benefits to other CALFED elements including water quality, water system reliability, conveyance and the ecosystem restoration

Schedule: Ongoing annual program

Implementing Agencies: Delta levee maintaining agencies, DWR, DFG, COE

Funding: Proposition 50, local matching funds

Suisun Marsh: The Suisun Marsh Charter Implementation Plan is based upon the premise that water quality, ecosystem, flood control, and management wetland benefits must be achieved in an integrated and coordinated implementation. The levee element is a key cornerstone in the implementation plan. The Suisun Marsh Levee Investigation Report has found that certain levees in the Suisun Marsh can be as essential to preserving water quality as some of the critical Delta levees. The program includes those Suisun Marsh levees that are authorized in legislation for Delta funding, however, additional authorization and funding is needed to develop a comprehensive levee program within the marsh and to provide the type of benefits now accruing to the Delta.

Schedule: Ongoing program

Implementing Agencies: levee maintaining agency, DWR, DFG, COE

Funding: Proposition 50, local matching funds

Beneficial Reuse of Dredge Material – Dredging is an activity that maintains channels, harbors, and conveyance capacity in the Delta. This activity produces significant quantities of material that must be disposed of, at cost to the dredging agency. At the same time, levee maintenance activities ongoing in the Delta require significant volumes of material to counteract subsidence, build levee buttresses, and for other purposes. In the past, the program has advanced the beneficial reuse of dredged material for levee maintenance, rehabilitation, and other projects, thereby reducing the cost of both dredging and levee work. Recently, however, there has been a perceived threat to water quality from use of this material. The Regional Water Quality Control Board has limited the reuse of dredged material and required large scale monitoring programs in those areas where they do allow its use. The cost of obtaining this dredged material, coupled with the cost of permits and monitoring now exceeds the cost of commercial borrow fill.

Schedule: Ongoing

Implementing Agencies: DWR, DFG, COE

Funding: Proposition 50, where economically justified

Risk Assessment Study – The Levee Risk Assessment Team has made significant progress in developing the system model of the Delta, the characteristics of a breach, and the effects of saltwater intrusion resulting from seismic levee failure on export water quality. The team has, also, studied the capability of contractors to respond to single and multiple levee breaches on critical Delta islands. Recent contracting difficulties have placed this work in suspension, however, the program committed to continue this study awarded a contract to J.R. Benjamin to conduct a system analysis and build a probabilistic model for the Delta. The model will be used to determine the economic risk associated with each potential cause of levee failure.

Schedule: Ongoing, completion is expected in 2007.

Implementing Agencies: DWR, CBDA, COE

Funding: Proposition 50

Special Improvement Projects

Special improvement projects enhance levee stability on levees that have particular importance in the system above the PL84-99 Delta-specific standard. This portion of the program will be deferred until base level of protection is achieved on critical islands.

Schedule: No activity

Implementing Agencies: Delta levee maintaining agencies, DWR, DFG, COE

Funding: None available

USACE Studies: The US Congress Conference Report 108-357 dated November 7, 2003 of the FY 04 EWDA states: "The conferees have provided \$1,100,000 for the Sacramento-San Joaquin Delta, California, study including \$350,000 for a reconnaissance study to evaluate environmental restoration, flood protection, recreation, and related purposes for the California Bay-Delta Authority North Delta Improvements project, and \$500,000 to initiate and complete a reconnaissance study to prioritize and evaluate environmental restoration, flood protection and related purposes for the Delta Islands and Levees. The remaining funding is provided for the Delta Special Study." In 2005, USACE will initiate Reconnaissance Studies on North Delta and Delta Islands and Levees.

Levee Subsidence Control Plan

Subsidence Studies: Subsidence studies have been ongoing for several years on Twitchell Island and they have shown that it is possible to stop and reverse subsidence by shallow flooding of the land. This study is continuing.

Schedule: Ongoing

Implementing Agencies: DWR, USGS

Funding: Proposition 50

Subsidence Reversal: The demonstration project to develop cost effective means to slow and reverse Delta subsidence has been in process since year 1. The project was actively evaluating the methods necessary for large scale reversal when contract problems resulted in the abrupt stoppage of all work. Program staff is working to restore these contracts and continue the ongoing studies and bring this important work to completion.

