A high-speed photograph of water splashing, creating a dense, textured spray of droplets and bubbles. The water is captured in mid-air, with a soft, ethereal glow. The background is a solid, light blue color.

# Volume 1

Chapter 5 – Implementation Plan



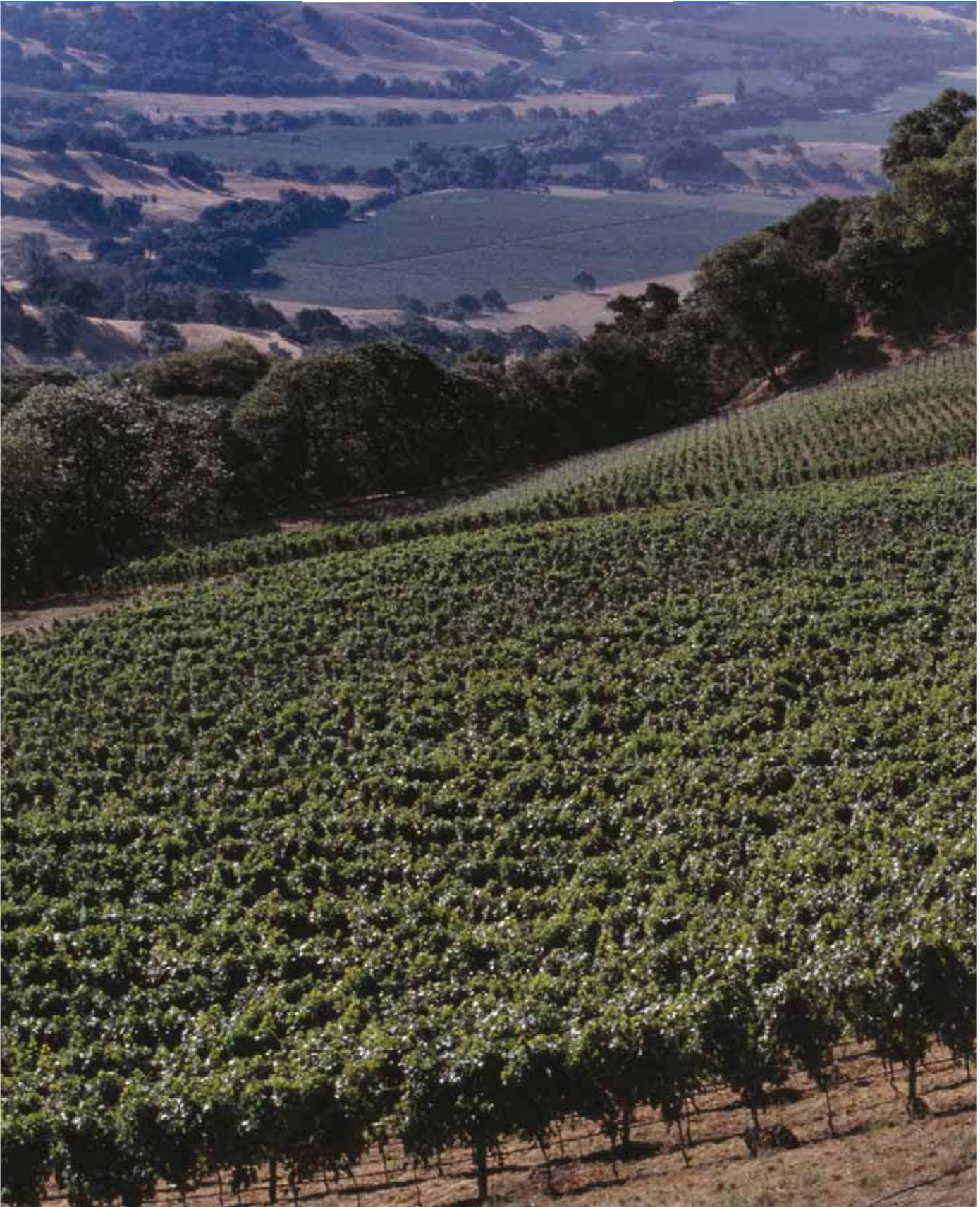
# Chapter 5 Implementation Plan

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Drip irrigation in California's vineyards is one example of how using water efficiently can help us get maximum utility from existing supplies.  
(DWR photo)

# Chapter 5 *Implementation Plan*

## About This Chapter

Chapter 5 Implementation Plan lays out the implementation plan for California Water Plan Update 2005. It presents 14 recommendations. Each is followed by related action plan, intended outcomes, resource assumptions, implementation challenges, and performance measures.

- Implementation Plan Organization
- Implementation Costs
- Recommendations 1 through 14

## Implementation Plan Organization

The implementation plan is organized around recommendations with related action plan, intended outcomes, resource assumptions, implementation challenges, and performance measures. (See Table 5-1 Elements of the implementation plan). The recommendations are directed at California (decision-makers throughout the state), State government (executive and legislative branches), DWR and other State agencies to lead our actions over the next 25 years. Additional details for actions assigned to the Department of Water Resources are presented in DWR's Strategic Business Plan (2005).

In each action plan, near-term high-priority actions, included in the Framework for Action (Chapter 2), are preceded by an hourglass symbol ( ⌚ ) to indicate that they should be completed before the next update.

Evaluating the performance of some actions plans requires a tracking system that will show whether and how well statewide and regional water management objectives are met. Table 5-2 (Evaluation categories for achieving water management objectives) lists categories developed for this purpose (see Chapter 4 for details). This table is cited in the performance measure section of applicable actions plans.

**Implementation challenges specific to each of the 25 resource management strategies and recommendations on reducing or removing their challenges are presented in Volume 2 Resource Management Strategies and are not repeated in this chapter.**

## Implementation Costs

Carrying out the recommendations of *California Water Plan Update 2005* will require significant action and investment by all Californians. Local implementation of the 25 resource management strategies (see Volume 2 Resource Management Strategies) and performing the essential support activities (in Chapter 2 A Framework for Action), which include CALFED Bay-Delta Program actions, will require billions of dollars over the next 25 years (see Table 1-1 in Volume 2 Chapter 1). The support activities are essential to integrating the resource management strategies and reducing uncertainty and risk. These activities are statewide and integrated regional water planning and management, data and analytical tools improvements, research and development, and science programs. Many of the management strategies would be applied incrementally and adaptively to meet changing regional conditions and goals. However, other strategies and all of the essential support activities need significant upfront and ongoing funding.

