

California Bay-Delta Program

Water Quality Program Multi-Year Program Plan (Years 6-9)

(State FYs 2005-06 to 2008-09; Federal FYs 2006 to 2009)

Implementing Agencies:

California Department of Health Services

U.S. Environmental Protection Agency

State Water Resources Control Board

Regional Water Quality Control Boards

May 16, 2005



Goals, Objectives and Targets

CALFED agencies and the Water Quality, Ecosystem Restoration and Watershed Management programs are investing in water quality projects to improve water quality for all beneficial uses, including drinking water, agricultural water, providing clean water for a diverse and healthy aquatic ecosystem, and supporting watershed stewardship. The Water Quality Program is investing in projects to improve water quality from source to tap to benefit the more than 23 million Californians whose drinking water supplies come from the Bay-Delta watershed.

Goals and Objectives:

The goal of the Water Quality Program (WQP) is to advance efforts to provide safe, reliable, and affordable drinking water to the millions of Californians who rely on waters from the Delta watershed through cost-effective continuous improvement to source water quality, water management, and treatment. The WQP is committed to achieving continuous improvement in the quality of the waters of the Bay-Delta system with the goal of minimizing ecological, drinking water and other water quality problems. The CALFED Programmatic Record of Decision (ROD) (August 28, 2000) describes the WQP and identifies the initial program activities in support of its water quality targets, including specific milestones for their achievement. Work is progressing on all Record of Decision (ROD) commitments, while currently emphasizing source water improvement and regional planning.

Since the issuance of the ROD, the Delta Drinking Water Council and its successor, the California Bay-Delta Public Advisory Committee's Drinking Water Subcommittee (BDPAC's DWS) has had a strong role in guiding implementation of the Program. In 2002, the BDPAC's DWS developed a framework for drinking water quality management called "The Equivalent Level of Public Health Protection Decision Tree" (ELPH diagram) and Conceptual Framework (a descriptive document)¹. In 2003, the United States Environmental Protection Agency (EPA) sponsored a focused workshop to identify and prioritize actions for program implementation and the WQP initiated a process to develop a comprehensive strategic plan for the WQP. As part of the strategic planning process, program goals, objectives, and strategic actions addressing source water quality, water management, treatment, affordability, cost-effectiveness, coordination and communication, and research were developed. A draft final strategic plan will be completed in 2005. We anticipate that the development of regional drinking water plans, combined with the technical work being done for the drinking water policy by the Central Valley Regional Water Quality Control Board, will further set the direction of the Program as plans are implemented.

Targets:

As stated on page 65 of the CALFED ROD, the WQP's general target is "continuously improving Delta water quality for all uses, including in-Delta environmental and agricultural uses" and its specific target for "providing safe, reliable, and affordable drinking water in a cost-effective way, [is] to achieve either: (a) average concentrations at Clifton Court Forebay and other southern and central Delta drinking

¹ The Conceptual Framework document can be found at <http://calwater.ca.gov/BDPAC/Subcommittees/DrinkingWaterQualitySubcommittee.shtml>, and provides a description of the ELPH diagram.

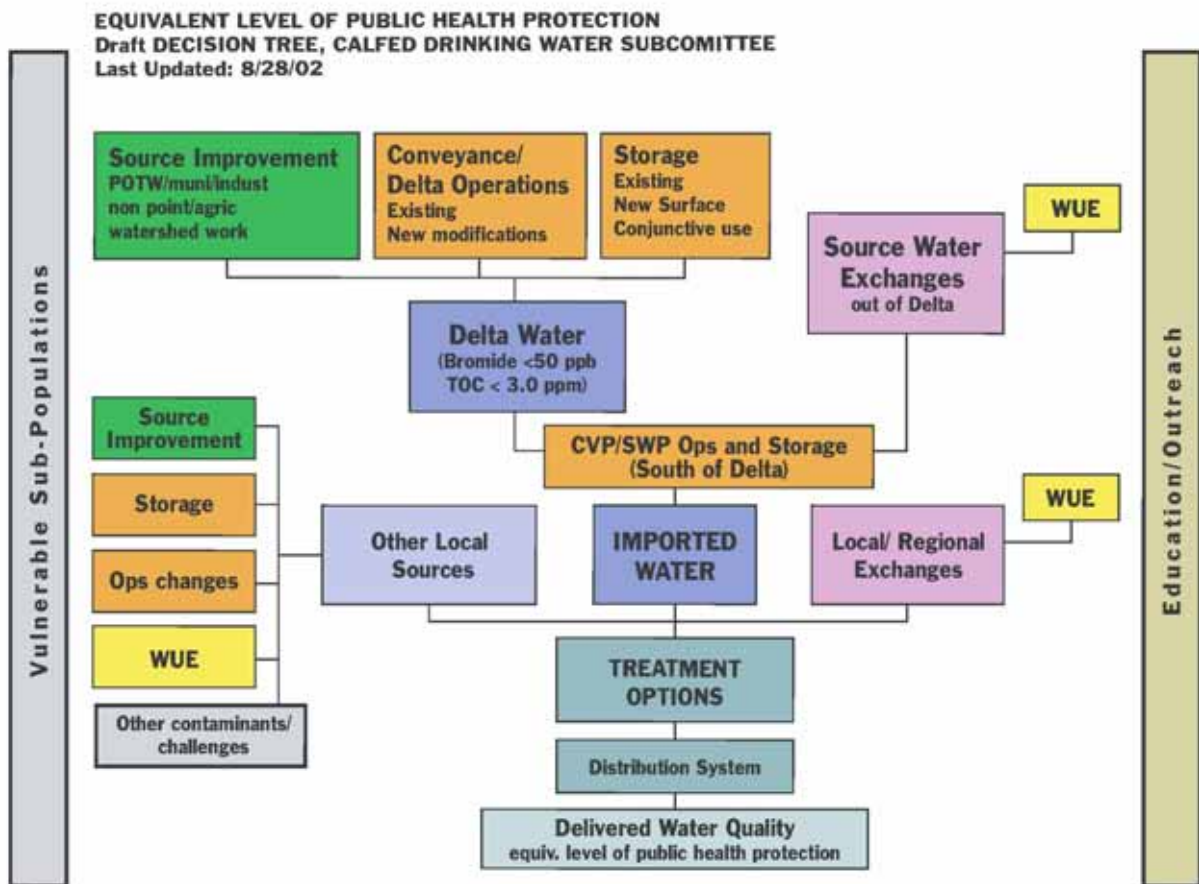
water intakes of 50 µg/L bromide and 3.0 mg/L total organic carbon, or (b) an equivalent level of public health protection using a cost-effective combination of alternative source waters, source control and treatment technologies.”

