



## **STRATEGIC PLAN**

**January 2007-December 2008**

**Water Recycling Funding Program  
Division of Financial Assistance**

*Promoting Water Recycling  
By Providing Technical and Financial Assistance*

January 18, 2007

 California Environmental Protection Agency  
**STATE WATER RESOURCES CONTROL BOARD**

## **Vision**

Achieve the maximum reuse of treated municipal wastewater for beneficial uses in California

## **Mission**

Promote the beneficial reuse of treated municipal wastewater (water recycling) in order to augment fresh water supplies in California by providing technical and financial assistance to agencies and other stakeholders in support of water recycling projects and research

## **Strategic Goal**

Increase the state water supply by promoting and funding economically feasible water recycling projects that result in a statewide public benefit, while making effective use of our funding resources

## **Objectives**

1. Funded projects are economically feasible

2. Funded projects result in a statewide public benefit

3. Funded projects achieve planned target recycled water deliveries

## **Key Strategic Projects**

1. Develop Economic/Financial Analyses Guidance
2. Develop Beneficiary Pays Framework Guidance
3. Perform Project Performance Analyses
4. Develop Standard Operating Procedures
5. Develop a Training Program
6. Promote, Coordinate and Finance Water Recycling Statewide Efforts

## FOREWORD

In August 2006, the Water Recycling Funding Program (WRFP) staff began developing a strategic plan. The plan provides a vision and mission, establishes a strategic goal and objectives, and identifies specific measures and targets for tracking performance. In developing the plan, WRFP staff worked with the Office of Research, Planning and Performance and participated in a pilot project to evaluate approaches to enhance our management and performance capabilities.

The WRFP provides grants and loans to local agencies to plan, design and construct water recycling facilities. Since the late-1970s, the WRFP has distributed close to \$132 million in planning and construction grants and approximately \$509 million in low interest loans for construction of water recycling facilities.

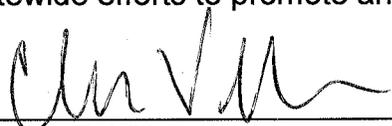
California has the potential to recycle an additional 1,400,000 to 1,670,000 acre-feet per year of water beyond 2002 by the year 2030. The current level of allocated funding for water recycling projects falls short of fulfilling California's needs. It is incumbent upon the state to use its limited funds in a way that promotes meeting water supply needs in the most economically feasible manner from a statewide perspective.

The plan presented here identifies key strategic projects that if implemented can support our efforts of increasing the state water supply by promoting and funding economically feasible water recycling projects. Under the plan, the WRFP will lead efforts to develop an economic and financial analyses framework and methodology, a beneficiary pays framework, track performance of funded projects, and develop standard operating procedures and a training program for the WRFP. In addition, the WRFP will participate as a partner and catalyst in statewide efforts to promote water recycling.

WRFP staff may use the plan as a guide for actions over the next two years. Under the direction of Division of Financial Assistance management, staff will begin to undertake the key strategic projects called for in the plan. Success will be measured in terms of whether the performance targets established are met.

The plan is intended to provide a framework for action. Thus, if opportunities to further our mission arise, which are not contemplated in the plan, staff may bring these proposals to management.

I look forward to working with staff, management and other California agencies in statewide efforts to promote and fund water recycling projects and research.

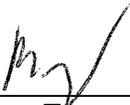


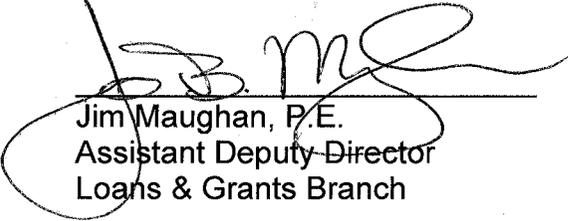
Claudia E. Villacorta, P.E., Program Manager

## STRATEGIC PLAN APPROVAL

*On January 18, 2007, the California State Water Resources Control Board, Executive Office, and Division of Financial Assistance, approved the Water Recycling Funding Program Strategic Plan for calendar years 2007-2008.*

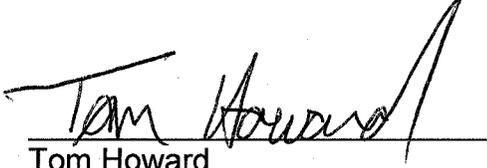
### Division of Financial Assistance

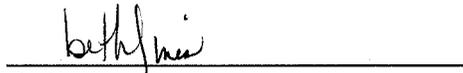
  
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## **INTRODUCTION**

The use of recycled water has a long history in California. As water demands grow and new water supplies become increasingly difficult to develop, water recycling has become a significant part of California's water portfolio. While many recycled water systems exist in the state, there is potential for new systems and expansion of existing systems. Water recycling is encouraged in both state statutes and policies of the State Water Resources Control Board (State Water Board). In addition, significant bond and other funds have been made available for financial assistance, and the State Water Board through the Water Recycling Funding Program (WRFP) has played a leading role in using these funds to assist local agencies to plan and construct water recycling projects. The State Water Board also has other activities that promote the use of recycled water.

The plan presented here will guide WRFP efforts to increase the state water supply by promoting and funding economically feasible water recycling projects. This plan provides background and historical information that provides a context for the WRFP and a basis for the program and the proposed strategy. The plan also provides a vision, mission, guiding principles, a strategic goal and objectives for the WRFP. It identifies performance measures and specific targets intended to be achieved within the timeframes indicated and against which measurements will be compared in order to assess performance towards achieving the WRFP goal and objectives. Progress in achieving the WRFP goal and objectives will be reported to staff and management. Significant obstacles encountered will be reported and potential solutions and/or changes will be recommended.

The plan is intended to be a guide for the calendar years 2007 through 2008. This document is not a static and fixed plan. It can be adjusted to reflect experience, new information or legislative initiatives, or changing circumstances. Any future opportunity to further the mission, goal and objectives, which is not contemplated in this plan, will be considered and implemented when appropriate.

The total resources needed to implement the key strategic projects identified in this plan for calendar years 2007-2008 approximate 1.2 Personnel Years (PYs) and \$1.1 million in potential contracting services. WRFP staff will begin to work towards implementing the proposed strategic projects and activities outlined in the plan. Current staff and funding resources within the DFA will be utilized to implement the proposed projects.

### **Purpose of the Program**

The purpose of the WRFP is to promote water recycling by providing technical and financial assistance to local agencies and other stakeholders in support of water recycling projects and research.

## ***Core Activities***

The WRFP's core activities are to review and process requests for funding of water recycling planning and construction projects in accordance with the WRFP Guidelines adopted in 2004. These activities include, but are not limited to, the following:

- Review, analyze and comment on proposed water recycling planning and construction project applications.
- Make funding determinations on planning and construction project applications.
- Prepare funding commitments for grants and/or loans and obtain Division and/or State Water Board approval of projects.
- For planning projects, review, provide comments and approve facilities planning reports submitted as required in the grant agreement.
- For construction projects, make eligibility determinations, review and approve plans and specifications, review construction bid packages, issue approval of award to construct, inspect completed project, and review and evaluate project performance.

## ***Supporting Activities***

In addition to the core activities outlined above, the WRFP participates in other tasks in support of water recycling. Key tasks include the following:

- Track and provide analyses of legislation impacting water recycling.
- Administer bond funds available for research on water recycling.
- Represent the State Water Board on various committees, including the California Department of Health Services (DHS) Recycled Water Committee.
- Provide advice and technical support to internal staff, management, and external stakeholders for policy development and public presentations.
- Respond to public inquiries by providing technical information and background on state policy and regulations on water recycling.