**Table 5-1 Elements of the implementation plan**

Element	Description
<b>Action plan</b>	Describes key activities to carry out each recommendation and the entities best positioned to play a key role. Action plans break recommendations into manageable parts including assignments, resource assumptions, implementation challenges, and performance measures for tracking progress.
<b>Intended outcome</b>	Describes the desired end result and may indicate an estimated and/or recommended timeframe for implementation.
<b>Resource assumption</b>	Estimates resources, including human and/or financial resources, required to accomplish the action plan.
<b>Implementation challenge</b>	Identifies factors that may restrict, limit, or regulate the action plan such as scope, funding, skill levels, policy, technology, dependency.
<b>Performance measure</b>	Method to ensure accountability by measuring work performed and results achieved. This describes what is to be measured and the methods of measurement. Measures may be short term, intermediate, and/or long term. In contrast, evaluation criteria represent the technical information used to help policy-makers, water managers, and the public compare how well scenarios and resource management strategies meet desired water management objectives. The criteria listed in Table 5-2 (Evaluation categories for achieving water management objectives) includes parameters like the cost of implementing different resource strategies, environmental benefits, water reliability, and water quality improvements (see Chapter 3 for details).

Since 1995 voters have demonstrated their support for managing our water resources by approving several bond measures, which total an average of \$1 billion annually. These bonds, combined with local funding, have led to significant progress in new water conservation, ground-water storage, water recycling, and ecosystem restoration. Implementation of the CALFED Bay Delta Program was a major driver for these bonds, and the program will continue to be vital for improving water management in California.

Strategies, options, and guidelines for public investments and State financial assistance included in the implementation plan are described in Volume 4 Reference Guide article “Financing Strategies and Guidelines for Funding Water Resource Projects.”

**Table 5-2 Evaluation categories for assessing achievement of water management objectives**

<b>Water management objective</b>	<b>Evaluation category</b>	<b>Information source</b>
<b>Increase water supply, reallocate supplies or manage demand (all use sectors)</b>	Urban, agricultural, and environmental reliability	Water portfolio / flow diagram; water management/system analysis; inventory of new projects
<b>Improve drought preparedness</b>	Urban, agricultural, and environmental reliability	Water management/system analysis
<b>Improve operational flexibility</b>	Urban, agricultural, and environmental reliability	Data monitoring/compilation and system analysis
<b>Improve water quality (all use sectors)</b>	Risks to human/ecosystem health and agricultural production	Water management/system analysis
<b>Reduce groundwater overdraft</b>	Salinity intrusion Subsidence Groundwater levels (long term)	Data monitoring/compilation and system analysis
<b>Reduce flood impacts</b>	Flood risk	Economic analysis and system analysis
<b>Environmental benefits</b>	Fisheries (populations and habitat) Native habitat/vegetation Wildlife (populations and habitat)	Data monitoring/compilation, biological opinion, and system analysis
<b>Energy benefits</b>	Energy availability	Data monitoring/compilation and system analysis
<b>Recreational opportunities</b>	Quantity, quality and variety of water-based recreation	Data monitoring/compilation and system analysis
<b>Other considerations</b>	Catastrophic vulnerability	Economic analysis and system analysis
	Third party impacts	Economic analysis and system analysis
	Economic/financial	Economic analysis and system analysis
	Public Trust and environmental justice	Participation in planning; assistance to low-income and disadvantaged communities

## Recommendation 1 – Diversify Regional Water Portfolios

California must invest in reliable, high quality, sustainable, and affordable water conservation, efficient water management, and development of water supplies to protect public health, and improve California’s economy, environment, and standard of living.

To provide for the future, California must rely on a diverse set of water management strategies to (1) use and manage its existing water supplies efficiently; (2) implement new technologies to further water conservation and recycling, augment supplies, and improve water quality; (3) increase water storage and improve conveyance to gain flexibility and complement the benefits of other water management tools; (4) reduce and eliminate groundwater overdraft; and (5) improve watershed management, restore ecosystems and promote stewardship of resources. To realize the full potential outlined in this water plan update, California needs significant and continuous investments for integrated regional water management, more public and private partnerships, project implementation, and better data and analytical tools.

### Action Plan

- Regions invest in water conservation, efficient water management, and development of reliable, high quality, sustainable and affordable water supplies. The State should provide public funding for implementing local strategies that have broad public benefits.
- Local and regional planners diversify and increase the resource management strategies in their integrated regional water management plans.
- DWR will use its technical and financial assistance programs (including Proposition 50 funded programs) to effectively and equitably support planning and implementation of local and regional water use efficiency, water recycling, groundwater storage and management, ecosystem restoration, urban streams, flood management, and related planning efforts.
- DWR will continue to promote implementation of recommendations from California’s Groundwater Update 2003 (DWR Bulletin 118-03) to improve groundwater management and work with local agencies to develop guidelines to reduce overdraft.
- DWR will work with local agencies and private utilities to overcome constraints to implement recycling and desalination projects.

### Intended Outcomes

- Protect public health, and maintain and improve California’s economy, environment and standard of living.

- Disbursement of Proposition 50 funding for implementation of integrated regional water management plans and other efforts to improve statewide water management objectives.
- Guidelines for reduction of groundwater overdraft in 2005.
- Reduce and eliminate groundwater overdrafts.

### Resource Assumptions

- Many tasks in this recommendation can be accomplished with existing resources over time and through implementation of Proposition 50. Additional and ongoing funding and local assistance are required for implementing integrated regional water management plans after Proposition 50 has been fully implemented.
- Full and timely implementation of CALFED Bay-Delta Program elements and related local assistance programs will require new funding and resources or significant redirection of existing resources.

### Implementation Challenges

- Developing institutional relationships with other agencies necessary for integrating information between different planning efforts.
- Uncertainty in continuity of federal, State, and local funding.
- Difficulty in achieving consensus among different stake holders about implementation actions and priorities.