In addition, Appendix D² of the Water Quality Program Plan, identified several additional numeric targets listed for drinking water intakes:

Chloride	250 mg/L, 150 mg/L (Same as D-1641 and the current Sacramento-San Joaquin Bay Delta Water Quality Control Plan)
Nutrients (nitrate)	10 mg/L, no increase in nitrate levels
Total Dissolved Solids	< 220 mg/L (10-yr avg) (from SWP Water Service Contract, may be changed to a 6-month or 1 year avg target) < 440 mg/L (monthly avg)
Pathogens	No MCL standard; < 1 oocyst/100L for <i>Giardia</i> and <i>Cryptosporidium</i>
Turbidity	0.5 or 1.0 NTU (in treated water); 50 NTU (target is to reduce current variability)

The strategy of “an equivalent level of public health protection” is to achieve an equivalence of the CALFED ROD targets through implementation of a variety of activities, including source improvement (at both tributary waters entering the Delta as well as improvement in other sources that help reduce reliance on imported water), Delta water management improvements (including activities that reduce seawater intrusion into Delta intakes), local and regional infrastructure improvements and additions, regional water quality exchanges, to improved treatment technology and distribution system modifications to ensure high quality water at the tap. These activities are identified in the “Equivalent Level of Public Health Protection” diagram, as seen on the following page.

² “Water Quality Targets for Parameters of Concern” – there are also a number of qualifiers on these targets highlighted in this section.



Performance Measures:

Performance measures are used to translate program goals and objectives into measurable benchmarks of program progress. They present information on program implementation, conditions, trends, outcomes, and the significance of program activities in meeting the objective(s) and goals. The Goals and Objectives and Targets sections listed the numeric targets and conceptual models the WQP is currently using to assess performance. There is still a great deal of work to do to develop a meaningful method of measuring performance and adapting the program accordingly.

From the institutional side, regional plans will help the program to identify 1) priority drinking water constituents and relevant metrics for the many different regions relying on the Delta, 2) priority activities at local, regional, and state levels to improve treated drinking water quality and 3) the existing and planned state of treatment technology in each region. The regional plans fill out the ELPH diagram by informing the program on the various opportunities and trade-offs between the identified “tool boxes.” From the scientific side, research is still needed to understand the sources, fate and transport of the many of the constituents of concern, such as organic carbon, and their roles in both the ecosystem and in drinking water treatment in order to both prioritize actions and to develop meaningful performance measures. Unfortunately, these are also two areas where funding is difficult to obtain.

In late 2004, the WQP developed a matrix of potential program indicators, looking at administrative indicators, ROD milestone and other goal-related indicators, and constituent based indicators. The WQP has also been working closely with the Central Valley Drinking Water Policy Work Group (http://www.swrcb.ca.gov/rwqcb5/available_documents/dw-policy/index.html), which is developing technical studies to determine if regulations are needed to protect drinking water as a beneficial use of waters in the Central Valley region. The Work Group has prioritized its constituents of concern to drinking water (very similar to the list identified in the Targets section above) and developed a database of relevant monitoring data. Its next steps are to develop conceptual models of these constituents, using available scientific literature and monitoring data, and to identify data gaps and perform some short-term monitoring. The WQP has supplemented the data collection of this effort, and has commissioned white papers on the state of Delta water treatment and on pathogen monitoring. The Work Group's technical studies are scheduled to conclude in 2007 and the WQP will continue its coordination with this effort to develop the foundation for performance measures.

In 2005, the WQP completed its first Program Assessment, slightly behind the schedule indicated in the ROD. The Program Assessment developed a suite of administrative performance measures, demonstrating the significant lag between awarding funding and actually spending the funding. This alone indicates that there would be little progress to measure, even if a full suite of performance measures were in place. The Program Assessment also describes the performance of the program in meeting its ROD and other objectives, and its movement towards constituent based indicators. One concept that originated within the strategic planning process is the development of a suite of indicators which link Delta water quality with the treated water quality of plants using Delta water, accounting for the conveyance, storage, and blending of source water prior to treatment. The WQP is also coordinating with existing programs within its implementing agencies to determine where opportunities exist to coordinate on performance measure development and implementation.

Accomplishments

Several notable water quality accomplishments were achieved in Year 5:

- The Central Valley Regional Water Quality Control Board passed a resolution supporting the development of a drinking water policy for the Sacramento and San Joaquin Delta and upstream tributaries. The Central Valley Drinking Water Policy Project is, for the first time, developing the technical studies needed to inform policies and plans for water quality objectives for several known drinking water constituents of concern, such as disinfection by-product precursors and pathogens. This drinking water policy is needed because current policies and plans lack water quality objectives for several known drinking water constituents, such as disinfection by-product precursors and pathogens, and do not include implementation strategies to provide effective source water quality protection. It is funded by multiple sources – the California Urban Water Agencies, the Sacramento Regional County Sanitation District, the Sacramento Watershed Monitoring Program, the EPA and CALFED, through a SWRCB grant. The project is also an excellent example of public involvement and outreach – it is managed by a group of stakeholders, under direction of the CVRWQCB.
- The Central Valley Regional Water Quality Control Board’s approval of a total maximum daily load or TMDL to control salt and boron discharges into the lower San Joaquin River, which will ultimately improve the overall water quality for these important source waters.
- Finally, the BDPAC’s DWS identified regional planning as a high priority for the WQP. Pilot regional water quality plans were developed with funding from the WQP for Southern California, Northern Sacramento Valley, and the Delta Region. The WQP anticipates that these plans will help to shape future program priorities.

Specific accomplishments (completed actions) are detailed below and are organized into five major categories: source improvement; regional ELPH planning; treatment technology; science and improved understanding; and institutional and program management. Funding sources are in parentheses. These categories were developed during the strategic planning process:

- **Source Improvement** includes continuous source water quality improvement, water management, and research.
- **Treatment Technology** includes drinking water treatment research, technology assessment, and facilitating implementation.
- **Regional ELPH Planning** includes WQP facilitation of the development, integration and implementation of plans by various regions.
- **Monitoring and Assessment** includes the development of performance measures and indicators, monitoring and assessment efforts and economic evaluations.
- **Program Management** includes funding, coordination, strategic planning, and outreach activities.

The following is a list of accomplishments (completed actions) organized by category, with notations where accomplishments are ROD-directed actions.