Schedule: Ongoing

Implementing Agencies: DWR, CBDA, USGS

Funding: Proposition 50

Emergency Management and Response

Emergency Response: The Department continues to place high priority on an effective emergency response and has worked diligently on a number of items under the emergency response heading. Among these are working closely with the Corps of Engineers and other interested agencies on Delta-wide asset management, flood fight inventory improvements, SEMS compatibility and establishing a larger authorization to expend funds in response to emergency needs beyond the existing \$50,000 per site, \$200,000 per year limits..

Delta-Wide Asset Management: Program staff has worked closely with the 6 counties and the State Office of Emergency Services to develop a system that will allow distribution and management of emergency response assets across political boundaries. The goal is to improve the responsiveness and effectiveness of agencies engaged in flood fight efforts to keep high water and/or strong winds from causing catastrophic levee failures in the Delta that could have consequences of statewide impact. While we are nearing completion on a number of memoranda of understanding, the efforts at coordination and cooperation must continue to enhance the management system and maintain its state of readiness.

Schedule: Ongoing

Implementing Agencies: DWR, Sacramento, Yolo, Contra Costa, San Joaquin, Alameda, Solano Counties, State OES, COE

Funding: Proposition 50, federal, and local funding

Flood Fight Inventory Improvements: The critical time in the prosecution of any flood fight is the first few hours, through the first day. To be effective, manpower and materials must be mobilized and employed early to prevent overtopping, erosion, and internal damage to the levees. Since the levee maintaining agencies have limited supplies with which to flood fight there is a need to stockpile additional materials in key locations to supplement those assets. This project will acquire and distribute approximately 10 flood fight boxes and necessary materials for flood fight, including sandbags, plastic sheeting, wood stakes, and hand tools to key areas within the Delta for use in that first critical time period.

Schedule: Ongoing

Implementing Agencies: DWR

Funding: Proposition 50

Standardized Emergency Management System (SEMS) Compatibility – Organization of emergency response teams and coordination of efforts among escalating jurisdictions is critical to effectively respond to any emergency; flood fighting is no exception. Program staff have developed a SEMS template for use by individual levee maintaining agencies to assure they have those critical elements in their plan to support coordinated escalation. This is needed to assure proper coordination, is required by law, and is a prerequisite to receive State reimbursement for damage claims and expenses connected with a flooding incident. Staff will continue to work with local agencies, mutual aid partners, and others to assure full SEMS compatibility and proper coordination during actual flooding incidents.

Schedule: Ongoing

Implementing Agencies: DWR

Funding: Proposition 50, local funding

Authorization to Expend Funds in Emergency – The Delta Levee Emergency Management and Response Plan, Appendix F of the Levee System Integrity Program Plan, discussed the very limited authorization of the program to provide funding to minimize the effects of island flooding on the Delta and its assets of Statewide importance. Currently the program can cost-share not more than \$50,000 for each site in an emergency with a maximum limit of \$200,000 in any one year. Given that emergency breach closure at Upper Jones Tract consumed more than \$5.0 Million and restoration of the interior slopes will require significantly more, the current limit is unrealistically low. The ROD proposed the Levee System Integrity Program be authorized to expend \$10 Million specifically for financing implementation of a Delta Emergency Response Plan.

Schedule: Ongoing

Implementing Agencies: DWR, USACE, OES

Funding: Proposition 50

Program Management

Program Tracking: The levee System Integrity Program tracks reduction in risk of overtopping, stability, and piping failures on a project-by-project basis, by reporting the number of miles of Delta levee raised to the elevation of the PL84-99 Delta-specific standard. This method will continue to be used until studies are complete to better quantify the risk to the overall Delta levee system. The program will continue working with CALFED Science to refine the program tracking measures to develop a full set of metrics that accurately depict program accomplishments.