### Performance Measures

- Annual funding dedicated for CALFED Bay-Delta Program, local technical and financial assistance, data and analytical tools development, feasibility and implementation of resource management strategies, groundwater management plans, urban water management plans, and regional water plans.
- Measured improvements in statewide water management objectives using criteria in Table 5-2 (Evaluation categories for achieving water management objectives).
- Progress in achieving implementation of intended outcomes.

## Recommendation 2 – Promote and Practice Integrated Regional Water Management

State government must provide incentives and assist regional and local agencies and governments and private utilities to prepare integrated resource and drought contingency plans on a watershed basis; to diversify their regional resource management strategies; and to empower them to implement their plans.

State government recognizes the critical role regional efforts must play in California water planning and management, the need for integrated resources planning across jurisdictional boundaries as regionally-based efforts, and the need for more closely coordinated water planning with land use planning and urban development. State government should assist cities, counties, local water agencies and private utilities to prepare urban and agricultural water management plans, watershed and groundwater management plans, a Water Element for local General Plans, and to implement existing legislation and State policies to improve coordination between water and land use planning.

### Action Plan

- ⌚ Regional efforts should incorporate integrated resource planning to meet multiple water management objectives consistent with the principles advanced in this water plan.
- ⌚ The degree and nature of the need for more groundwater and surface water storage varies from region to region; therefore, DWR will work with regional entities to evaluate the best ways to meet their groundwater and surface storage needs and the possible means of sharing storage capacity among regions.
- ⌚ Local governments and agencies should improve coordination between land use planning and water planning and management to ensure that new infrastructure has adequate water supply and that land uses are protective of water quality.
- ⌚ State government should give preference to applicants of Proposition 50, Chapter 8<sup>1</sup> grants who have plans that apply DWR and State Water Resource Control Board (SWRCB) grant program guidelines<sup>2</sup>.
- ⌚ DWR will adapt its expertise, resources, and existing programs and develop new ones to give incentives and technical assistance to regional and local agencies and governments to prepare comprehensive, integrated water management plans that include actions to protect public trust resources and promote efficient, beneficial water use.
- ⌚ DWR will develop guidelines for technical and financial assistance and templates for integrated regional water

management plans, urban and agricultural water management plans, and drought contingency plans.

- DWR will continue to provide technical, administrative, and financial assistance to implement actions under the California Urban Water Conservation Council, “Memorandum of Understanding Regarding Urban Water Conservation in California” and the Agricultural Water Management Council, “Memorandum of Understanding” to improve water use efficiency in California.
- The Resources Agency should continue to support development and use of statewide natural resource databases, analytical tools, and evaluation criteria to identify priorities for ecosystem restoration and provide information to planners and decision-makers.
- DWR will develop the necessary tools to assist local and regional agencies be successful with the integrated regional water management and planning and will monitor the development and implementation of these plans to ensure an equitable distribution of technical and financial assistance in planning efforts. Data from these plans can be integrated into future California water plan updates

### Intended Outcomes

- Disbursement of Proposition 50 funding for development of regional water plans and related activities including data collection and public outreach.
- Guidelines for effective integrated regional water management in 2005.
- Guidelines and template for urban and agricultural water management plans in early 2005.
- Status report on groundwater basins management in 2006.
- Recommendations for groundwater management plans and model ordinance in 2006.
- Implement a Critical Water Shortage Reduction Purchase Program along with the required updates for Urban Water Management Plans in 2005.
- Coordinated development of a comprehensive ecosystem restoration plan for the entire state by region.

<sup>1</sup> Proposition 50: Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, Chapter 8 “Integrated Regional Water Management.”

<sup>2</sup> DWR and SWRCB. 2004. Integrated Regional Water Management Grant Program Guidelines: Proposition 50, Chapter 8.

[www.grantsloans.water.ca.gov/grants/integregio.cfm](http://www.grantsloans.water.ca.gov/grants/integregio.cfm)

- Communication plan to inform local and regional agencies of DWR's programs, available databases, and data collection and analysis by 2006.

### Resource Assumptions

- DWR will implement the recommendation to the extent possible with existing resources, including disbursement of financial assistance funded by Proposition 50. Expansion or continuation of the program beyond that funded by Proposition 50 would require additional funding or a redirection of resources from other programs.
- It is anticipated that the full implementation of the recommendation would require many positions and annual funding within DWR. Funding and positions also would be required for other State agencies with watershed or water resource related local assistance programs.

### Implementation Challenges

- DWR staff developing necessary relationships with local entities and identifying roles needed to initiate and develop integrated regional water management plans that are consistent with statewide water management objectives.
- Uncertainty in continuity of State and local funding to maintain participation.
- Maintaining interest over 3 to 5 years needed to build consensus and develop initial integrated regional water management plans for all regions of California.
- Ensuring that all areas of the state are equally served by regional planning efforts and funding.

### Performance Measures

- Annual funding dedicated for the CALFED Bay-Delta Program, local technical and financial assistance, small and disadvantaged communities, data and analytical tools development, feasibility and implementation of resource management strategies, groundwater management plans, urban water management plans, and regional water plans.
- Number, distribution, and quality, including identification of disproportionate community impacts, of groundwater management plans, urban water management plans, drought contingency plans, and integrated regional water management plans.
- Progress in meeting actions under the California Urban Water Conservation Council, "Memorandum of Understanding Regarding Urban Water Conservation in California" and the Agricultural Water Management Council, "Memorandum of Understanding" to improve water use efficiency in California.

- Measured improvements in statewide water management objectives using criteria in Table 5-2 (Evaluation categories for achieving water management objectives).
- Implementation of projects identified in the plans.

### Recommendation 3 – Remediate Surface Water and Groundwater Contaminants

State government must lead an effort with local agencies and governments to remediate the causes and effects of contaminants on surface water and groundwater quality.

The evaluation should inventory, evaluate, and examine the effect of contaminants on public health, long-term sustainability of water resources and treatment costs, and should identify cost-effective ways and propose management strategies to improve water quality. To safeguard water quality for all beneficial uses, State government should also adopt preventive programs that integrate source water protection, pollution prevention, matching water quality to use, and water treatment and distribution.