- Provide staff support to other agencies, in particular the California Department of Water Resources (DWR), in review and selection of funding applications for water conservation or integrated regional water management projects.
- Participate in CALFED Bay-Delta Program activities. The CALFED Bay-Delta Program is a cooperative effort of the State and federal agencies with management or regulatory responsibilities for the San Francisco Bay-Sacramento San Joaquin River Delta. The Water Use Efficiency (WUE) Program is an integral part of the CALFED Bay-Delta Program. The goal of CALFED's WUE Program is to accelerate the implementation of cost-effective actions to conserve and recycle water throughout the state. The WRFPP's involvement has consisted of participation in the CALFED WUE Subcommittee and will continue in any successor committees evolving from the CALFED reorganization. The WRFPP reviews and comments on many CALFED reports covering water recycling efforts. In addition, the WRFPP coordinates with CALFED to obtain feedback and comments on WRFPP guidelines, policies and proposed projects.

## History, Background, Authority, and Program Accomplishments

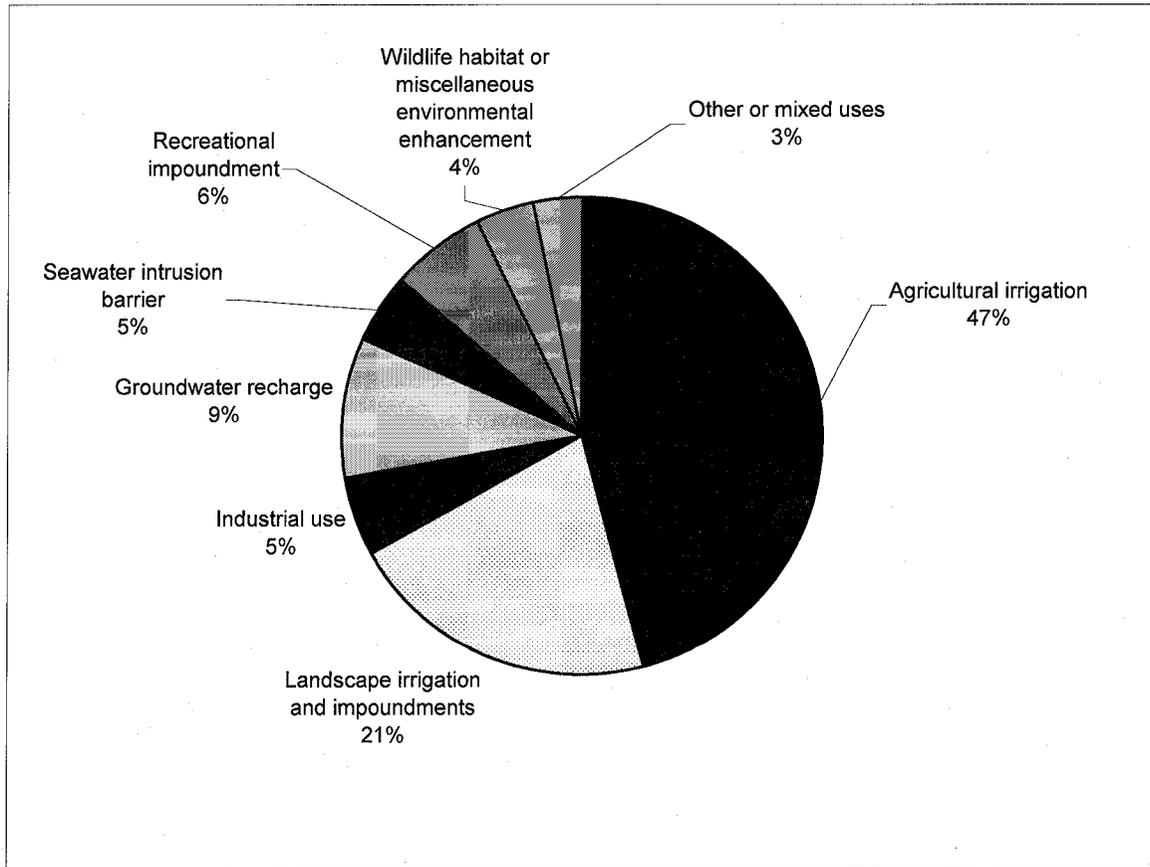
### ***Water Recycling in California***

For more than a century, California has been using recycled water as a non-potable water supply. In the late 1800s, farmers began using municipal wastewater to irrigate crops and others used it for landscape irrigation. By 1910, at least thirty-five communities were using recycled water to irrigate crops and the city of San Francisco began using raw sewage to irrigate Golden Gate Park (by 1912 minimal treatment was added due to complaints). By 1952, 107 communities used recycled water for agricultural and landscape irrigation. Today, communities use recycled water in a variety of ways, primarily for agriculture irrigation, landscape irrigation and groundwater recharge (see Figure 1). At least twenty varieties of food crops are grown with recycled water, including lettuce and celery. Eleven non-food crops, such as pasture and feed for animals, are irrigated with recycled water. In landscape irrigation, recycled water is primarily used to irrigate turf in schoolyards, golf courses, freeway landscaping and parks. Industrial uses of recycled water include boiler feed water in oil refineries, cooling towers in power stations, and laundries.

### ***What is Recycled Water?***

*The California Water Code defines recycled water as "water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource" (California Water Code Section 13050(n)). "Recycled water" has the same meaning as "reclaimed water."*

**Figure 1. Types of Recycled Water Use in California as Percent of Annual Use, 2001**



## ***History of the Water Recycling Funding Program***

The Office of Water Recycling was created in October 1977 as a result of an Executive Order issued by Governor Edmund G. Brown, Jr. The Office of Water Recycling administered most of the projects funded under the Clean Water Construction Grant Program (CWCGP), which combined state bond funds with monies made available for wastewater collection, treatment, disposal and reuse as a result of passage of the Federal Water Pollution Control Act Amendments of 1972. Approximately 50 water recycling planning studies and several water recycling construction projects were funded under this program. In 1978, however, the U.S. Environmental Protection Agency (USEPA) determined that this program could not be used to fund water recycling projects intended primarily for water supply purposes. Water recycling projects that were not eligible for funding under the CWCGP were thus funded under the California Clean Water and Water Conservation Bond Law of 1978. The 1978 bond law provided \$50 million for grants for pollution control, water conservation, and water recycling projects. Approximately \$11.2 million of this amount was used to fund four water recycling projects. Another source of funding used to fund projects not eligible under the CWCGP was the Renewable Resources Investment Fund (RRIF). The RRIF was created to provide money for fish habitat, forest resources, soil conservation, water recycling, and other renewable resources. To initiate this program the Legislature provided \$10 million from the General Fund, including \$4.5 million to the State Water Board for water recycling, with which one project was funded. It was hoped that the RRIF would be sustained by a bond measure, Proposition 1 in June 1980, but it did not pass.

Beginning in 1984 a series of bond issues, described in more detail in Appendix B, provided loans and grants for planning, design and construction of water recycling projects. These funds were administered initially under the Water Recycling Loan Program for design and construction only. As the program expanded to include grants and planning studies, the program became the Water Recycling Funding Program (WRFP). The WRFP was established to promote water recycling by providing financial assistance to local agencies for planning and construction of water recycling facilities.

### ***What is Water Recycling?***

*Water recycling is the process of treating wastewater for beneficial use, storing and distributing recycled water, and the actual use of recycled water.*

The Office of Water Recycling continued administering the funding programs for water recycling including the WRFP as well as other supporting activities as described above. As a result of the reorganization of the State Water Board in 2002, all the grant and loan programs administered by the State Water Board were housed within the Division of Financial Assistance (DFA). DFA organized by geographic regions and later reorganized under a matrix management system. The key duties of the Office of Water Recycling continued under the

DFA. The specific designation of "Office of Water Recycling" however was eliminated. Other activities of the DFA in support of water recycling responsibilities, as described in this plan, were incorporated into the scope of the WRFP, including supporting research in water recycling and assisting the State Water Board in policy development. The WRFP, in addition to its core activities, continues to administer key supporting activities previously administered by the Office of Water Recycling.