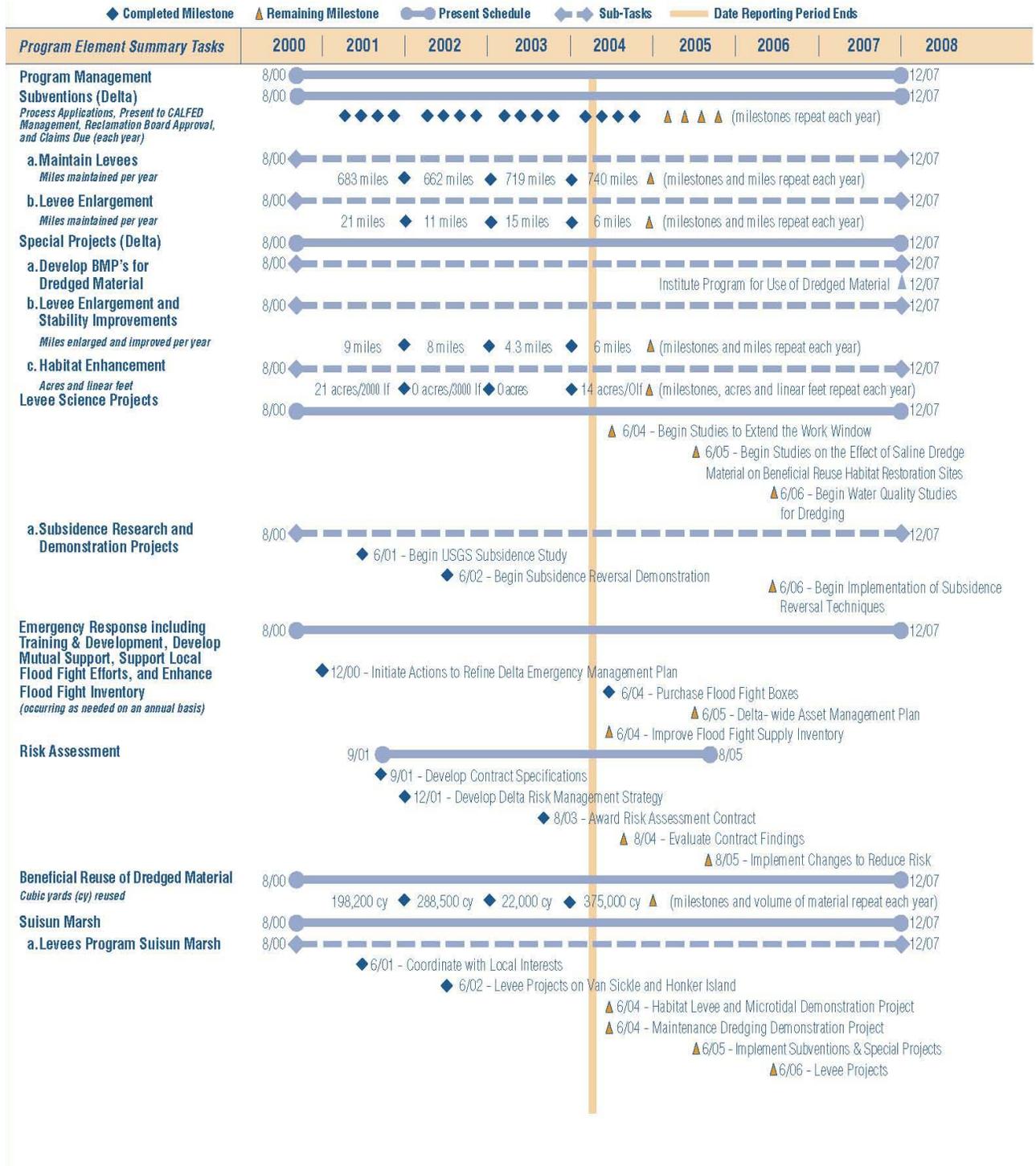
Implementation Actions: Program staff will continue to work with researchers to better define the risks of levee failure

Schedule: Ongoing

Implementing Agencies: DWR, CALFED Science, LMA, Consultants

Funding: Proposition 50

Schedule



Integrating Science, Environmental Justice and Tribal Relations

Science: The Levee System Integrity Program’s approach to developing a “science-based” program is multi-faceted. It gleans the most recent scientific findings as appropriate from other California Bay-Delta Authority-related actions in the estuary. The program seeks independent peer reviews of our research projects from the California Bay-Delta Authority Science Program and stakeholders. It develops appropriate conceptual models for project designs based on established knowledge or testable hypotheses. The program develops and implements project monitoring plans that support research needs identified by the conceptual models. It uses monitoring results to modify future projects and guide adaptive management. The program integrates ERP/Science goals whenever possible into levee program actions and seeks cooperative partners that bring science knowledge and experience to each project. The program develops and communicates science information through conferences, appropriate publications, and general public outreach.

The Levee System Integrity Program is focusing on several critical areas of interest to water managers and the science community:

1. What are the causes and solutions of land subsidence on Delta lands?
2. What is the risk of levee failure from seismic activity?
3. How do the Delta’s important, native fish use and interact with recreated wetland habitats?
4. How, why, and when is dissolved organic carbon produced from wetlands, subsidence reversal, or accidental island flooding?
5. What is the nature of current sediment balance in the Delta, and how does it affect potential ecosystem restoration and subsidence reversal?
6. What is the effect of exotic species on wetland restoration activities?
7. How can wildlife benefits be better integrated into flood control levees?