#### Action Plan

- ⌚ DWR will help resolve long-standing water quality issues in the state, such as Delta salinity, dissolved oxygen in San Joaquin River (SJR) near Stockton, salinity at Vernalis, and ecosystem restoration flow needs, extending from the Klamath River in the north to Salton Sea in the south.
- DWR will work with the Department of Health Services, State Water Resources Control Board, Regional Water Quality Control Boards, and other State, federal, and local agencies to develop a coordinated process to monitor, evaluate, prevent, mitigate, and treat the effects of contaminants on surface water and groundwater quality. DWR could participate by sharing data, coordinating data collection efforts, identifying problem watersheds and aquifers, and conducting analysis of surface water and groundwater flow and transport of contaminants.
- SWP will complete feasibility studies and recommendations for re-operation of the Delta Cross Channel and the Through-Delta Facility in 2005 and feasibility studies for Franks Tract Improvements in 2006.

#### Intended Outcomes

- Joint agency inventory and response plan for dealing with causes and effects of contaminants.

#### Resource Assumptions

- Completing the work plan to implement the recommendation and a portion of the actual work could be accomplished with existing resources.
- Full implementation of the recommendation could require significant resources depending on DWR's role.

#### Implementation Challenges

- Difficulty in defining the scope of work and working with the myriad of entities responsible for water quality problems.
- Coordinating a program for identification and monitoring of contaminated sources

#### Performance Measures

- Level of implementation of water quality management strategies proposed in the joint agency plan.
- Meeting statewide, regional, and local water quality objectives.
- Number of water bodies removed from the list of impaired water bodies.

## Recommendation 4 – Improve Aging Water Infrastructure

California must maintain, rehabilitate and improve its aging water infrastructure, especially drinking water and sewage treatment facilities, operated by State, federal, and local entities.

State government should lead an effort, with input from public and private owners of water infrastructure, to identify and prioritize water infrastructure maintenance of key components with regional or statewide significance. Improvements may include refinements in the way water systems are operated, additional conveyance capacity, and new water storage. This effort should also identify and implement financing strategies for continued public investments in the resulting infrastructure maintenance plan.

### Action Plan

- DWR will develop and carry out a comprehensive flood management plan. DWR has prepared a White Paper that addresses the need for an aggressive investment in the State's flood management system (DWR 2005).
- State leads an effort with federal, State, regional, and local entities to inventory the current extent of unmet infrastructure and maintenance work, estimate the potential costs, and develop a strategy for funding the needed work, such as loans and grant programs.
- Develop a plan to replace and/or rehabilitate those portions of the SWP that are reaching the end of their design life in 2006.
- State works with regional water planning efforts to identify physical and operational constraints in statewide water management systems, and to find ways to improve operational efficiencies and supply reliability.
- To continue operating and maintaining the SWP, DWR will:
  - Establish and maintain a risk-based management process that integrates SWP operations, energy, and maintenance. This program addresses the 16 strategic initiatives identified in the Future Operations Migration Strategy to be completed by 2009.
  - Improve fiscal information reporting for the State Water Project in 2005.
  - Obtain a new FERC License for Oroville Facilities by January 31, 2007.

### Intended Outcomes

- Prioritized list of unmet infrastructure and maintenance work, potential costs, and strategy for funding the work in cooperation with federal, State, regional, and local entities.
- Evaluation of SWP pumping and power plant units for potential refurbishment work in 2006.

- Plan for evaluation and repair of the Santa Ana Pipeline and other pipelines, as necessary, in 2006.
- For SWP operations:
  - Power portfolio and risk policy and procedures in 2005.
  - Suite of timely, useful, and accurate operational reports for effective SWP management in 2006.
  - Suite of timely, useful and accurate financial reports specific to SWP needs in 2006.
  - Filed application with FERC to renew the Oroville Facilities FERC license (Project 2100) on or before Jan. 31, 2005 & completed documentation for issuance of the new license by Jan. 2007.

### Resource Assumptions

- An inventory of the SWP's unmet infrastructure and maintenance work, potential costs, and strategy for funding the work could be accomplished with existing resources.
- Additional resources would be needed or redirected from other programs for DWR to serve as the major coordinator of this recommendation.

### Implementation Challenges

- Resistance to implementing new water user fees or general taxes to fund the work.
- Making infrastructure rehabilitation projects cost-effective.
- Improvements to infrastructure should consider and implement measures that reduce impacts.

### Performance Measures

- Level and continuity of funding and funding sources for infrastructure improvement projects.
- Number of completed improvements identified in inventory of the current unmet infrastructure and maintenance work, potential costs, and strategy for funding the work in cooperation with federal, State, regional, and local entities that are completed.
- Measured improvements in statewide water management objectives using criteria in Table 5-2 (Evaluation criteria for achieving water management objectives).

## Recommendation 5 – Implement the CALFED Program

State government must continue to provide leadership for the CALFED Bay-Delta Program to ensure continued and balanced progress on greater water supply reliability, water quality, ecosystem restoration, and levee system integrity.

The CALFED Bay-Delta Program<sup>3</sup> needs greater federal commitment, agency involvement, spending authorization, and funding to ensure continued and balanced implementation. State government should cooperate with the federal government to review and revise the implementation plan for the CALFED Bay-Delta Program to reflect the current fiscal climate, and accordingly adjust the focus, scope, expectations, work plan, and budget for all elements of the Bay-Delta Program to achieve balanced and effective implementation.

### Action Plan

- ⌚ CBDA works with CALFED agencies to develop a comprehensive list of tasks being conducted under the CALFED Bay-Delta Program, to prioritize the tasks in cooperation with the CBDA public advisory committee, to develop a schedule for completing the tasks, and to estimate funding necessary to continue work.
- ⌚ DWR, in cooperation with the California Bay-Delta Authority (CBDA) and CALFED implementing agencies, will implement actions in the CALFED Record of Decision, namely the Delta Improvements Package and other CALFED programs, including the Ecosystem Restoration, Water Quality, Levees, and Water Use Efficiency programs, its Science Program and the Interagency Ecological Program.
- ⌚ DWR and the U.S. Army Corps of Engineers, in conjunction with the California Department of Fish and Game, will prepare the Delta Risk Management Strategy to evaluate the probability of Delta levee failures in the next 50 years, estimate the impacts and economic consequences from levee failures, propose actions to reduce the probability of levee failures and their consequences, and develop a strategic action plan with alternative strategies to reduce risk for the Delta.
- ⌚ DWR, in cooperation with the regional partners, will complete feasibility studies of additional surface storage in the CALFED Record of Decision. California should pursue projects that have regional support and viable financing plans.
- ⌚ DWR, in cooperation with the CBDA and other State and federal agencies, will continue to evaluate and, if feasible, implement a long-term Environmental Water Account.