Source Improvement

Central Valley Drinking Water Policy: "CVRWQCB, with support from the CALFED Agencies and DHS, will establish a comprehensive State drinking water policy for Delta and upstream tributaries by the end of 2004" (ROD). In July 2004, the CVRWQCB adopted a resolution supporting this project.

San Joaquin Drainage: "Finalize State Basin Plan Amendment (BPA) and Total Maximum Daily Load (TMDL) for salinity in the lower San Joaquin River by the end of 2001" (ROD). The BPA was adopted by the CVRWQCB in 2004.

"Initiate regional desalination demonstration project (for agricultural drainage) by the end of 2002" (ROD). Agricultural drainage water recycling using membrane technology by Panoche Drainage District was completed in 2004.

"Study Recirculation of export water to reduce salinity and improve dissolved oxygen in the San Joaquin River" (ROD). Recirculation was successfully tested in Fall 2004.

"Address drainage problems in the San Joaquin Valley to improve downstream water quality. Begin implementation of appropriate source control measures (e.g., on farm and district actions, development of treatment technology, real-time management and reuse projects such as agroforestry) by the end of 2003" (ROD). Three projects that help to implement drainage source control measures in the San Joaquin Valley concluded in Year 5.

Control Runoff into Conveyances: "Control Runoff into the California Aqueduct and other similar conveyances. Develop and implement watershed programs adjacent to appropriate conveyance channels by the beginning of 2004" (ROD). One watershed assessment was completed in 2004.

NPS Grants: Agricultural Water Quality Grants (Proposition 50 Chapter 5) were awarded to eight projects to develop and implement agricultural Best Management Practices (BMPs) that reduce loads of drinking water constituents of concern.

Regional ELPH Planning

Bay Area Blending/Exchange Project (ROD). The Bay Area Water Quality and Water Supply Reliability Program evaluated cooperative projects among Bay Area water districts to meet their water quality and reliability objectives through the feasibility phase. This work has now transitioned into a regional group that is developing a Bay Area Integrated Regional Water Management Plan.

Regional ELPH Planning – The program released a Request for Proposals for regional drinking water quality planning projects in May 2004. Three projects were completed with this funding: pilot regional plans in Southern California, Sacramento Valley, and the Delta.

Treatment

UV Disinfection: "Initiate UV disinfection plant demonstration project by the end of 2002" (ROD). MWD completed studies integrating UV disinfection and other oxidants.

Ion Exchange for Organic Carbon Removal: The Solano County Water Agency investigated application of innovative ion exchange technology for organic carbon removal.

Monitoring and Assessment

Continuous Analyzers: Continuous organic carbon and anion analyzers have been installed at Hood, Vernalis, and the Banks Pumping Plant. A continuous organic carbon analyzer has been installed at Milepost 3.5 on the Delta Mendota Canal. Data from these analyzers and other sensors will be compiled, analyzed, and reported in Water Quality Weekly Reports by the DWR Office of Water Quality.

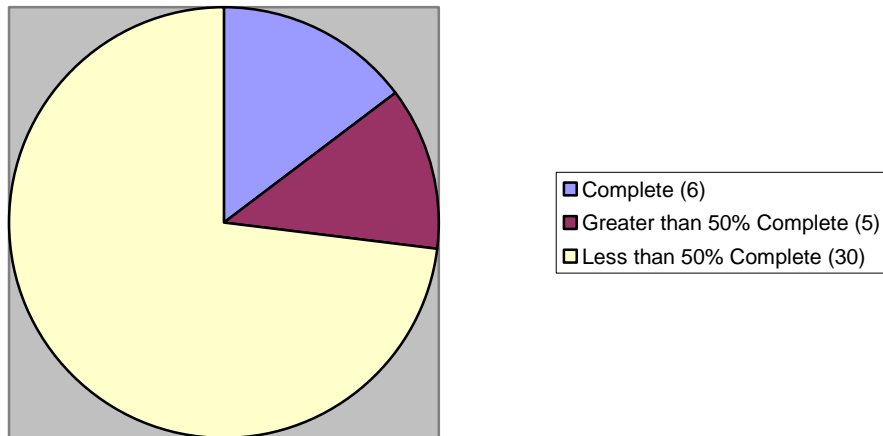
Program Management

Initial Program Assessment: "BDPAC's DWS will complete initial assessment of progress toward meeting CALFED water quality targets and alternative treatment technologies by the end of 2003" (ROD). The initial program assessment was completed in May 2005.

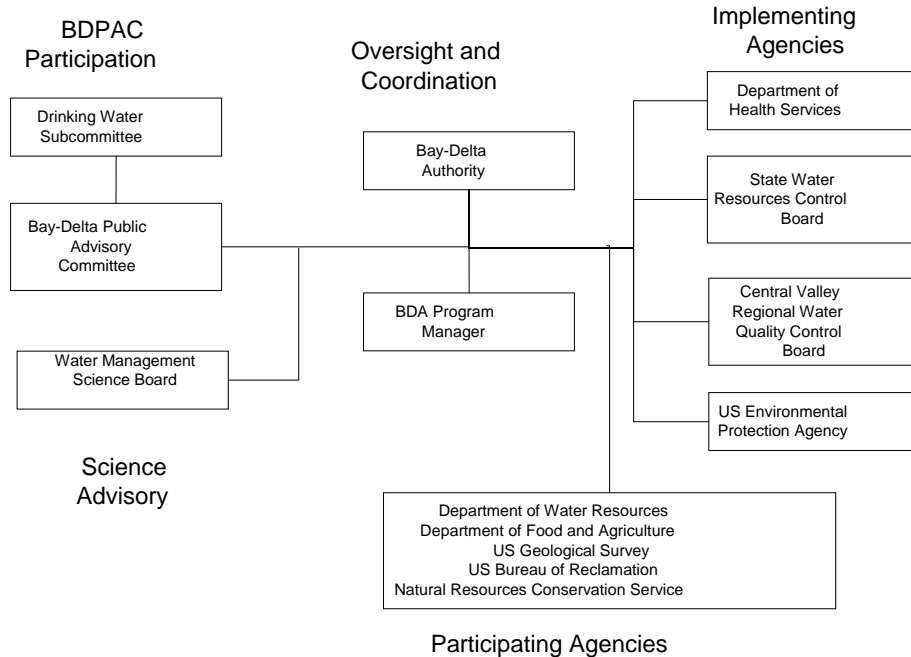
The initial assessment of progress includes a number of administrative program statistics, as well as the production of a project tracking database. From this database, the program can easily provide information like the following:

(this table will be updated before the MYPP is finalized)

Status of Funded WQP Projects (41 total)