### ***Program Accomplishments***

- Since the late-1970s, the State Water Board distributed close to \$132 million in planning and construction grants and approximately \$509 million in low interest loans for water recycling projects. A summary of funding is shown in Table 1.
- The State Water Board participated and assisted in identifying and evaluating recommendations as part of the 2002 Recycled Water Task Force (Task Force), which is described below. The Task Force completed its work with a final report in June 2003. Some of the recommendations called for the State Water Board to take the lead role and are incorporated into projects in this strategic plan.
- In 2002, the State Water Board updated and conducted a comprehensive statewide survey of municipal wastewater facilities where recycled water was used. This survey indicates that, as of the end of 2001, approximately 525,000 acre-feet per year of water are currently being recycled in California. Figure 1 shows types of recycled water use in California.

**Table 1. Summary of State Water Board WRFP Funding and Expected Deliveries, 1978-September 2006**

| <b>Funding source</b>                              | <b>Construction loans</b> | <b>Construction grants</b> | <b>Planning grants</b> | <b>Total loans and grants</b> | <b>Expected recycled water deliveries from construction, AF/year</b> |
|--|---------------------------|----------------------------|------------------------|-------------------------------|--|
| 1978 Bond Law                                      | NA                        | \$11,194,122               | NA                     | \$11,194,122                  | 4,791  |
| Renewable Resources Investment Fund (General Fund) | NA                        | \$4,500,000                | NA                     | \$4,500,000                   | 3,600  |
| 1984 Bond Law                                      | \$57,437,401              | NA                         | NA                     | \$57,437,401                  | 26,548   |
| 1988 Bond Law                                      | \$37,610,923              | NA                         | NA                     | \$37,610,923                  | 15,985   |
| 1996 Bond Law                                      | \$1,811,841               | NA                         | \$545,000              | \$2,356,841                   | 413  |
| 2000 Bond Law (Proposition 13)                     | \$39,350,000              | \$59,511,290               | \$4,332,500            | \$103,193,790                 | 134,001  |
| 2002 Bond Law (Proposition 50)                     | NA                        | \$50,755,375               | \$900,000              | \$51,655,375                  | 88,652   |
| State Revolving Fund                               | \$372,904,578             | NA                         | NA                     | \$372,904,578                 | 65,571   |
| <b>Total</b>                                       | <b>\$509,114,743</b>      | <b>\$125,960,787</b>       | <b>\$5,777,500</b>     | <b>\$640,853,030</b>          | <b>339,561</b>   |

NA-Not Applicable

Note: Summary is for projects receiving funding commitments during this period. The dollar amounts represent amounts initially committed to a project, not the actual amounts disbursed, which can deviate to a limited extent. Because of cost sharing, these amounts do not represent total project costs, which can include local, other state and federal contributions.

## ***Water Recycling Laws and Policies***

Since the late 1960s, California has supported policies and laws to promote water recycling within the state. In 1967, the Legislature declared that "the state undertake all possible steps to encourage development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the state." (California Water Code, Section 13512). In 1974, California passed the Water Reuse Law, which declared that the "primary interest of the people of the state in the conservation of all available water resources requires the maximum reuse of reclaimed water in the satisfaction of requirements for beneficial uses of water" (California Water Code Sections 461-465).

In an effort to support legislative directives, in January 1977, the State Water Board adopted Resolution No. 77-1 (Policy with Respect to Water Reclamation) declaring its intent to "encourage, and consider or recommend for funding, water reclamation projects...". By this resolution, the State Water Board adopted a report entitled "Policy and Action Plan for Water Reclamation in California". This policy and action plan recommended a variety of actions to encourage the development of water reclamation facilities and the use of reclaimed water. Later that year, to help implement the action plan, Governor Edmund G. Brown, Jr. issued Executive Order B-36-77, establishing the Office of Water Recycling within the State Water Board. The executive order directed this new office to take "all reasonable steps to promote recycling and reclamation of wastewaters in California, including all efforts necessary to achieve the goal...of construction of facilities to make available an additional 400,000 acre-feet of reclaimed water by 1982." In addition to managing funding of water recycling projects, the office also promoted research, conferences, and public information.

In 1991, the Governor Pete Wilson signed into law the Water Recycling Act, which established a "statewide goal to recycle a total of 700,000 acre-feet of water per year by the year 2000, and 1,000,000 acre-feet per year of water by the year 2010" (California Water Code Section 13577).

In June 1994, the State Board signed a joint "Statement of Support for Water Reclamation" with the USEPA, California Conference of Environmental Health Directors, DWR, United States Bureau of Reclamation (USBR), DHS, and Water Reuse Association of California. The statement resolves that these agencies support the pursuit and development of federal, State, and local water reclamation policies and regulations that will reduce constraints and promote water reclamation.

In 2000, Governor Gray Davis approved Senate Bill 2095 enacting the Water Recycling in Landscaping Act which requires any local public or private entity that produces recycled water and determines that within 10 years it will provide recycled water within the boundaries of a local agency, to notify the local agency

of that fact. In turn, each local agency is required to adopt and enforce within 180 days a specified recycled water ordinance, requiring the use of recycled water in its jurisdiction, unless the local agency had already adopted such an ordinance or similar regulation prior to January 1, 2001.

In 2001, Governor Davis signed into law Assembly Bill 331. The bill required the DWR to convene the 2002 Recycled Water Task Force to identify constraints, impediments, and opportunities for the increased use of recycled water. The Task Force consisted of 40 members representing federal, State, and local government, public health professionals, private sector and nonprofit entities, and other stakeholders. The Task Force was chaired by former Board member Richard Katz and was administered by the Department of Water Resources and State Water Board staff. The Task Force report, which was submitted to the Legislature in 2003, contained a number of recommendations to guide the Legislature, State government, public agencies and other stakeholders in efforts to increase the safe use of recycled water. The Task Force recommended DWR take the lead in tracking efforts by all agencies to implement the recommendations. The summary of recommendations requiring State Water Board action/involvement is included in Appendix A.

In September 2006, Governor Arnold Schwarzenegger signed into law Assembly Bill 371. The bill includes a statement that the DHS, DWR, the State Water Board, and the nine Regional Water Quality Control Boards (Regional Water Boards) should take appropriate steps to implement the recommendations of the Recycled Water Task Force as a means to meet the goal of recycling one million acre-feet per year of water by 2010. The bill requires the California Department of General Services and the California Department of Transportation to install piping appropriate for recycled water use in any of their landscape irrigation projects if they are notified by a recycled water producer that recycled water will be provided for those projects within ten years. The new law also requires DWR to adopt and submit to the Building Standards Commission a California version of Appendix J of the Uniform Plumbing Code. This will ensure proper design standards to safely plumb buildings for both potable and recycled water(California Water Code Sections 13555.5 and 13557).

### **Organization/Program Resources**

The WRFP resides in the Project Development Unit 1B within the Loans & Grants Branch of the Division of Financial Assistance (DFA) at the State Water Board. The WRFP staff consists of six full time engineers and one manager (total 7.0 PYs). Additionally, the WRFP relies on staff in other units, consistent with DFA's matrix management system, to support its core activities. The number of staff working on WRFP activities varies depending on program workload. Currently, four staff outside the WRFP assist in managing water recycling projects. Each of these four staff allocates an average of 20-30% of

their time (total of 0.8-1.2 PYs) to performing WRFP activities. Together, all WRFP staff currently oversee 47 planning studies and 53 construction projects.