- DWR, in cooperation with the CBDA and other state and federal agencies, should implement the Delta Smelt Action Plan recommendations.
- DWR works with the CBDA, CALFED agencies, the Governor, and the Legislature to develop acceptable mechanisms for funding the work.
- DWR promotes communication, cooperation, and collaboration among State and federal agencies involved in the CALFED Bay-Delta Program.

### Intended Outcomes

- Inventory of tasks being conducted under the CALFED Bay-Delta Program and a schedule and budget for completing the tasks.
- Developing the Delta Risk Management Strategy.
- Improve environmental and water quality conditions in the Delta.
- A long-term Environmental Water Account.
- Pursuing implementation of CALFED storage projects that have regional support and viable finance plan.
- Long-term finance plan with funding solutions for implementation of the different program elements of the CALFED Bay-Delta Program.

### Resource Assumptions

- Existing resources can complete the inventory of tasks being conducted under the CALFED Bay-Delta Program and a work plan for completing the tasks.
- Additional resources or a redirection of existing resources will be required to complete the feasibility studies associated with the CALFED Bay-Delta Program. Significant additional resources will be required to fully implement the CALFED Bay-Delta Program Record of Decision.
- Additional resources will be required for the development of the Delta Risk Management Strategy.

### Implementation Challenges

- Resistance to implementing new water user fees or general taxes to fund the work.
- Difficulty in defining beneficiaries that could help fund the work.

<sup>3</sup> For information about CALFED program, visit the CALFED Web site: [www.calwater.ca.gov](http://www.calwater.ca.gov)

## Performance Measures

- Level, sources, and continuity of annual funding dedicated for CALFED Bay-Delta Program.
- Progress in completing the actions in the CALFED Bay-Delta Program Record of Decision.
- Measured improvements in statewide water management objectives using criteria in Table 5-2 (Evaluation criteria for achieving water management objectives).

## Recommendation 6 – Provide Effective State Government Leadership, Assistance, and Oversight

State government must lead water planning and management activities that: (a) regions cannot accomplish on their own, (b) the State can do more efficiently, (c) involve interregional, interstate, or international issues, or (d) have broad public benefits.

These activities include, but are not limited to: (1) preparing California Water Plan updates as a public forum to integrate State, federal, regional, and local plans to meet the state's future agricultural, urban, and environmental water demands and water management objectives; (2) operating and maintaining the State Water Project; (3) providing regulatory oversight to protect public health and safety and public trust values, including water quality, environmental protection, flood management, and dam safety; (4) participating in major regional initiatives, such as the CALFED Bay-Delta Program, and (5) forming public-private partnerships to implement regional programs like the Colorado River Quantification Settlement Agreement. Other State activities are included in the recommendations that follow.

### Action Plan

- ⌚ State government should continue to provide a leadership role in the protection of public health and safety, especially with regard to drinking water quality, dam safety, and flood management.
- ⌚ State government should provide technical assistance for efforts involving interregional, interstate, and international issues or for efforts creating broad public benefits and for at-risk low-income communities with drinking water and other infrastructure challenges.
- ⌚ DWR will develop and administer a Dry Year Water Transfer Program when needed to meet critical water needs during shortages while protecting regions with available supplies.
- ⌚ DWR and State agencies should advance water planning and management that restore and protect watersheds and assess instream flow demands needed to protect and restore aquatic ecosystems.
- ⌚ DWR will complete the next phases of this water plan update, use the water plan update process as a forum to identify and resolve conflicts between regional plans, and integrate the water plan into a future State strategic planning process.
- State government will provide timely regulatory approvals and prevent conflicting rules or guidelines.

- DWR will use a collaborative process to work with local, regional, State, and federal agencies and stakeholders to conduct regular updates of key reports on California's water resources including the California Water Plan (Bulletin 160), California's Groundwater (Bulletin 118), California Water Atlas, and California's Water Resources (Bulletin No. 1).
- DWR will continue to expand its public education programs to raise public awareness of California's water system, supplies and uses and various water management strategies.

### Intended Outcomes

- Improve statewide and local water supply reliability and water quality.
- Establish a Dry Year Water Transfer Program.
- Successful resolution of interregional, interstate and international water negotiations.
- Updates of *California Water Plan* (Bulletin 160), *California's Groundwater* (Bulletin 118), *California Water Atlas*, and *California's Water Resources* (Bulletin No. 1).
- Develop a statewide database of instream flow demands that can be used by regional and State planning efforts to identify and prioritize ecosystem restoration projects for integrated water management plans.

### Resource Assumptions

- Many tasks in this recommendation can be accomplished with existing resources.
- Future updates of the *California Water Plan* (Bulletin 160) will require annual funding to include professional facilitation, outreach to the public, and better coordination with local, State and federal water and resource agencies. Additional resources needed for analytical tools and data are included under Recommendation 11.
- Future updates of *California's Groundwater* (Bulletin 118), *California Water Atlas* (OPR and DWR 1979), and *California's Water Resources* (Bulletin No. 1) cannot be accomplished with existing resources unless resources are redirected from other programs.

## Implementation Challenges

- Developing the institutional relationships with other agencies necessary for integrating information between different planning efforts.
- Uncertainty in continuity of State and local funding to maintain participation.

## Performance Measures

- Measured improvements in statewide water management objectives using criteria in Table 5-2 (Evaluation categories for achieving water management objectives).
- Operational efficiency and effectiveness of the State Water Project.
- Annual funding dedicated for CALFED Bay-Delta Program and updates for California Water Plan (Bulletin 160), California's Groundwater (Bulletin 118), California Water Atlas (OPR and DWR 1979), and California's Water Resources (Bulletin No. 1).
- Frequency and quality of updates of *California Water Plan* (Bulletin 160), California's Groundwater (Bulletin 118), California Water Atlas, and California's Water Resources (Bulletin No. 1).
- Number and implementation of interregional, interstate, and international water agreements.