Program Structure



Agency	Roles and Responsibilities
California Bay-Delta Authority	<ul style="list-style-type: none"> Oversight and coordination
Department of Health Services	<ul style="list-style-type: none"> State co-lead, Grant funds manager Management of treatment technology development, and health effects studies
State Water Resources Control Board	<ul style="list-style-type: none"> State co-lead, Grant funds manager
Central Valley Regional Water Quality Control Board	<ul style="list-style-type: none"> Management of source protection efforts
U.S. Environmental Protection Agency	<ul style="list-style-type: none"> Federal lead Administration of Clean Water Act and Safe Drinking Water Act via state agencies
Department of Water Resources	<ul style="list-style-type: none"> Municipal water quality investigations SWP water quality monitoring Conveyance program Storage Program
U.S. Bureau of Reclamation	<ul style="list-style-type: none"> San Joaquin Valley agriculture drainage program CVP water quality monitoring, Recirculation study
Department of Food and Agriculture	<ul style="list-style-type: none"> Conservation programs for agriculture
U.S. Geological Survey	<ul style="list-style-type: none"> Data and science assessments of water quality Contract research
Natural Resources Conservation Service	<ul style="list-style-type: none"> Resource conservation programs for agriculture

Major Activities

Regional drinking water quality management planning is a high priority for the WQP in Years 6 and 7. In Year 5, the WQP funded the development of regional plans for Southern California, Northern Sacramento Valley, and the Delta. It is hoped that funding for additional regional planning will be obtained through Proposition 50, in order to maintain the program's progress and inform its long-term priorities.

The Delta Improvements Package (DIP) will also remain a high priority for the WQP in Years 6-9. For example, a number of water quality projects were authorized in the Federal Water Supply, Reliability, Environmental Improvement Act (P.L. 108-361), including Frank's Tract (Feasibility Studies and Actions), relocating M&I intakes in the Delta (design and construction on a schedule coordinated consistent with the South Delta Barriers Improvement Project) and San Joaquin River salinity improvements. The WQP now incorporates Franks Tract, a project with a primary goal to improve operations of the State Water Project (SWP) and the Central Valley Project (CVP) while significantly reducing salinity levels in the South Delta and at the Contra Costa Water District (CCWD) intakes and SWP/CVP export facilities. The WQP will work closely with the Department of Water Resources to fully understand the potential of this project, to implement pilot tests, and to ensure that water quality gains are maintained through appropriate changes in the Water Quality Control Plan or project operations agreements. The current available funding and the total estimated cost for the DIP activities and other WQP priorities are identified in the table of actions at the end of this section.

The WQP will also continue to coordinate with the implementing agencies and stakeholders on the San Joaquin Water Quality Management Plan³, in order to monitor implementation of the Salinity and Boron TMDL, to ensure improvement of agricultural water quality in the Delta, and to explore potential opportunities to improve drinking water quality through focused funding of tools identified within the plan. In general, the WQP will continue to coordinate on DIP implementation and monitor its performance to assure its water quality goal proceeds in balance with its other goals. For example, the WQP will monitor CCWD progress on environmental studies related to relocating their intake to improve their water quality. While the DIP has the immediate attention in the sequencing of CBDA projects, regional ELPH plans are being developed and their outcomes will be the focus of the next sequence of water quality activities. In this respect, Years 8 and 9 are more speculative in this program plan.

Monitoring and assessment gaps are becoming increasingly critical to the WQP. The WQP is currently relying on the technical work being done under the Central Valley Drinking Water Policy development. This project is collecting available water quality monitoring data, drafting conceptual models of the fate and transport of key constituents of concern to drinking water, and identifying additional monitoring needs based on this information. WQP has been working closely with this project to inform its own program performance measure development. Monitoring and assessment conducted in connection with grant funded projects helps but inevitably is localized and short-term, thus leaving significant information gaps. The WQP has made significant progress in establishing real-time monitoring stations in key locations, but consistent long term funding is needed to support this component of the program,

³ This effort is also assisting in the implementation of the Stockton Dissolved Oxygen TMDL.

especially in the assessment of collected data and in specialized research to refine conceptual models and performance measures.

Meeting funding needs will continue to be a challenge for the WQP. The funding needed to implement many of the actions in Years 6-9 is expected to come from the various Proposition 50 (Prop 50) grant programs under the jurisdiction of California Department of Health Services (DHS), State Water Resources Control Board (SWRCB), and California Department of Water Resources (DWR). DHS has approximately \$430 million through Proposition 50 to fund drinking water quality improvement projects statewide, including such projects as the DIP. Although the Prop 50 grant programs address statewide water quality improvement and all proposed projects must compete for funding according to established criteria, it is anticipated that a significant portion of the Prop 50 funds will ultimately support projects directly related to CALFED drinking water quality goals and objectives. The funding will be available over a four-year period, from 2005 – 2009, under the following chapters:

- ◆ Chapter 4 supports drinking water treatment and source improvement and is being administered by the Department of Health Services. The WQP is participating in the grant review process;
- ◆ Chapter 5 supports source water quality improvements and is being administered by the SWRCB – a portion of this was distributed through the 2003 SWRCB grants and the remainder is being distributed through smaller grant processes, like the Agricultural Water Quality Grants. The WQP has \$3.4 million remaining in these funds to support regional planning and implementation projects;
- ◆ Chapter 6 supports drinking water treatment and is being administered jointly by the Department of Health Services and the Department of Water Resources;
- ◆ Chapter 7 supports water quality improvement in the lower San Joaquin and Delta, including the Franks Tract project, and watershed management plans, which often address drinking water quality, and is administered by CALFED implementing agencies, and
- ◆ Chapter 8 supports integrated regional water management planning and implementation and is being administered jointly by the SWRCB and the Department of Water Resources.

Local matching funds for WQP projects will provide a significant source of funding. For example, over \$100 million is anticipated in local matches for San Joaquin River salinity improvements and for the CCWD intake relocation.

The CALFED 10-year finance plan estimates that WQP funding needs, although significantly lower than original ROD estimates, will continue to be under-funded into the future. Although certain projects like those described in the Delta Improvements Package have a higher *potential* to be funded because of their critical importance in short-term balancing of the CALFED Program, there are other high priority actions like regional planning – critical to long-term balance - which are at risk. The Finance Plan estimates a \$110.1 million funding gap for the WQP for Year 6 through 9. Furthermore, in Year 6, there will be no directed money for monitoring and science, and only minimal resources for program support, even assuming that Proposition 50 funds support the activities described above.

The following list identifies the specific major activities for the WQP for Years 6 – 9, dependent on the level of funding achieved. They are organized by category, with notations where accomplishments are ROD-directed actions.