The current level of unallocated funding for the WRFP is about \$59 million for construction loans and grants, planning grants and research. Of this total, \$7.6 million is available for construction grants from Proposition 13 and Proposition 50 (see Appendix B for a description of the bond laws). Approximately \$40 million is available for construction loans from the 1984 bond law repayments. In addition, approximately \$10 million is available from Proposition 13 for planning grants and loans, and about \$1.3 million is available for research under Proposition 13. The State Revolving Fund (SRF) Loan Program, while primarily intended for funding water pollution control facilities, is also available to provide loans for water recycling facilities planned for water supply purposes (see Appendix B). There is no specified allocation in the SRF for water recycling, and this program is used when other loan funds are unavailable. Currently, the SRF Loan Program is accepting water recycling loan applications; however, limited funds are available.

Future funding for the WRFP is not expected to increase beyond current levels. Nonetheless, since loan funds are revolving, available funds can be sustained but at lower levels. Additional Proposition 84 funding may become available for integrated regional water management projects, which could include water recycling projects. WRFP staff may play a role in the review of water recycling components of integrated regional water management projects under Proposition 84. Additionally, water recycling projects can compete for Proposition 50, Chapter 8 Integrated Regional Water Management Grant Program (IRWMGP) funds. The Water Boards' IRWMGP resides within the DFA and will closely coordinate with the WRFP when integrated regional water management project proposals include water recycling components.

### **Relationship/Alignment to Other Water Board Plans and Goals and Other State Programs and Efforts**

We made an effort to ensure that our plan helps achieve the goals of California Environmental Protection Agency (Cal/EPA) Strategic Vision (2000) and State Water Board's Strategic Plan (2001). Our plan supports Goal 6 of Cal/EPA's Strategic Vision, which is "to ensure the efficient use of natural resources". For this goal, Cal/EPA set an objective "to increase the use of reclaimed water". Our plan also supports Goal 4 of the State Water Board's Strategic Plan, which is that "water resources are fairly and equitably used and allocated consistent with public trust". For this goal, the State Water Board will help facilitate more efficient uses of water through water transfers, conjunctive use and water recycling. Additionally, the plan supports Cal/EPA's Environmental Justice Policy. The policy states that Cal/EPA and the BDOs "shall accord the highest respect and value to every individual and community, by developing and conducting our public health and environmental protection programs, policies, and activities in a manner that promotes equity and affords fair treatment,

accessibility, and protection for all Californians, regardless of race, age, culture, income, or geographic location” (Government Code Section 65040.12).

This plan also helps implement key recommendations of the 2002 California Recycled Water Task Force. A summary of key Task Force recommendations is summarized in Appendix A.

## **PROBLEM DESCRIPTION**

California’s population is expected to grow from 36.5 million today to 48 million in the year 2030. As the state’s population grows, so will the competition for California’s limited water supplies. Over the past 50 years, California has met much of the increasing water demands, primarily through a network of water storage and conveyance facilities, groundwater development and more recently by improving the efficiency by which we use water (water use efficiency).

California’s biggest challenge now and in the future will be to make sure water is “in the right places at the right times”. In order for our water supplies to be reliable and to achieve maximum utility of our existing water supplies, California must continue to implement measures to use water more efficiently. By augmenting our existing supplies, California can continue to support a healthy economy and environment.

California primarily meets increasing water demands through water use efficiency measures such as water conservation, water transfers, conjunctive use of ground and surface water supplies and water recycling. Water recycling offers significant potential to improve water supply reliability for California. For more than a century, California has been using recycled water as a non-potable water supply. Today, as water becomes more scarce, recycled water has become an attractive alternative. It is estimated that California water agencies recycle approximately 525,000 acre-feet of wastewater annually (State Water Resources Control Board survey conducted in 2001)<sup>1</sup>. This amount is three times more than the amount recycled in 1970 (see Figure 2 for the recycled water use trend from 1970 to 2002).

The increase in the amount of recycled water used over the years is due, in part, to the investment made by California to develop and implement water recycling projects through the various bond measures described earlier and the SRF Loan Program. Since the late-1970s, the State Water Board distributed close to \$132 million in planning and construction grants and approximately \$509 million in low interest loans for water recycling projects. The USBR also played a major role in

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<sup>1</sup> The volume of reuse of treated municipal wastewater is tracked to determine progress toward achieving statewide water recycling goals. While the reuse of other types of wastewater meet the definition of recycled water, historically, the reuse of industrial and agricultural wastewaters has not been included in the total volume of recycled water use within the state. Agricultural wastewaters are typically reused without treatment and thus do not meet definition of recycled water.

funding projects through appropriations under provisions of Title XVI of Public Law 102-575. Under the USBR Title XVI Program, federal construction funds are provided only for projects specifically authorized by Congress. USBR then makes a funding recommendation on construction of authorized projects in the President's annual budget request to Congress. To date, the USBR distributed close to \$275 million in construction grants and about \$11.5 million in planning grants for water recycling projects in California.

The DWR and the CALFED Bay-Delta Program incorporated water recycling in the water supply planning efforts for the State. However, no funding is available from DWR for water recycling planning and construction projects. Additional funding may become available under Proposition 84.

Despite the positive efforts made to date by state and federal funding agencies to promote and fund water recycling projects, California has fallen short of meeting the established water recycling goals (See Figure 2) and may not meet the 2010 goal of 1,000,000 acre-feet per year of recycled water use.

Failure to meet future goals would likely be due to the lack of sufficient funding. However, there are other potential obstacles that can delay or prevent water reuse, such as user acceptance or reclaimed water quality.

*The amount of treated municipal wastewater produced in California is about 5 million acre-feet per year. By 2030, the amount available for water recycling is estimated to increase to 6.5 million acre-feet per year.*

*One million gallons per day is equivalent to 1120 acre-feet per year.*

Based on projections of the Recycled Water Task Force, California has the potential to recycle an additional 1,400,000 to 1,670,000 acre-feet per year of water beyond 2002 by the year 2030. This is about twenty-three percent of the available municipal wastewater. Assuming the average cost to build the capacity to yield one acre-foot per year is \$6500-\$6800<sup>2</sup>, a total of \$9 to \$11 billion for capital costs will be needed to produce and deliver this recycled water capacity. Under the existing cost share, the state needs to finance about \$300 million annually in grants and low interest loans to achieve the additional 1,400,000 to 1,670,000 acre-feet per year of recycled water potential by the year 2030.