## Recommendation 7 – Clarify State, Federal, and Local Role and Responsibilities

California must define and articulate the respective roles, authorities, and responsibilities of State, federal, and local agencies and governments responsible for water.

In light of the growing role of local agencies and governments in regional water planning and management, State government should redefine how to empower and assist them to implement their regional water plans and programs. State government also needs an internal review of how State resource agencies do business and identify ways to make these agencies more efficient, effective, and responsive to Californians. Establishing an interagency water forum would strengthen coordination among State agencies responsible for water, water quality, and for ocean water desalination and would ensure that State agency strategic plans and activities are consistent with the Governor's and State water policies.

### Action Plan

- ⌚ State government should lead an effort to examine where the mandates and jurisdictions of State, federal, and local governments and agencies conflict with or complement each other to streamline and coordinate the roles and jurisdictions governing California water management.
- ⌚ State agencies must integrate their expertise and resources to support integrated regional water management.
- DWR will work with the Governor and Legislature to improve DWR's mission, functions and organization in relation to other State and local agencies and governments with water management responsibilities.

### Intended Outcomes

- State develops a proposal to redefine the respective roles, authorities, and responsibilities of State agencies and local agencies and governments responsible for water.
- DWR responds more effectively and efficiently to today's water problems and supports integrated regional water resource planning and management.
- Development and implementation of a framework through which local, State, and federal water agencies and governments can coordinate their activities and work plans.

### Resource Assumptions

- Additional resources or a redirection of existing resources will be required to conduct a thorough review of DWR's mission and organization and to participate in a larger review of all State water management agencies

### Implementation Challenges

- Getting the needed direction and resources from the Governor and Legislature to undertake a comprehensive review of existing programs and evaluate alternatives.
- Difficulty in maintaining staff morale during any significant reorganization.

### Performance Measures

- Progress in implementing changes to DWR's mission and organization to respond to today's water problems.
- Level of consistency among the strategic and capital improvement plans of State water agencies.
- Level of participation of local, State, and federal water agencies and governments in the effort to redefine the respective roles, authorities, and responsibilities of State agencies and local agencies and governments responsible for water.

## Recommendation 8 – Develop Funding Strategies and Clarify Role of Public Investments

California must develop broad, realistic, and stable funding strategies that define the role of public investments for water and other water-related resource needs over the next quarter century.

State government needs to lead an effort to identify and prioritize funding strategies to finance regional and state-wide water planning, programs, and infrastructure. State government needs to clearly articulate when, and for what actions, to use public investments from State and federal sources. California's water finance plan must also recognize the critical role of local public and private funding based on the principle of beneficiary pays and the need for user fees.

### Action Plan

- ⌚ State government should use a benefit-based approach to develop long-term, reliable funding sources for water projects in a way that accurately characterizes benefits, uses public funds responsibly, and follows the principles of equity and environmental justice.
- ⌚ State leads an effort to develop broad and realistic funding strategies that define the role of public investments for water and other water-related resource needs over the next quarter century.
- ⌚ State agencies work with the Governor and the Legislature to develop policy and a work plan for implementing the finance plan of the CBDA, recommendations of the Commission on Building for the 21st Century and other efforts for financing water management and related activities, and develop policy regarding investment of public funds in private water utilities.
- State government help implement regional programs by developing funding processes that are clear, consistent, and streamline.
- State agencies ensure consistency and coordination with the Capital Budget Planning Process, a five-year strategic planning process for capital budget planning across State agencies pursuant to AB 1473 and the three planning priorities in AB 857 (Stats. 2002; ch. 1016).

### Intended Outcomes

- Greater linkage of State investments in water infrastructure and projects with the mandated capital budget planning process to ensure greater consistency in State policies used as the basis for investment decisions across State agencies.
- Implement the finance plan of the CBDA and the recommendations of the Commission on Building for the 21st Century.
- State's water finance plan with funding strategies and criteria.

### Resource Assumptions

- Developing the work plan can be accomplished with existing resources.
- Implementing the work plan will likely require additional resources or the redirection of existing resources.

### Implementation Challenges

- Resistance to funding methods like new water user fees or general taxes to fund the work.
- Difficulty in defining and allocating benefits and costs among diverse sets of water users.

### Performance Measures

- Level of implementation of the finance plan of the CBDA.
- Level of implementation of the recommendations of the Commission on Building for the 21st Century.
- Level and continuity of funding and variety of local, State, and federal funding sources for water management activities.

## Recommendation 9 – Invest in New Water Technology

State government must invest in research and development to help local agencies and governments implement promising water technologies more cost effectively.

State government should work with California research and academic institutions, like the California Academy of Science, California Council on Science and Technology, the University of California, and other universities and colleges, to identify and prioritize applied research projects leading to the commercialization of new water technologies and better scientific understanding of California’s water-related systems.

### Performance Measures

- Number of initiated research and development projects.
- Application of results of research and development studies in integrated regional water management plans.

### Action Plan

- ⌚ DWR will work with California research and academic institutions to identify and prioritize applied research projects. State government should also encourage pilot projects and focused research incorporating knowledge and experience specific to each region.
- ⌚ DWR will work with other State agencies and in coordination with the Interagency Ecological Program and CALFED Science Program to invest in a broad and diverse scientific agenda that will fill the gaps of knowledge about California’s water resources.
- ⌚ DWR will work with State agencies to help in the collection of data and analysis of instream flows.

### Intended Outcomes

- Initiate and support research and development studies on promising water technologies.
- Enhanced Science Program modeled upon and, integrated with, the existing Science Program of the CBDA.

### Resource Assumptions

- For ongoing research and development, the State would need to invest annually to commercialize promising water technologies.
- Consistent with CALFED Bay-Delta Program goals for science funding, investments in water science should be established within a range of 3 percent to 5 percent of total public funds (cost share) expended to help implement local and regional resource management strategies.