Source Improvement

Central Valley Drinking Water Policy: "CVRWQCB, with support from the CALFED Agencies and DHS, will establish a comprehensive State drinking water policy for Delta and upstream tributaries by the end of 2004...Evaluate and determine whether additional protective measures (regulatory and/or incentive based) are necessary to protect beneficial uses by the end of 2004" (ROD). CALFED, the USEPA, California Urban Water Agencies, Sacramento Regional County Sanitation District, and the Sacramento Watershed Monitoring Program have funded the following project to achieve this milestone. Years 6-8 will be devoted to implementation of the policy work plan. The final product of the working group will be a policy recommendation to the Regional Board for their adoption (likely in the form of a Basin Plan Amendment).

Schedule: Complete technical work in 2007, basin plan amendment in 2009

Total Cost: \$2,690,000

Funding Status: Technical work funded with a grant from Prop 50 in the amount of \$970,000, with EPA and local cost shares of \$1,160,000. The actual basin plan amendment will require additional funding (\$560,000).

Project Lead: RWQCB and Stakeholder Work Group

Franks Tract: "Develop a strategy to significantly reduce salinity levels at the Delta drinking water intakes and improve water supply reliability by reconfiguring levees and/or Delta circulation patterns around Franks Tract" (ROD). This project was moved into the WQP following the development of the CALFED 10-Year Finance Plan, due to its initial studies finding that there is a significant potential for the reduction of Delta salinity. The WQP will work with the implementing agencies to develop information of the expected level of water quality improvement at the Delta drinking water intakes that will result from Franks Tract project alternatives.

Schedule: Complete feasibility study and environmental documentation in June 2006. Begin construction of pilot project in FY 2006-07.

Total Cost: \$13,400,000 for Feasibility Study. \$19,100,000 estimated for Phase I Pilot Testing.

Funding: \$4,800,000 funded in Year 5 through Proposition 50 Chapter 7, State Water Contractors, and Proposition 13.

Feasibility study authorized under federal legislation (P.L. 108-361).

Project Lead: DWR

San Joaquin Drainage: The San Joaquin River Water Quality Management Group is developing an alternative solution to meet the objectives of the Salinity and Boron TMDL in the Lower San Joaquin River and assist in implementing the Dissolved Oxygen TMDL in the Stockton Deep Water Ship Channel. The approach focuses on implementing salinity reduction in the West Side/Grasslands area, where the highest salt loads originate, while using recirculation and water purchases to meet Vernalis salinity objectives during the load reduction implementation. The approach also incorporates an element of real-time management, to manage salt loading into the San Joaquin River, while not redirecting impacts to the Delta. Specific details are still being identified.

Schedule: Alternative TMDL approach must show progress by 2007.

Total Cost: Estimated costs of \$100,000,000 to implement the remaining phases of the West Side drainage reduction, \$1,500,000 per year for water purchase, \$5,000,000 in capital improvements for recirculation have been identified to date.

Funding: To date, over \$36,000,000 has been invested in implementing West Side drainage reduction actions (state, federal, and local funds). This activity is authorized under P.L. 108-361 and contributes to meeting a number of federal regulatory obligations on the San Joaquin River. A feasibility study of the use of Recirculation is also authorized by P.L. 108-361. Currently, there is no state/federal funding dedicated to this effort, but the region has developed an IRWMP and parties are encouraged to apply for Proposition 50 Chapter 8 funds.

Project Lead: San Joaquin River Water Quality Management Group (stakeholders, DWR, USBR)

Vernalis Flow Objectives: "Develop and implement within two years a plan to meet all existing water quality standards and objectives for which the State and Federal water projects have responsibility" (ROD).

Schedule: Currently scheduled for completion by December 2005.

Total Cost: No cost estimate is available.

Funding: Authorized under federal legislation (P.L. 108-361), SB113 and PL requires a plan to meet these standards by the fall of 2005.

Project Lead: DWR and US Bureau of Reclamation

Old River and Rock Slough Water Quality Improvement Projects: (ROD): Relocate agricultural drains in Old River and Rock Slough to improve water quality at Contra Costa Water District intakes, prior to installation of permanent barriers. Investigate local watershed sources of water quality degradation.

Schedule: Construction started in Fall 2004 and will be complete by December 2006.

Total Cost: \$4,420,000 for the drain relocations, \$9,150,000 for Phase I of the Contra Costa Canal lining.

Funding: Drainage relocations and Phase I of Contra Costa Canal lining are funded through construction. (Prop 13 and local funds)

Project Lead: CCWD

Control Runoff into Conveyances: "Initiate comprehensive evaluation of necessary physical modifications (e.g., modifications to berms, bypasses, and storm drains to divert storm water away from and prevent its discharge into the Aqueduct and other similar conveyance channels) by the end of 2001" (ROD). Future implementation of this milestone is dependent on DWR or the State Water Contractors completing the initial comprehensive evaluation for the State Water Project facilities. This evaluation could be combined with the Sanitary Survey.

Schedule: Not identified.

Total Cost: \$2,000,000 for the initial comprehensive evaluation.

Funding: Funding of improvements to the California Aqueduct will be dependent on a locally funded evaluation.

Project Lead: DWR or State Water Contractors

Water Quality Exchanges: "Facilitate water quality exchanges and similar programs. If agreement is reached by the parties involved, complete environmental review and begin implementation of a long-term program, including necessary infrastructure, by the end of 2004" (ROD). The Friant Water Users Authority (Friant) and Metropolitan Water District of Southern California (MWD) continue to implement the Phase 2 Workplan for the Water Quality Exchange Partnership. A key Workplan activity is identifying pilot projects that can be implemented to improve both water supply reliability for Friant and water quality for MWD. Several Friant member districts have identified pilot projects which meet these objectives and these pilot projects are currently being investigated for future implementation. MWD's second Water Quality Exchange Partnership with the Kings River Water Association (Kings) is currently on hold pending King's decision on whether to proceed with additional Partnership activities.

Schedule: This project is scheduled to complete this milestone by the end of 2005.

Total Cost: \$20,000,000

Funding: Funded for planning studies and pilot projects (Prop 13).

Project Lead: MWDSC

CCWD Alternative Intake Project: Relocation of drinking water intakes for in-Delta water users is federally authorized for design and construction under P.L. 108-361. Actions are to be coordinated on a schedule consistent with the installation of permanent operable barriers.

Schedule: Planning and environmental compliance activities and documents are scheduled to be completed in 2006/7.

Total Cost: \$70,400,000

Funding: Currently funded by CCWD. Authorized for design and construction if consistent with P.L. 108-361.