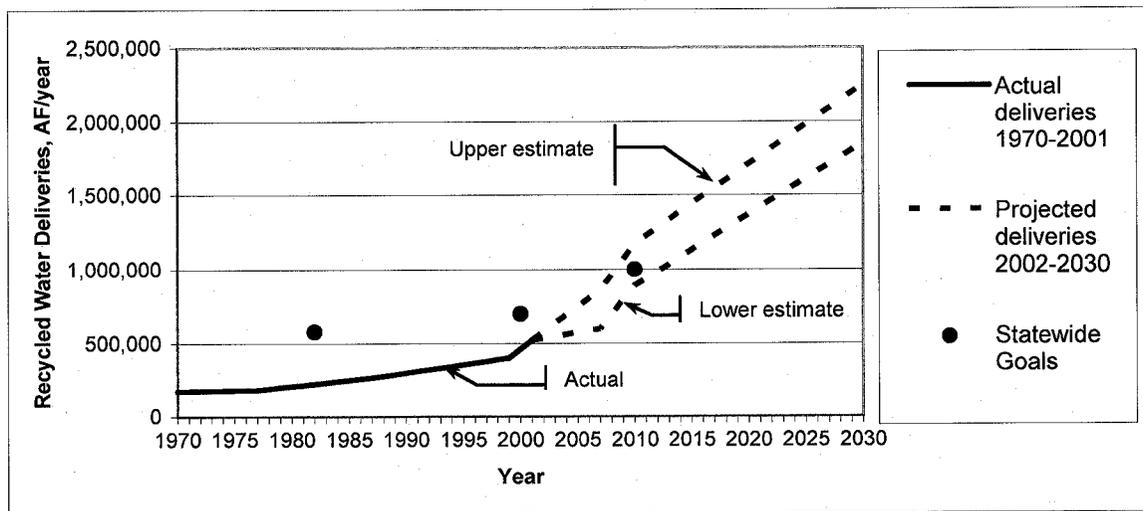
In 2005, the WRFPP adopted a Competitive Project List (CPL), which identified and categorized water recycling construction projects totaling close to \$2 billion based on data provided by agencies interested in construction funding. From this list, the WRFPP approved \$57 million in funding for 19 projects. The remaining 88 projects on this list have an estimated total cost of \$1.742 billion. The WRFPP can provide construction grants of up to 25 percent of total

<sup>2</sup> When capital and operational costs are annualized over the life of a project, the average unit cost to treat and deliver recycled water has been estimated to be \$600 per acre-foot, though the costs for projects have a wide range that can exceed \$2,000 per acre-foot.

construction costs or \$4 million per project, whichever is less. The remainder of the construction costs can be funded with a low interest state loan.

The current level of funding for water recycling projects falls short of fulfilling California's needs. More reliable and stable sources of funding are needed. Water competes for funding with other needs of society. It is important that the state use its limited funds in a way that promotes meeting water supply needs in the most economically feasible manner. One key challenge for water recycling projects is that the financial analysis of such projects may appear unfavorable, even though there may be total project benefits that outweigh the project's costs. Thus, an economic analysis of the overall benefit-cost is essential for considering a water recycling project's worth versus expense to society as a whole. Additionally, there is a need to allocate the costs of water recycling projects on an equitable basis. Funding agencies must tailor their grant/loan programs to reflect the distinction between local and statewide benefits and adjust the required local cost share requirements accordingly. Projects should receive state funds when there is a statewide public benefit. By identifying all project beneficiaries and allocating costs accordingly, there is opportunity to provide a broader financial participation in projects, thus encouraging more water recycling.

**Figure 2: Actual and Projected Recycled Water Deliveries, 1970-2030**



Reference: DWR, Water Recycling 2030, California Recycled Water Task Force Report, 2003

## **MISSION, VISION AND GUIDING PRINCIPLES**

### **Mission**

Our mission is to promote the beneficial reuse of treated municipal wastewater (water recycling) in order to augment fresh water supplies in California by providing technical and financial assistance to agencies and other stakeholders in support of water recycling projects and research.

### **Vision**

Our vision is to achieve maximum reuse of treated municipal wastewater for beneficial uses in California.

### **Guiding Principles**

All of our program activities and initiatives will be guided by the following principles.

- We will seek and maintain a funding process that is consistent, transparent, fair and equitable;
- We will take into consideration the needs of disadvantaged communities in accordance with our environmental justice policy;
- We will be effective and responsive in our work;
- We will be professional and use sound engineering and science in our daily activities and in our decision-making approach; and
- We will raise the level of expertise and increase our knowledge in the area of water recycling.

## **GOAL, OBJECTIVES AND STRATEGIES**

### **Strategic Goal**

Our strategic goal is to increase the state water supply by promoting and funding economically feasible water recycling projects that result in a statewide public benefit, while making effective use of our funding resources.

### **Objectives**

To achieve our strategic goal, we have established the following objectives:

1. Funded projects are economically feasible;
2. Funded projects result in a statewide public benefit; and
3. Funded projects achieve planned target recycled water deliveries.

### **Key Strategic Projects**

We will fulfill our strategic goal and objectives by implementing the following key strategic projects:

1. Develop Economic/Financial Analyses Guidance
2. Develop Beneficiary Pays Framework Guidance
3. Perform Project Performance Analyses
4. Develop Standard Operating Procedures
5. Develop a WRF Training Program
6. Promote, Coordinate and Finance Water Recycling Statewide Efforts

## Key Strategic Project #1: Develop Economic/Financial Analyses Guidance

### *Strategic Project #1 Goal:*

The goal of this project is to develop guidance for economic and financial analyses to make effective use of funding resources and determine financial feasibility. This project would aid in fulfilling the Strategic Goal and Objective 1.

### *Strategic Project #1 Objectives:*

1. Develop economic and financial analyses guidance to establish a framework and methodology for applicants to follow when conducting economic analysis and financial analysis of potential water recycling projects; and
2. Establish economic and financial analyses as funding criteria during the review of water recycling project proposals and in making funding determinations.

### *Background:*

One key challenge for water recycling projects is that the financial analysis of such projects may often appear unfavorable, even though there may be total project benefits that outweigh the project's costs. A water recycling project might be economically justified when compared to development of new fresh water supplies, but financially infeasible because the local agency would find purchasing fresh water would be cheaper. Wholesale agencies, such as the State Water Project, meld the costs of existing water facilities into a wholesale price. This wholesale price does not reflect the cost to develop new projects. Local agencies responsible for planning and constructing water recycling projects compare the costs of water recycling to their current and projected wholesale prices for purchasing potable or fresh water. Thus, on a financial basis, reuse may not appear to be feasible or desirable.

#### ***What is an Economic Analysis?***

*An analysis to determine the total monetary and non-monetary costs and benefits of all resources committed to a project, regardless of who in society contributes or receives the benefits.*

When evaluating a project, it is important to look at the economic justification and financial feasibility to determine whether a project *should* or *can* be constructed. To determine whether a project *can* be constructed, a financial analysis is performed to determine the ability to finance construction and to pay for project capital and operating costs. An economic analysis is used to determine the total monetary and non-monetary costs and benefits of all resources committed to a project, regardless of who in society contributes or receives the benefits. A

project is considered economically justified and *should* be constructed if the total true benefits outweigh the total true costs (both monetary and non-monetary). An economic analysis provides a suitable benefit-cost perspective for considering if a water recycling project is worth the expense to society as a whole.

When evaluating a project for economic feasibility, the net economic unit costs for a proposed project are calculated and compared to other water recycling project alternatives and to non-water recycling alternatives (i.e. unit cost for development of other freshwater sources). For the purposes of comparing water supply projects with different yields, unit costs (i.e., dollars per acre-foot) are often used instead of total present worth or equivalent annual value. The most economically feasible alternative is the alternative that has the lowest cost (present worth or equivalent annual value). This alternative should be given primary consideration unless other non-monetary factors are overriding. Some examples of non-monetary benefits include environmental benefits such as reduction of nutrient rich effluent discharges to surface waters, the conservation of fresh water supplies and the reduction of saltwater intrusion.

***What is the most economically feasible alternative?***

*The alternative which the analysis determines to have the lowest cost (present worth or equivalent annual value) unless non-monetary factors are overriding.*

Previous bond laws have established cost-effectiveness as a criterion to consider when funding water recycling projects. The 2004 WRF Guidelines define an eligible water recycling project as "a project that is cost-effective based on the project objective when compared to the appropriate alternatives to achieve the objective". The Guidelines require that project applicants perform a cost-effectiveness evaluation of alternative project concepts (Table 3, WRF Guidelines, 2004). As recommended in the Guidelines, this should include an analysis of non-recycled water alternatives and economic costs (Appendix B, WRF Guidelines, 2004).