### Implementation Challenges

- Uncertainty in continuity of State and local funding to maintain participation.
- Participation and cooperation of local, State, and federal agencies on science and research efforts.

## Recommendation 10 – Adapt for Global Climate Change Impacts

State government must help predict and prepare for the effects of global climate change on our water resources and water management systems.

State government should work with and assist researchers to monitor, predict and prepare for the effects of global climate change on California's water systems and the environment. DWR should develop alternative flow data to help State, federal, and regional planners test the potential effects of global climate change on different resource management strategies; and to help water facility operators test alternative reoperation strategies, including the State Water Project.

### Action Plan

 DWR will work with other State agencies to develop biannual reports on the impacts of global climate change, including impacts to water supply and will prepare and report on mitigation and adaptation plans in accordance with Executive Order S-3-05 signed by the Governor of California June 1, 2005.

 DWR will work with other State agencies to develop and help implement strategies to reduce greenhouse gas emissions in the State in accordance with the goals established by Executive Order S-03-05. DWR will provide expertise to help identify means of energy savings for the storage, conveyance, distribution, and use of water. DWR will describe the energy use characteristics of various resource management strategies in the next California Water Plan.

 DWR will evaluate management responses to potential impacts of global climate change on the State Water Project and California's hydrology.

- DWR will work with climate change experts to develop alternative flow data to help State and regional planners test potential effects of global climate change on different management strategies.
- DWR will seek funding to establish a position to participate with ongoing global climate change studies and manage staff work related to global climate change research. Alternatively, existing resources may be redirected from other programs to establish the position.

### Intended Outcomes

- Developing plans to mitigate and adapt to the impacts of global climate change, especially on California water supply and agriculture.

- Developing plans to help reduce the emission of green house gases related to the storage, conveyance, distribution and use of water.
- Establishing a position to coordinate DWR's participation in global climate change studies.
- Beginning implementation of the plan responding to the impact of global climate change on the management of the State Water Project.
- Alternative flow data characterizing potential climate change impacts.

### Resource Assumptions

- Establishing positions to coordinate DWR's participation in global climate change studies would require additional resources or redirection of existing staff and annual funding to improve data and analytical tools to more accurately predict impacts of global climate change.
- Evaluating impacts of global climate change on the management of the State Water Project can be done with existing resources.

### Implementation Challenges

- Uncertainty in continuity of State and local funding to maintain participation.
- Participation and cooperation of local, State, and federal agencies on science and research efforts.

### Performance Measures

- Funding provided to California's universities and local, regional, and State agencies for ongoing global climate change studies and manage staff work related to global climate change research.
- Progress in implementing of the plan responding to the impact of global climate change on the management of the State Water Project.
- Number of planning studies that evaluate the potential impacts of climate change on the alternative management strategies and infrastructure they consider and select.

## Recommendation 11 – Improve Water Data Management and Scientific Understanding

DWR and other State agencies must improve data, analytical tools, and information management and exchange needed to prepare, evaluate, and implement regional integrated resource plans and programs in cooperation with other federal, tribal, local, and research entities.

California needs better data and analytical tools to produce useful and more integrated information on water quality, environmental objectives, economic and equity issues, and surface water and groundwater interaction. A consortium of public and private entities, with State leadership and stakeholder input, should prepare a long-term plan to improve and peer review data and analytical tools, as well as to develop presentation and decision-support tools to make complex technical information more accessible to decision-makers and resource managers. DWR should build and maintain the Water Plan Information Exchange (Water PIE), an online information management system to assist regional and local agencies and governments, which would include information from locally-developed urban and agricultural water management plans and local general plans.

### Action Plan

- ⌚ DWR with regional input will develop a general checklist of issues, resources, data, and analytical tools as well as guidelines to aid regional integrated resource planning.
- ⌚ DWR will select and/or develop the analytical tools and data in support of the next water plan update.
- ⌚ DWR will develop the Water Plan Information Exchange (Water PIE) for collecting and sharing data, and networking existing databases and Web sites, among State, federal, regional, and local agencies and governments and citizen monitoring efforts, to improve analytical capabilities and developing timely surveys of statewide land use, water use, and estimates of future implementation of resource management strategies.
- ⌚ DWR will participate in efforts by the California Water and Environmental Model Forum to develop and carry out a plan for long-term improvement of analytical tools and data for statewide planning.

### Intended Outcomes

- Strategic plan for the long-term improvement of analytical tools and data for statewide planning.
- Inventory of existing data and tools, resulting in identification of key data and tool gaps.

- A conceptual analytical framework and analytical work plan for the next water plan update that is accepted by water stakeholders.
- Begin implementation of elements of the Water Plan Information Exchange.

### Resource Assumptions

- Developing the long-term plan for analytical tools and data and the work plan for the Water Plan Information Exchange could be accomplished with existing resources.
- Limited implementation could be accomplished with existing resources, but full implementation would require additional resources or redirection of existing staff.

### Implementation Challenges

- Developing the institutional relationships with other local, State, and federal agencies necessary for integrating information between different planning efforts.
- Adoption of data and data management guidelines, principles and standards by local, State, and federal agencies and programs needed to promote data and information sharing.
- Inadequate resources to develop Water Plan Information Exchange database.

### Performance Measures

- Progress in completing and implementing plan for the long-term improvement of analytical tools and data for statewide planning.
- Progress in completing and implementing the work plan for the creation of the Water Plan Information Exchange.
- Progress in evaluating the performance of alternative mixes of management strategies using multiple future scenarios and the evaluation categories in Table 5-2 (Evaluation categories for achieving water management objectives).

## Recommendation 12 – Protect Public Trust Resources

DWR and other State agencies must explicitly consider public trust values in the planning and allocation of water resources and protect public trust uses whenever feasible.

State government should exercise continuous supervision over its navigable waters, the lands beneath them, and the flows of their tributary streams and protect the public's rights to commerce, navigation, fisheries, recreation, ecological preservation, and related beneficial uses.