Project Lead: CCWD, lead CEQA agency; USBR, lead NEPA agency

Nonpoint Source Grants: This includes projects to identify, develop, and implement management practices to reduce loads of drinking water pollutants of concern to the Delta and its tributaries. These projects are primarily funded through implementing agency grant solicitations. Efforts focus on the major types of nonpoint sources in the Delta watershed including irrigated agriculture, managed wetlands, livestock grazing, and urban runoff. Regional planning results will inform the appropriate level of effort in controlling Nonpoint sources.

Schedule: Ongoing

Total Cost: TBD, Regional Plans will inform the targeted investment in Nonpoint source water improvement.

Funding: Proposition 50 Chapters 4 and 5 (and potentially 8).

Project Lead: Grant recipients.

Regional ELPH Planning

Full – Scale Regional Planning – The highest priority for the Water Quality Program is the development of regional water quality plans. Pilot scale efforts will be evaluated for future direction of planning focus. Regional plans identify and inform the prioritization of water quality efforts needed to achieve its targets.

Schedule: Develop full scale plans for major regions by 2007.

Total Cost: An initial estimate is \$11.6 million to develop five regional plans.

Funding: Potential funding through Proposition 50 Chapters 5, 7 and 8

Project Lead: CBDA, Grant recipient (local and regional entities)

Treatment

UV Light and Multiple Disinfectants Project: This is a Bay Area Project– Bench-scale, pilot-scale and demonstration-scale testing of UV treatment and multiple disinfectants on Delta waters. A consortium of Bay Area water agencies led by Contra Costa Water District has initiated a program investigating combinations of advanced treatment technologies applied to Delta Water. The primary objective is to aid utilities using Delta water in developing compliance strategies through modification of existing facilities, and installation of new treatment processes. Phase I is focused on UV treatment and multiple disinfectants. Phase II will focus on membranes.

Schedule: Completion of Phase I in 2006. Completion of Phase II in 2008.

Total Cost: \$4,220,000

Funding: Phase I is funded by the USEPA (\$750,000), American Water Works Association Research Foundation, local agencies, contractor and academic institution contributions (\$760,000). Advanced treatment technology funding is available through Proposition 50, Chapter 6.

Project Lead: CCWD

Monitoring and Assessment

Delta Improvements Package Performance Evaluation and Monitoring Program: As part of the DIP, a Program will be developed and implemented to evaluate the water quality and biological resource effects of the activities in the DIP. As necessary, corrective actions will be identified, as well as implementation of projects to improve water quality.

Schedule: TBD (Similar to other DIP activities)

Total Cost: An early estimate is \$1,000,000 per year.

Funding: Unfunded.

Project Lead: Potentially DWR, DFG, USGS (through IEP), in coordination with CBDA

Performance Measures: See description of activities under the subsection “Performance Measures” in Section One of this program plan.

Schedule: Ongoing, strong coordination with the Central Valley Drinking Water Policy efforts.

Total Cost: \$300,000 per year for consultant assistance, plus current staffing levels (\$200,000 per year).

Funding: CV Drinking Water Policy is funded. WQP has staff resources only for this effort. No other funding is available.

Project Lead: CBDA

Coordinated Monitoring: “As part of the CALFED Science Program, develop a comprehensive monitoring and assessment program by the beginning of 2003” (ROD). The WQP focus has been on establishing comprehensive monitoring stations at key locations, and on supporting complementary monitoring efforts. 15 monitoring and assessment projects have been awarded for \$8 million, a number of these support the monitoring related to the Conditional Waiver of Agricultural Drainage. The WQP does not have the resources to develop a new “comprehensive monitoring and assessment program” so it is working with the Central Valley Drinking Water Policy to determine current data availability, and with implementing agency programs to determine where supplemental actions would help develop a comprehensive monitoring program. The CV Drinking Water Policy is also tasked to develop conceptual models, which the WQP could use to focus assessment efforts when resources become available.

Schedule: None, currently awaiting progress on other efforts.

Total Cost: TBD

Funding: None

Project Lead: CBDA, Implementing Agencies

Program Management

Final Program Assessment: “The BDPAC DWS will complete final assessment and submit final recommendations on progress toward meeting CALFED water quality targets and alternative treatment technologies by the end of 2007” (ROD).

Schedule: Begin scoping this effort by the end of 2006.

Total Cost: \$700,000

Funding: TBD (None currently identified)

Project Lead: CBDA

Water Management Science Board: In Year 5, CBDA established a Water Management Science Board to provide overarching review and coordination of program strategies, plans and specific issue of strategic importance for program elements that contribute to drinking water quality and water supply reliability. The Board intends to convene a number of standing panels including a panel on water quality, as well as issue-specific task forces such as one on the Delta Improvements Package.

Schedule: Ongoing.

Total Cost: The WQP share of WMSB support is \$100,000 per year, plus \$50,000 per year to support the Water Quality Subcommittee of the WMSB.

Funding: EPA funding is potentially available for WQP support of WMSB Subcommittee in Year 6. Years 7-9 TBD.