Performance Measures.

Performance measures translate program goals and objectives into measurable benchmarks of success. Performance measures range from relatively simple metrics to complex cross program assessments. As such, 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 the Levee System Integrity Program have been continuously working to design performance measures for the program. The Science Program has articulated the following three levels of Performance Measures. These will be refined as they are tailored for the unique needs of each program. For Levees, examples of performance measures include:

- **Level 1: Simple administrative measures.** Site-specific indicators that track direct responses of specific projects or groups of projects (such as number of dollars spent and the number of projects funded).
- **Level 2: Quantifiable accomplishments directly related to program actions.** Indicators that track the responses of groups of projects on a local or regional level (such as acre feet of conserved or storage water, miles improved levees, or fish counts).
- **Level 3: System-wide indicators.** Indicators that track broad, often complex, responses of groups of projects (such as water supply reliability or ecosystem health).

Because Level 3 measures gauge the combined effects of several Program Elements, the Levee Program will contribute to the Science Programs ongoing work in this area. The Levee Program tracks Level 1 indicators of expenditure and the number miles of Levees improved. In addition, the Levee Program is making progress on Level 2 indicators related to more complex measures of the risk of levee failure to local land owners, the Delta ecosystem, and Delta water exports. The development of these more robust indicators hinges on the completion of the Levee Risk Assessment.

Environmental Justice: The program is committed to continue working with the Environmental Justice Program to address environmental justice issues related to implementation of the levee system integrity program, as they arise.

Tribal Relations: Currently there are no Federally-Recognized tribes located in the Delta region. However, if a tribe becomes Federally-Recognized, the program will actively engage those tribal governments in the planning and development of Delta region levee projects through tribal briefing and consultation meetings. The CBDA's Tribal Coordinator will assist in coordinating meetings between the tribes and the lead agencies.

Cross-Program Relationships

Ecosystem Restoration Program – The program has achieved notable success in preserving existing habitat and developing new critical habitat in the Delta. There are additional opportunities, such as the Dutch Slough Project, to improve the volume, type and quality of enhancements through cooperation between Levee System Integrity and the Ecosystem Restoration Program. The Levee System Integrity Program staff remains committed to working with ERP for mutually beneficial projects that advance common program goals. Levee System Integrity looks forward to implementation of the improved environmental regulation and permitting promised in Section 3 of the Record of Decision.

Conveyance Program – The Delta levees are the borders of the channels for the water conveyance systems through the Delta. Water conveyance capabilities can be affected if a Delta levee fails. The levees program is working with the North Delta Flood-Eco Project to implement mutually beneficial flood control improvements.

Water Quality Program – The Delta levees restrain the daily chloride contamination of export water for more than 23 million Californians and 7,000,000 acres of farmland due to tidal influx of saltwater. Improvement in the reliability of water quality is a natural by-product of the maintenance, preservation, and improvement of the Delta levee system. The program will continue its close coordination on the Franks Tract Project to ensure flood control benefits on neighboring islands.

Water Supply Reliability – Through consistent maintenance, preservation, restoration, and improvements in levee system stability, the risk of levee failure is reduced and the water supply is protected.

Funding

Levees ¹ (\$ in millions)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Grand Total
State ²	\$29.2	\$13.7	\$3.6	\$21.6	\$21.4	\$18.5	\$0.4	\$0.4	\$108.7
Federal ³		\$0.2	\$0.2	\$0.3	\$0.2				\$0.9
Local ⁴	\$4.5	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$25.5
Water User ⁴	\$0.2	\$0.3	\$0.3	\$0.4	\$0.4	\$0.4	\$0.4	0.373	\$2.6
Available Funding Total	\$33.9	\$17.2	\$7.1	\$25.3	\$25.0	\$21.9	\$3.8	\$3.7	\$137.8
Projected Needs Estimate ⁵	\$33.0	\$76.0	\$78.0	\$82.0	\$26.7	\$46.1	\$58.2	\$59.6	\$459.6
Original ROD Estimate (Aug, 2000) ⁶	\$33.0	\$76.0	\$78.0	\$82.0	\$45.0	\$65.0	\$65.0		\$444.0

NOTES:

- Funding for Years 1 - 3 reflect actual State, Federal and Local obligations, commitments, encumbrances and expenditures updated to reflect actual fund amounts for each task. State funds for Years 4 & 5 reflect the Governor's Budget May Revision. Federal funds are the Year 4 enacted and President's FY 2005 proposed budget. Projected funding shown in Years 6 - 8 includes remaining estimates for State bond funds, ongoing State base funding, and local matching to grants for years where bond funding is available. Federal appropriations beyond Year 5 are unknown.
- The State budget includes funding for the California Bay-Delta Authority (Authority), Department of Water Resources (DWR), Department of Fish and Game (DFG), State Water Resources Control Board (SWRCB), and the San Francisco Bay Conservation and Development Commission (BCDC).
- The Federal budget includes funding for the U.S. Army Corps of Engineers (USACE).
- Water User/Local funding includes State Water Project Funds that are collected from state water contractors but are budgeted and appropriated through the state government. Local grant matching funds are estimated and updated as information becomes available.
- The Projected Needs Estimates are based on funding targets from the 10-year finance plan (July 2) and may change based on completion of the plan in November 2004 (includes estimates for Suisun Marsh).
- Original ROD Estimate represents the original Stage 1 (Years 1-7) funding estimates from the Record of Decision (Aug 2000).

Funding by Task

Levees ¹ (\$ in millions)	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Grand Total
1) Program Management	\$0.1	\$0.5	\$0.5	\$3.4	\$3.4	\$3.5			\$11.3
2) Subventions	\$20.0	\$9.0	\$4.3	\$11.4	\$11.4	\$9.9	\$3.0	\$3.0	\$72.0
3) Special Projects	\$13.5	\$6.0	\$1.6	\$8.6	\$8.6	\$6.9			\$45.3
4) Levee Subsidence		\$0.8	\$0.02	\$0.8	\$0.8	\$0.8			\$3.2
5) Emergency Response		\$0.2		\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$1.1
6) Risk Assessment			\$0.1						\$0.1
7) Beneficial Reuse	\$0.1	\$0.5		\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$1.5
8) Oversight and Coordination	\$0.1	\$0.2	\$0.6	\$0.7	\$0.4	\$0.4	\$0.4	\$0.4	\$3.3
9) Suisun Marsh									\$0.0
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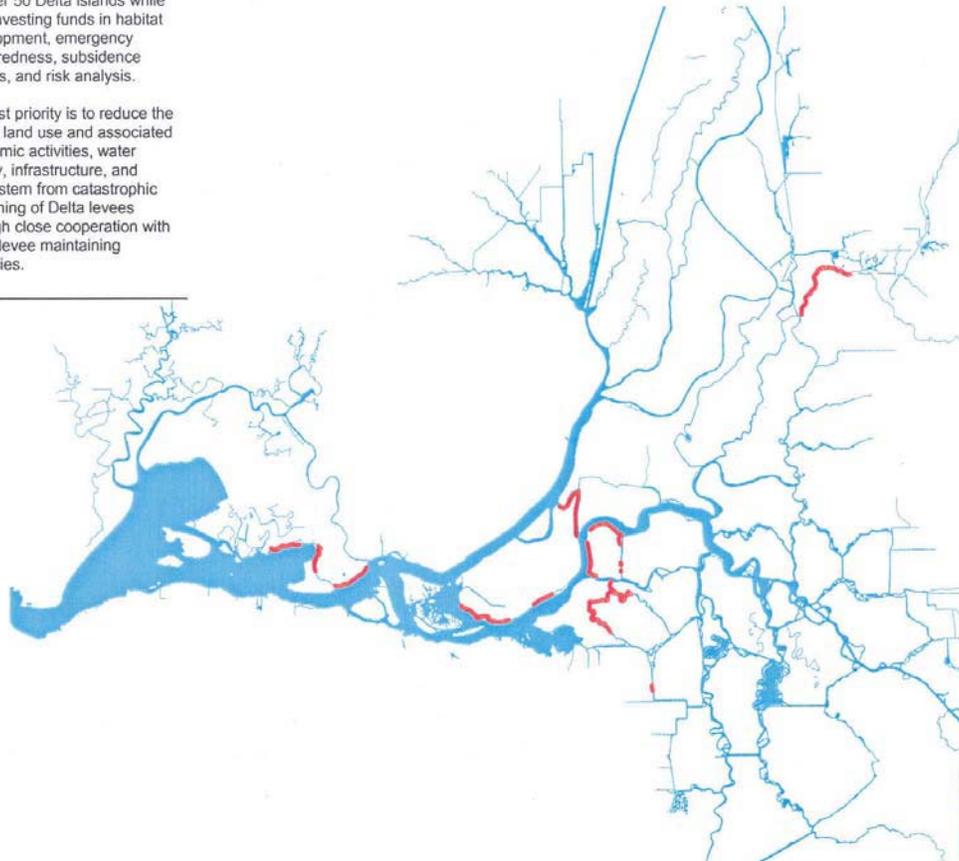
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Geographical Distribution of Levee Stability Activities

Reduce Levee Failures

The program improved levees on over 50 Delta islands while also investing funds in habitat development, emergency preparedness, subsidence studies, and risk analysis.