The WRF has used economic and financial analyses procedures developed in the past for the calculation of economic costs, determination of economic feasibility, and determination of financial feasibility. Although these procedures are fairly well established, their use has become inconsistent and some aspects are now outdated. There is a need to update the 2004 WRF Guidelines and establish economic and financial analyses as funding criteria. The guidance needs to also incorporate sound principles of economic analysis. In developing this guidance document, there is an opportunity for the State Water Board to work with USBR and DWR to develop a uniform economic analysis framework and methodology across all funding agencies as recommended by the 2002 Recycled Water Task Force (recommendation 5.1.1). In addition, efforts to update the 2004 WRF Guidelines and establish criteria will support Task Force recommendation 5.2, which calls for all funding agencies to include a financial

analysis and an economic analysis as two of the funding criteria in State and federal funding programs.

*Activities:*

1. Review existing WRFP economic and financial analysis procedures, draft Economic Analysis Guidance document (July 2006) prepared by DWR, "An Economic Framework for Evaluating the Benefits and Costs of Water Reuse" (2006) funded by WaterReuse Foundation, and other guidance documents available from the USBR, California Urban Water Agencies, and the USEPA "Economic Analysis Guidelines" (40CFR Part 35, Subpart E, Appendix A);
2. Convene a special taskforce/committee with DWR and USBR planners and economists to recommend an appropriate interest rate to use in a present worth analysis (discount rate), unit cost calculation procedures, appropriate freshwater development alternative benchmarks, other potential quantifiable benefits or avoided costs, and address other issues;
3. Contract expert assistance if needed to assist in the quantification or methodology for quantification of benefits or costs;
4. Draft framework, methodology and proposed Economic/Financial Analyses Guidance and modify 2004 WRFP Guidelines;
5. Contract assistance if needed to draft guidance document;
6. Modify 2004 WRFP Guidelines to incorporate Economic/Financial Analyses Guidance and establish economic and financial analyses as funding criteria. Revisions to the WRFP Guidelines will be done, when feasible, in conjunction with any other revisions/changes recommended as a result of implementing one or more of the Strategic Projects in this plan;
7. Obtain internal and external stakeholder review of guidance and modified WRFP Guidelines;
8. Adopt Economic/Financial Analyses Guidance and modified WRFP Guidelines;
9. Implement new Economic/Financial Analyses Guidance and WRFP Guidelines;
10. Train staff;
11. Hold public workshops to educate applicants on new revisions to the WRFP Guidelines and Economic/Financial Analyses Guidance; and
12. Utilize previously established procedures to calculate the unit cost of proposed water recycling projects during the period when the proposed Economic/Financial Analyses Guidance is being developed. This information will be considered when making a funding determination. Financial feasibility using current procedures will continue to be evaluated.

*Timeframe:* January 2007-December 2008

*Resources Needed:* 500 staff hours (0.28 PY) and \$100,000 in potential contracting services

## **Key Strategic Project #2: Develop Beneficiary Pays Framework**

### *Strategic Project #2 Goal:*

The goal of this project is to develop a framework to allocate costs according to project beneficiaries and a methodology to incorporate this concept into state cost share determination for the WRF. In addition, this project will identify potential incentives to support disadvantaged communities in the planning and construction of water recycling projects. This project would aid in fulfilling the Strategic Goal and Objective 2. In addition, this project will aid in strengthening the Guiding Principles.

### *Strategic Project #2 Objectives:*

1. Develop a framework for allocating costs of water recycling projects on an equitable basis among project beneficiaries;
2. Develop a methodology for identifying the appropriate state share when the project results in a statewide public benefit; and
3. Evaluate and make recommendations on strategies to provide incentives to disadvantaged communities for the planning and construction of water recycling projects.

### *Background:*

Water recycling projects that are economically feasible are not necessarily financially feasible. This occurs when project benefits accrue beyond a project sponsor's boundaries or the institutional framework of water supply development and distribution prevents local agencies from perceiving the true costs of alternative water developments. By identifying all project beneficiaries and allocating costs accordingly, there is opportunity for providing broader financial participation in projects, thus encouraging more water recycling.

There is a need to allocate the costs of water recycling projects on an equitable basis. Projects should receive public funds when there is a public benefit. The true benefits and costs identified as part of the economic analysis can help identify the proportion of the total benefits a project beneficiary is expected to enjoy and is a starting point to identifying equitable share of funding responsibility (federal, state, local and private share).

Several efforts in the past years have been made to incorporate or promote the beneficiary pays concept into state funding programs:

- a. A key strategy outlined in the August 2000 CALFED Programmatic Record of Decision (ROD) is to implement a state and federal grant/loan program that provides funds for actions contributing to water use efficiency projects which meet CALFED objectives but are not locally cost-effective. The ROD recognizes that any investments in water recycling projects would need to consider that some projects might not be cost-effective when viewed from a local rather than a statewide perspective. In these cases, a larger state and federal share in the form of grants rather than loans could be justified when projects are cost-effective from a statewide perspective. Consistent with the ROD, funding agencies, such as the State Water Board, should tailor specific grants or loans to reflect the distinction between local and statewide benefits and adjust the required local cost share requirements accordingly.
- b. The 2002 Recycled Water Task Force called for developing a mechanism for identifying equitable capital and operational funding schemes, according to the beneficiaries, based on allocation of the benefits and costs in the economic analysis (Recommendation 5.1.1).
- c. The DWR attempted to incorporate the concept of beneficiary pays into its water use efficiency funding by limiting funding for projects that are considered locally cost-effective. The approach of DWR will be evaluated for applicability to the WRFPP.
- d. In 2001 the State Water Board adopted a resolution to limit the total capital cost subsidy of a project in order to ensure significant local investment. The resolution applied to Proposition 13 funds, and stated that the combined state grant and loan cannot exceed an equivalent subsidy of 45 percent of capital costs. Federal funding can be used as long as the combined State and federal funding does not exceed 45 percent subsidy.

*Activities:*

1. Convene a special taskforce/committee with DWR and USBR funding program staff and economists to address the concept of beneficiary pays and practical approaches to incorporate this into cost-share determinations;
2. Review literature and guidance documents from other funding agencies;
3. Draft framework, methodology, and proposed Beneficiary Pays Framework Guidance and modify WRFP Guidelines;
4. Contract assistance if needed to draft Beneficiary Pays Framework Guidance document;
5. Obtain internal and external stakeholder review of Beneficiary Pays Framework Guidance and modified WRFP Guidelines;
6. Modify 2004 WRFP Guidelines to incorporate Beneficiary Pays Framework Guidance and specific recommendations to provide incentives to disadvantaged communities if applicable. Revisions to the WRFP Guidelines will be done, when feasible, in conjunction with any other revisions/changes recommended as a result of implementing one or more of the Strategic Projects in this plan;
7. Adopt Beneficiary Pays Framework Guidance and modified WRFP Guidelines;
8. Implement Beneficiary Pays Framework Guidance and new WRFP Guidelines;
9. Train staff; and
10. Hold public workshops to educate applicants on new revisions to the WRFP Guidelines and Beneficiary Pays Framework Guidance.

*Timeframe:* January 2007-June 2008

*Resources Needed:* 400 staff hours (0.23 PY) and \$60,000 in potential contracting services

### **Key Strategic Project #3: Perform Project Performance Analyses**

#### *Strategic Project #3 Goal:*

The goal of this project is to collect, compile, analyze and summarize data from all funded water recycling projects to compare planned and actual project performance. This project would aid in fulfilling the Strategic Goal and Objective 3.