Project Lead: CBDA

Public Involvement and Outreach

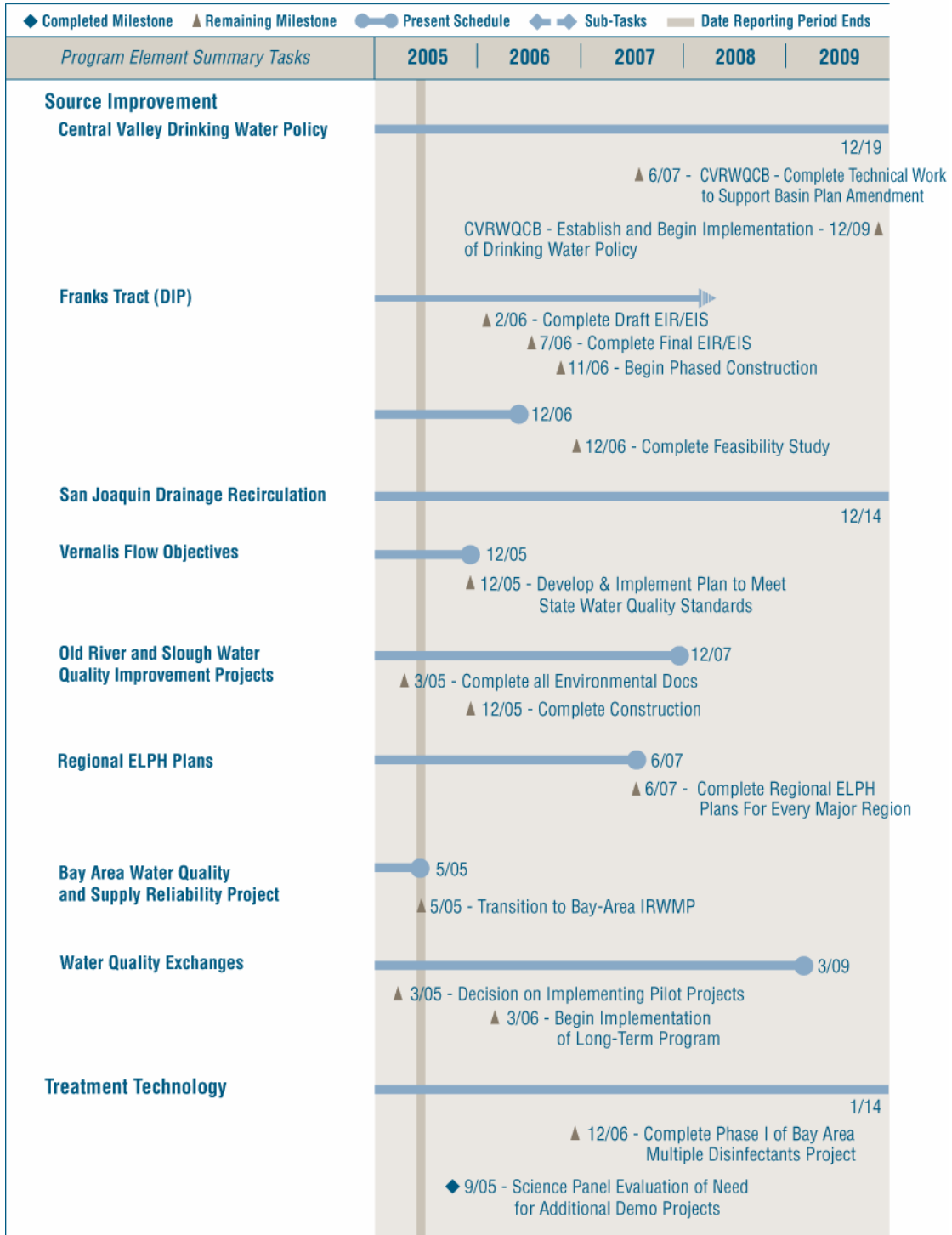
The major vehicle for public involvement and outreach for the WQP is through the Bay Delta Public Advisory Committee's Drinking Water Subcommittee. The mission of the Drinking Water Subcommittee is to review Water Quality Program implementation and provide comments to the Bay Delta Public Advisory Committee (BDPAC) on the implementation. One of the responsibilities of the BDPAC DWS is to exchange information between other BDPAC subcommittees and stakeholders. For example, this Program Plan was reviewed by the BDPAC DWS, who made a recommendation the BDPAC prior to the Plan's approval by the Bay-Delta Authority board. The Program Plan was also presented to the Water Supply and Ecosystem Restoration Subcommittees.

The WQP is working on using its recent program assessment to inform ways to improve its web site for better outreach, and for technology transfer – such as creating a treatment technology forum to facilitate sharing of treatment research among Delta water users and enhancing its project database to provide more information over the web and to enable the public to contact projects directly. The WQP is continually seeking ways to improve its outreach, including through requirements for public involvement in grant funded projects.

Some recommendations from the Program Assessment include providing grant recipients the opportunity to present their project results to the BDPAC DWS and/or broader audiences through regularly scheduled BDPAC DWS meetings or specially convened workshops.

Schedule

WATER QUALITY PROGRAM ACTIVITIES



Integrating Science, Environmental Justice and Tribal Relations

Science:

The following table identifies the science aspects of the Major Activities identified in this Plan.

Major Program Activities, Years 6-9	Adaptive Management				Peer Review	Use of Science Boards and Technical Experts	Cross-program coordination (which program)	Estimated funding for science portion of activity
	Addressing Uncertainties		Science Communication	Monitoring (including for Performance Measures)				
	Studies and Research	Analysis of existing data						
Central Valley Drinking Water Policy		X	X	X	X	X (ERP)	85%	
Performance Measures		X		X		X (All)	75%	
Franks Tract	X	X		X	X	X (Conveyance, ERP and Levees)	40%	
San Joaquin Drainage	X	X		X	X	X (Conveyance, ERP)	10%	
Control Runoff into Conveyances		X		X			20%	
NPS Grants	X	X		X			0-20%	
UV Light and Multiple Disinfectants Project	X		X				100%	
Coordinated Monitoring		X		X			75%	
Water Management Science Board			X			X (All)	100%	

Annotations:

Central Valley Drinking Water Policy: Existing monitoring data of drinking water constituents was collected in Year 5 and uploaded onto a CDEN database. This data, along with existing literature, will be used to develop conceptual models for identified priority constituents. These conceptual models will be reviewed by technical experts (not just drinking water focused, but also ecosystem focused), and by the Water Management Science Board. The project will then use the conceptual models to identify knowledge gaps and will fund short-term monitoring studies where indicated. The project will hold a workshop on the draft conceptual models to receive comment. The conceptual models, if robust

enough, may inform regulatory policy, if not they may result in further data collection through regulatory requirements.

Franks Tract: Studies and research of regional hydrodynamics and fish movement are proposed. An expansion of flow and water quality monitoring is ongoing. This expanded study will include eight monitoring stations in the central Delta in addition to the six stations currently located in the north Delta. Modeling will be performed to evaluate the water quality benefits, water stage, and channel velocity in the Delta. The modeling results will be used to evaluate the feasibility of Franks Tract alternatives and select a preferred alternative. The Franks Tract project is to be implemented in phases and every phase will be monitored for performance prior to implementing the next phase to determine accuracy of modeling predictions and assessments. There will be ongoing peer review of the study scope and approach

San Joaquin Drainage: Studies and Research regarding agricultural drainage and the San Joaquin River are occurring through Nonpoint source grants, through monitoring and assessment requirements of the CVRWQCB's Conditional Waiver of Agricultural Drainage program, through nutrient monitoring and assessments related to the Stockton Dissolved Oxygen issue, and through local agencies under increasing regulatory requirements to reduce drainage impacts. For example, Nonpoint source grants have supported the development of selenium treatment technologies for use on agricultural drainage. The historic hydrology of the San Joaquin River has recently been updated, and may benefit from peer review. The San Joaquin River Water Quality Management Group has developed a spreadsheet model to analyze drainage solutions and their effects downstream. These efforts are being coordinated with the Conveyance and Ecosystem Restoration Programs due to their ties to the Delta Improvements Package.