Highest priority is to reduce the risk to land use and associated economic activities, water supply, infrastructure, and ecosystem from catastrophic breaching of Delta levees through close cooperation with Delta levee maintaining agencies.



Levee System Integrity Program Levee Stability Projects

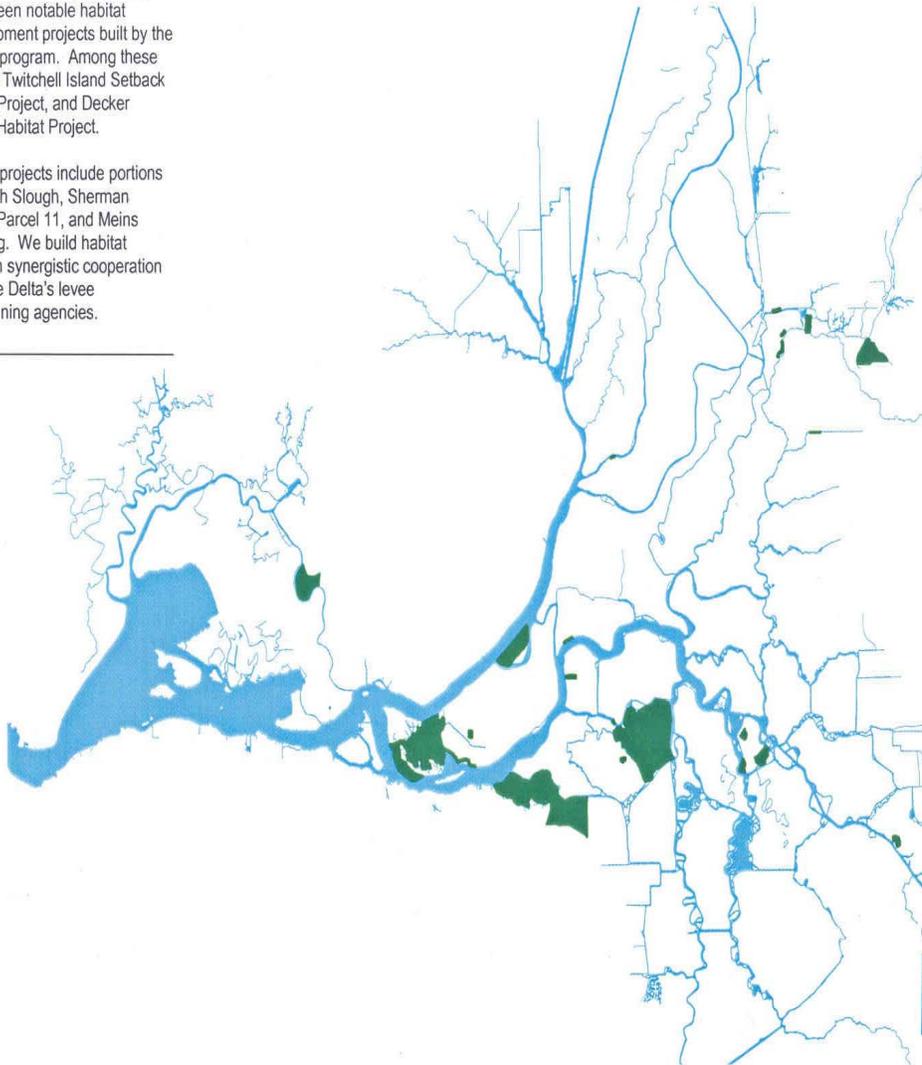


Geographical Distribution of Habitat Development Activities

Develop Habitat

Over the past few years there have been notable habitat development projects built by the levees program. Among these are the Twitchell Island Setback Levee Project, and Decker Island Habitat Project.

Future projects include portions of Dutch Slough, Sherman Island Parcel 11, and Meins Landing. We build habitat through synergistic cooperation with the Delta's levee maintaining agencies.



Levee System Integrity Program Habitat Projects