#### *Strategic Project #3 Objectives:*

1. Collect, compile, analyze and summarize pertinent performance data reported in the annual reports submitted for all previously funded projects; specifically, track annual recycled water deliveries and capital and operational costs reported in the annual reports;
2. Perform a comprehensive performance analysis of a select group of previously funded completed projects to compare the planned benefits, costs and recycled water deliveries with actual performance; and
3. Determine appropriate performance targets for achieving actual annual deliveries.

#### *Background:*

Historically, the WRFPP tracked information regarding planned and actual deliveries in acre-feet per year for each project. Performance was gauged by obtaining information from the annual reports submitted by the agencies after construction of the projects. The annual reports include the amount of recycled water deliveries, the corresponding amount of fresh/potable water usage replaced, the operation and maintenance costs, direct and indirect benefits resulting from the project, and challenges encountered and corrective actions implemented, if any. Entities that have received WRFPP funding are required to submit annual reports for a period of five years after construction of projects.

The last performance analysis of funded water recycling projects was conducted in 1997. The data used included annual reports from 1988 to 1996. Twenty-nine water recycling projects were included in the analysis. The analysis concluded that the actual project deliveries were only 52 percent of planned deliveries. There is a need to compile, analyze and summarize performance data reported in annual reports to compare planned annual recycled water deliveries to actual deliveries. In addition, data should be analyzed to compare planned capital and operational costs to actual costs. Data regarding challenges encountered and corrective actions implemented should also be documented. These analyses would be done for all previously funded projects. The information would allow the WRFPP to track whether water recycling project objectives are being met.

Currently, the State Water Board does not perform comprehensive analyses of water recycling project performance funded by the WRFP. The California Recycled Water Task Force recommended that funding agencies be provided with the resources to perform a comprehensive analysis of past recycling performance (Recommendation 1.6). Future analyses should be conducted and include comparison of actual yield versus planned yield, and actual versus planned costs and benefits. This information would allow the WRFP to track whether water recycling project objectives are being met and whether the benefits justify the costs. There is an opportunity to collaborate with the USBR, and possibly the WaterReuse Foundation, to perform these analyses and share costs.

*Activities:*

1. Develop staff guidance on the criteria to use in evaluating annual reports submitted by project sponsors and in determining actual project capital and operational costs;
2. Assemble and evaluate annual reports and project files to determine planned and actual recycled water deliveries, track actual capital and operational costs for projects, and data regarding challenges encountered and corrective actions implemented; enter data in appropriate spreadsheet or database;
3. Prepare summary report on annual basis assessing project performance based on data obtained from project annual reports;
4. Assess and establish appropriate targets for achieving actual recycled water deliveries as compared to planned deliveries;
5. Assess whether project sponsors should be required to submit annual reports beyond five years for projects that will take longer to reach funded capacity; and
6. Conduct a comprehensive performance analysis of a select group of previously funded completed projects to compare the planned benefits, costs and recycled water deliveries with actual performance. Summarize findings in a report.

*Timeframe:* Initial summary report: January 2007-April 2008

Ongoing: February-June annually

*Resources Needed:* 250 staff hours (0.14 PY) and \$150,000 in contracting services to prepare comprehensive report, and 100 hours (0.06 PY) every year to prepare summary of annual reports performance data.

## **Key Strategic Project #4: Develop Standard Operating Procedures**

### *Strategic Project #4 Goal:*

The goal of this project is to document and streamline WRFP procedures and make readily available information regarding our processes to the public. This project would aid in strengthening the Guiding Principles.

### *Strategic Project #4 Objective:*

Develop standard operating procedures in order to improve our effectiveness by establishing and maintaining a funding process that is consistent and transparent.

### *Background:*

The WRFP funding process involves several steps including the submittal and review of documentation needed to comply with the WRFP Guidelines and the preparation of grant or loan agreements between a project sponsor and the State Water Board. Currently, the WRFP relies on the WRFP Guidelines, existing templates, tools developed by various staff and the technical expertise of more experienced staff to review and approve projects. Over the last couple of years, the internal procedures have been streamlined to reduce the processing time. However, these procedures could be further streamlined. In addition, since the process is not well documented, there is a need to further standardize the process and develop a standardized set of procedures that ensure consistency during the review and approval of projects. Additionally, information regarding our funding process, including estimated time to complete various activities is not readily available to the public. Current WRFP information on the Web site is outdated and needs revision. The standard operating procedures will allow the WRFP manager to establish timeframes within which specific steps of the process should be completed.

### *Activities:*

1. Develop standard operating procedures for the WRFP. Specifically, develop flowcharts of activities and actions, identify timeframes to complete each activity, identify required management approvals for each activity, and update templates for the various correspondence and documentation prepared;
2. Coordinate with the Contracts Unit within the DFA to outline the activities and responsibilities during the preparation of funding agreements, processing of disbursements to agencies, closeout of projects, and timelines;
3. Identify areas of potential improvement in the funding process, which may result in revisions to the WRFP Guidelines;

4. Implement recommended changes to the funding process;
5. Finalize standard operating procedures;
6. Develop a training curriculum outlining our standard operating procedures and train staff responsible for managing water recycling projects; and
7. Post on our Web Site pertinent information regarding our funding process and other relevant information to potential applicants and the public.

*Timeframe:* Ongoing; Complete by July 2007

*Resources Needed:* 250 staff hours (0.14 PY)

## **Key Strategic Project #5: Develop a WRFP Training Program**

### *Strategic Project #5 Goal:*

The goal of this project is to raise the level of expertise and knowledge of staff in the area of water recycling. This project would aid in strengthening our Guiding Principles.

### *Strategic Project #5 Objectives:*

1. To improve our effectiveness, provide continuous training, guidance and expertise to staff on water recycling technical matters, water recycling policies, funding procedures and guidelines; and
2. Develop a syllabus of training topics for staff on the concepts of planning, design, and operation of water recycling projects and the application of these concepts as well as the policies and standard operating procedures in the WRFP.

### *Background:*

Currently, no formal training program is in place to train staff on WRFP procedures, policies, guidelines and water recycling technical matters. In the past, some training was provided to staff and a mentorship approach was the primary means of training new incoming staff. In addition, staff attends conferences, seminars and training offered outside the WRFP. There is a need to develop a syllabus of training topics and a curriculum to accomplish more specialized training relevant to WRFP activities. A suggested syllabus would consist of the following topics:

1. WRFP overview, history, vision, mission, goal and objectives, and WRFP Guidelines
2. Water recycling planning concepts
3. Water supply in California
4. California water rights and issues related to water reuse
5. Monetary analysis fundamentals and basic tools (cost indexing, interest factors)
6. Economic analysis
7. Financial analysis (construction financing plan, revenue program)
8. Engineering design concepts (mass balance and capacity calculations, etc.)
9. Facilities plan approval (application review, key issues, content of approval and basis, computation of eligible cost)
10. Plans and specifications review and approval, project completion documentation and closeout

11. Regulatory framework of water recycling (Regional Board permitting, Department of Health Services regulations and review, building standards, cross-connection control, etc.)
12. Retrospective assessment of past projects to illustrate challenges encountered and solutions implemented.

*Activities:*

1. Develop 1-2 hour training modules in the areas of the syllabus suggested above;
2. Identify potential instructors including staff from DFA, the Division of Water Rights, the DWR, and the DHS; and
3. Train staff responsible for managing water recycling projects.