Control Runoff into Conveyances: A feasibility study of the California Aqueduct would analyze existing data regarding Nonpoint pollution sources and conveyance problems along the aqueduct and its branches. It might also need to perform additional data collection to resolve unknowns.

Nonpoint Source Grants: In the past, the WQP has spent a significant portion of Nonpoint source grant money on developing the science to identify best management practices (BMPs) to control drinking water constituents of concern. In the future, these grants will be more focused on implementation of BMPs and the monitoring and assessment of results.

UV Light and Multiple Disinfectants Project: This applied research is demonstrating the effectiveness of new treatment technologies on Delta waters. Demonstration results should be highly transferable to other Delta treatment plants. The WQP is planning to create a website forum for the communication and collection of treatment research and application to Delta waters, and may facilitate workshops if warranted.

Coordinated Monitoring, Delta Improvements Package Performance Evaluation and Monitoring Program: Monitoring and assessment are the truest aspects of science in the WQP. Much is needed to understand existing water quality, including research and studies, analysis of existing data, and potentially increased monitoring. Results from new sampling stations demonstrate the importance of averaging time periods and sampling frequency, as well as modeling time steps. There is a great need for better coordination among agencies collecting and assessing data, for communicating results, and for peer review of assessments.

Performance Measures: See text in the Goals and Objectives section.

Water Management Science Board: The WMSB was established to provide scientific oversight/peer review for water management-related programs. The WQP will utilize the WMSB to address program gaps, and to provide peer review.

Environmental Justice:

The WQP and BDPAC DWS are committed to working with the Environmental Justice Coordinator and Environmental Justice Subcommittee to determine and address environmental justice issues related to drinking water quality. Although the program does not have funding to direct to specific environmental justice tasks, its implementing agencies have set priorities to meet disadvantaged community needs and have either set funding targets for disadvantaged communities or waived matching fund requirements in the various Proposition 50 grants. The WQP is currently working with its implementing agencies to collate environmental justice statistics related to drinking water, which it will then share with environmental justice interests as a base for future discussions on formulating specific goals.

Tribal Relations:

Drinking water quality issues are important to many tribes, and tribes have unique difficulties in resolving their drinking water quality problems. WQP projects may affect, and thus need to be responsive to, tribal interests. Projects funded through the implementing agency grant programs are required to identify potential tribal issues and address them in their projects. The WQP participates in tribal workshops to help identify drinking water quality issues of concern to tribes. The WQP is also in the process of providing a database of its funded projects over its website, to help tribes identify projects in their vicinity. The WQP will continue to work with the CALFED Tribal Coordinator to determine the appropriate interface between the WQP and tribal communities.

Cross-Program Relationships

Implementation of the Water Quality Program is contingent upon coordination with other CALFED Program Elements. This coordination continues to occur at the working level as well as the management and oversight levels and may vary from project to project. Storage and Conveyance, Ecosystem and Watershed all have distinct roles in the overall scheme to improve drinking water in the Delta, and the WQP is committed to working with the programs and their projects to develop a transparent understanding of the drinking water quality strategy and its components.

Conveyance – The WQP will be working closely with the Conveyance Program, specifically through the coordinated work on Franks Tract, the Delta Cross Channel, and the Through-Delta Facility. The WQP will also coordinate with the Conveyance Program on general Delta Improvements Package Implementation and the assessment of balanced progress.

Ecosystem Restoration – ERP and WQP water quality problems are frequently associated with the same sources indicating the need for cooperative monitoring and source improvement strategies. The development of conceptual models under the Drinking Water Policy will continue to coordinate with the ERP to assure that those models consider both drinking water and fishery beneficial uses.

Watershed Management – The Watershed Program and WQP work cooperatively on grant funding processes and have overlapping program objectives. Building local capacity for watershed management activities provides the mechanism for identifying, guiding, and implementing drinking water quality improvement projects. The Watershed and Water Quality Programs, working with the SWRCB, have coordinated their grant funding processes.

Water Use Efficiency – An important element of the WUE program is promotion of good water measurement and management by agricultural users. Reducing agricultural water use reduces the loads of drinking water pollutants of concern in drainage, tail water, and runoff. Urban water use efficiency likewise contributes to improved drinking water quality by reducing demand, urban runoff, and wastewater loads, and creating potential opportunities for water quality blending and exchange programs. Water Use Efficiency is identified as an important element in the ELPH diagram.

Levee System Integrity – The Delta levee system provides important protection against salinity intrusion, therefore, the WQP recognizes the significant influence the progress and success that the LSIP will have on protecting the quality of Delta water supplies.

Storage and Conjunctive Use–WQP is coordinating with the Storage Program since storage projects can have positive or negative effects on Delta Water Quality. The construction of the major dams of both the State and federal water projects greatly reduced seasonal fluctuations in Delta salinity. Additional storage north of the Delta could be operated to provide water quality benefits. On the other hand, feasibility studies of the proposed In-Delta Storage project show that it could increase loadings of some pollutants. Integration with this program is critical to the success of the WQP.

Funding

Water Quality (\$ in millions)	Yr 6	Yr 7	Yr 8	Yr 9	Total
State	\$6.4	\$1.0	\$3.3	\$0.4	\$11.0
Federal					\$0.0
Local					\$0.0
Water User	\$0.3	\$0.3			\$0.6
Available Funding Total	\$6.7	\$1.3	\$3.3	\$0.4	\$11.7
Finance Plan Targets	\$28.7	\$29.6	\$31.7	\$26.4	\$116.4
Unmet Needs	\$22.0	\$28.4	\$28.4	\$26.0	\$104.7

Funding by Task

Water Quality (\$ in millions)	Yr 6	Yr 7	Yr 8	Yr 9	Total
Source Improvement	\$3.0	\$0.9	\$2.9 ⁴		\$6.8
Regional ELPH Planning	\$3.4 ⁵				\$3.4
Treatment Technology Demonstrations					\$0.0
Monitoring, and Assessment					\$0.0
Program Management	\$0.4	\$0.4	\$0.4	\$0.4	\$1.6
Available Funding Total	\$6.7	\$1.3	\$3.3	\$0.4	\$11.7
Finance Plan Targets	\$28.7	\$29.6	\$31.7	\$26.4	\$116.4
Unmet Needs	\$22.0	\$28.4	\$28.4	\$26.0	\$104.7

⁴ Proposition 13 funding for in-Delta agricultural drainage treatment.

⁵ Proposition 50 Chapter 5 funding.

Geographical Distribution of Activities