### Action Plan

- DWR will protect the public trust when carrying out its role in water planning, including the preparation of this water plan.
- DWR will protect the public trust in connection with the planning, design, construction, and operation of SWP facilities and other projects in which DWR is a participant.
- Where DWR is the owner of a dam, it will make releases in compliance with Fish and Game Code section 5937. The State will assist all dam owners in meeting this code.
- DWR will take the public trust into account when acting as a party to a transfer, or when approving use of SWP facilities by others. Where approval of the State Water Resources Control Board is not required, as in the case of transfers of pre-1914 rights, DWR will consider all available information and protect public trust uses whenever feasible and reasonable.
- DWR will develop consistent, department-wide guidelines and methodology for how it will evaluate its public trust responsibilities.
- DWR will participate in efforts to coordinate implementation of public trust responsibilities with other State agencies.
- DWR will assist the State Water Resources Control Board by conducting and presenting studies and investigations regarding the needs of trust resources.
- DWR will protect the public trust when it represents the State on interstate river compacts such as the Klamath River Compact.
- DWR will protect the public trust in connection with water master duties on adjudicated streams.

### Intended Outcomes

- DWR guidelines and methodology for how DWR will evaluate its public trust responsibilities.
- Institutional mechanism for coordinating public trust responsibilities with other agencies.

- Complete and balanced evaluation and environmental review and documentation for planning, projects and operations.

### Resource Assumptions

- A portion of the necessary work could be accomplished with existing resources.
- Full implementation would require additional resources and/or redirection of existing resources.

### Implementation Challenges

- Difficulty in quantifying public trust responsibilities.
- Developing the institutional relationships with other agencies necessary for coordinating implementation of public trust responsibilities.

### Performance Measures

- Progress in completing department-wide guidelines and methodology for how DWR will evaluate its public trust responsibilities.
- Progress in implementing an institutional mechanism for coordinating public trust responsibilities with other agencies.
- Explicit evaluation of public trust resources and values in DWR and other State environmental review documents and reports.

## Recommendation 13 – Increase Tribal Participation and Access to Funding

DWR and other State agencies must invite, encourage, and assist tribal government representatives to participate in statewide, regional, and local water planning processes and to access State funding for water projects.

State agencies should include tribal water concerns and water uses in future water plan updates and should engage appropriate local, State, and federal agencies to resolve tribal water issues that are identified.

### Action Plan

- State government engages tribes at all stages of State’s water planning processes and provides assistance for meeting participation.
- DWR will conduct outreach to tribal associations and California tribes seeking their participation in the California water plan updates, particularly for identifying and evaluating tribal water concerns and water uses. Some of the potential areas of interest identified through tribal outreach conducted in 2003 follow.
- Tribal, State, and federal governments work cooperatively to ensure safe and piped potable water for all Californians, including its tribes.
- Tribal, State, and federal governments jointly assess surface water and groundwater quantity and quality needed to support tribal fishing rights and cultural practices.
- California Water Plan Update 2005 addresses tribal water rights in California and considers needed changes.
- Tribal, State, and federal governments cooperatively engage in sourcing funds for projects to improve tribal water supplies and quality and ecosystem restoration.
- Reinstate question for “Source of Water” and “Sewage Disposal” in the U.S. Census questionnaire.

### Intended Outcomes

- Incorporate tribal water concerns and water uses in the next update of the California Water Plan.
- Identify responsibilities of State agencies to address tribal water rights and other tribal water issues.
- Safer and piped potable water for tribes.
- Assessment of surface water and groundwater quantity and quality needed to support tribal fishing rights and cultural practices.
- Fund sources for projects to improve tribal water supplies and quality and ecosystem restoration.
- Reinstated question for “Source of Water” and “Sewage Disposal” in the U.S. Census questionnaire.

### Resource Assumptions

- Limited outreach could be accomplished with existing resources. Greatly expanded outreach would require additional resources or redirection of existing resources.

### Implementation Challenges

- Developing the institutional relationships with California tribes and appropriate federal, State, and local agencies and programs necessary for integrating information into the California Water Plan Update.

### Performance Measures

- Number and geographic representation of California tribes participating in statewide, regional, and local water planning processes.
- Level of support among California tribes of the findings and recommendations of the California Water Plan update.
- Successful implementation of tribal-related water policies, programs, and projects.

## Recommendation 14 – Ensure Environmental Justice across All Communities

DWR and other State agencies must encourage and assist representatives from disadvantaged communities and vulnerable populations, and the local agencies and private utilities serving them, to participate in statewide, regional, and local water planning processes and to get equal access to State funding for water projects.

Recent State policy establishes social equity and environmental justice as a State planning priority to ensure the fair treatment of people of all races, cultures, and income, in particular those having experienced significant disproportionate adverse health and environmental impacts.

### Action Plan

- DWR will incorporate environmental justice issues of precautionary applications, cumulative health impact reductions, public participation, community capacity building and communication, and meaningful participation into current and future California Water Plan Update processes and other DWR programs.
- DWR will conduct outreach to disadvantaged communities and vulnerable populations and their advocates seeking their participation in the California Water Plan Update, particularly for evaluating how they might be affected by different water management strategies.
- DWR will monitor or participate in activities of other federal, State, regional, and local governmental programs and processes which may have environmental justice interests relevant to the California Water Plan update.
- DWR, in coordination with the appropriate State and federal agencies, will review its current monitoring and regulatory programs to identify and address gaps in available data and monitoring programs that impact disadvantaged communities and vulnerable populations.

### Intended Outcomes

- Reporting the results of outreach to disadvantaged communities and vulnerable populations in the next California Water Plan Update, particularly the evaluation of how they might be affected by different water management strategies.
- Increased awareness of EJ issues by DWR Program Managers and other local and regional planning efforts.
- Identification of Environmental Justice communities and their specific needs.

### Resource Assumptions

- Limited outreach could be accomplished with existing resources. Greatly expanded outreach would require additional resources or redirection of existing resources.

### Implementation Challenges

- Developing the institutional relationships with local, State, and federal agencies serving, and advocates for disadvantaged communities and vulnerable populations to conduct outreach and integrate information into the California Water Plan update.

### Performance Measures

- Number and geographic representation of representatives from disadvantaged communities and vulnerable populations participating in statewide, regional, and local water planning processes.
- Level of support among representatives from disadvantaged communities and vulnerable populations of the findings and recommendations of the California Water Plan update.