*Timeframe:* January 2007-December 2007

*Resources Needed:* 250 staff hours (0.14 PY)

## **Key Strategic Project #6: Promote, Coordinate and Finance Water Recycling Statewide Efforts**

### *Strategic Project #6 Goal:*

The goal of this project is to further develop the WRFP to serve as a partner and catalyst in statewide efforts to promote, coordinate and finance water recycling projects and research. Specifically, this project will increase our coordination of water recycling funding with other agencies, maintain our current research activities, and assess the feasibility of initiating a targeted research funding approach to enhance the academic and research capabilities of the University of California system related to water recycling. This project would aid in fulfilling the Strategic Goal and Objective 2.

### *Strategic Project #6 Objectives:*

1. Establish a Water Recycling Funding Agency Coordination Group, consisting of state and federal funding agencies, to coordinate and discuss applicants' funding needs and share information on current status of funding programs and applications being reviewed. The Group would also identify and discuss opportunities to conform funding requirements and criteria;
2. Direct funds to support research on cost-effective treatment, testing and monitoring efforts, development of innovative/emerging technologies, study of emerging issues and fundamental scientific principles addressing technology, and public and environmental health related to water reuse;
3. Evaluate feasibility of directing funds to support water recycling research at one University of California campus in order to attract faculty and students to pursue water recycling as an academic specialty, enhancing the expertise within the state and helping to train the future practitioners working in government and consulting sectors in California; and
4. Participate in outreach activities to promote the WRFP statewide.

### *Background:*

#### Funding Agency Coordination

Typically, in California, local agencies seek funding from several state and federal agencies such as the State Water Board, DWR and USBR for water recycling projects. Each state and federal funding program has a different application and funding process. The State Water Board and the DWR funding programs function within the CALFED umbrella. Currently, state and federal funding agencies do not coordinate their water recycling funding efforts. There is

a need for greater coordination between funding agencies regarding information sharing, criteria utilized, applicants' needs, and funding processes.

The Recycled Water Task Force recommended a Water Recycling Funding Coordination Committee to coordinate applicants' funding needs (Recommendation 1.2). It recommended that the committee consist of representatives of the state and federal funding agencies, the California WaterReuse Association, and other stakeholders. The Task Force recommended the committee establish quantifiable objectives to be used in the review of projects, streamline project selection, and ensure an open process for setting selection criteria. These recommended tasks do not seem to be suited for such a broad-based committee. To serve the needs for interagency coordination and information sharing amongst funding agencies, the WRFP will create a coordination group instead, consisting of the State Water Board, DWR, and the USBR. This will accomplish some of the goals of the Recycled Water Task Force recommendation.

### Water Recycling Research

Public acceptance of recycled water depends on confidence that its use is safe. It is necessary to keep abreast of new constituents of concern to ensure that existing water recycling practices and regulations are adequately protecting the environment and public health. Any efforts to introduce new uses of recycled water should be based on sound scientific knowledge and evidence. Continued innovative research to establish and improve the scientific understanding of water recycling is needed. The Recycled Water Task Force recommended funding research on cost-effective treatment, testing and monitoring efforts, development of innovative/emerging technologies, study of emerging issues and fundamental scientific principles addressing technology, and public and environmental health related to water reuse (Recommendation 6.1.1).

To date, the WRFP has supported water recycling research efforts in these areas through the WaterReuse Foundation. Since the passage of Proposition 13 in 2000, the State Water Board has provided \$2 million in funding for research and administration through the WaterReuse Foundation (see Appendix D for a list of previously funded research projects). The WaterReuse Foundation is an educational, nonprofit public benefit corporation that serves as a centralized organization for the water and wastewater community to advance the science of water reuse, recycling, reclamation, and desalination. The Foundation's research covers a broad spectrum of issues including chemical contaminants, microbiological agents, treatment technologies, salinity management, public perception, economics and marketing. The Foundation updates priority research areas by obtaining input from its Board of Directors, subscribers, research partners, research needs assessment workshops and the Research Advisory Committee (RAC). The State Water Board is a member of the RAC and participates in the research needs assessment workshops. The WRFP will continue to fund WaterReuse Foundation research and other research initiatives.

## Water Recycling Academic & Research Program

Water recycling issues cross academic disciplines from water resources to groundwater hydrology to environmental toxicology. There is a need to have an integrated and comprehensive academic program addressing all relevant aspects of water recycling in the context of water resources management. We can further promote water recycling research by encouraging university faculty to devote some of their research to water recycling and to begin efforts to develop a comprehensive water recycling academic and research program within the university. The Recycled Water Task Force recommended using state research funds to encourage an integrated academic program on one or more campuses (Recommendation 6.2.1). We can start this by working with and evaluating feasibility of directing research funds to one of the University of California campuses, with funding targeted to a campus having a comprehensive approach. This will strengthen the expertise available within the state. Many of the engineering professionals working on water recycling projects in California have come from campuses in the state. Providing research funding involving students helps create a foundation for better-trained professionals in the future.

### Outreach

Applicants can greatly benefit from educational and outreach efforts that provide them with information regarding our funding program. There is an opportunity for the WRF to continue to participate in outreach activities such as participation in funding fairs or funding information workshops, conferences and sponsorship of booths at professional conferences. This was also recommended in the Recycled Water Task Force Recommendations (Recommendation 1.4.1).

### Activities:

1. Convene Water Recycling Funding Agency Coordination Group;
2. Work with WateReuse Foundation to identify and fund potential research projects utilizing up to \$500,000 from Proposition 13 research funds;
3. Work with UC Davis or other UC campus to identify and evaluate feasibility of supporting an academic and research water recycling research program;
4. Sponsor information booths at various conferences to create awareness of our funding programs and other relevant materials; and
5. Coordinate or participate in annual funding fairs or funding information workshops.

*Timeframe:* January 2007-June 2008

### *Resources Needed:*

450 staff hours (0.25 PY), up to \$500,000 in potential research contracts with WateReuse Foundation, up to \$300,000 in potential research contracts with a UC campus and to sponsor booth at professional conferences (one per year)

## MEASURING SUCCESS

To monitor and report progress and accomplishment of the strategic goal and objectives and to measure operational/process activities and resources, we have established the performance measures listed below. Each measure is categorized as either an input, output or outcome indicator. An input indicator measures resources dedicated to a particular task, program, etc. An output indicator measures products created or services provided. An outcome indicator measures a broader result or desired end result achieved. For each measure, a target or specific, measurable level of performance intended to be achieved within the timeframe is identified. All performance measures will be evaluated and adjusted when appropriate.

**Table 2. Performance Measures, Targets, Tracking/Evaluation Mechanism**

| Indicator | Measure   | Description   | Tracking /Evaluation Mechanism  | Target                               | Timeframe   |
|-----------|---|---|---|--------------------------------------|---|
| Outcome   | 1) Total volume in acre-feet per year of recycled water deliveries in California <sup>3</sup> | Determine total volume in acre-feet per year of recycled water deliveries in California | <p>Conduct comprehensive statewide survey of municipal wastewater facilities where recycled water is used to determine total volume of recycled water deliveries in California.</p> <p>Information is collected directly from water recyclers and Regional Water Board records. Water recyclers (i.e. public agencies, districts, municipalities) are mailed a survey form and requested to provide information regarding recycled water use including total deliveries, types of use, types of treatment, etc. Information is also collected from Regional Water Boards' records.</p> <p>Data is analyzed and categorized depending on types of use, treatment, etc. using a spreadsheet. Data is summarized in a report and posted on the WRFP website.</p> | 1,000,000 acre-feet per year by 2010 | Starting in August 2007, survey major facilities every two years and all facilities every five years thereafter |

<sup>3</sup> This is a performance measure which tracks progress towards meeting a statewide goal as opposed to a programmatic goal or objective. The State Water Board will work with other funding agencies and stakeholders to achieve the target set by California statute.

| Indicator | Measure   | Description   | Tracking /Evaluation Mechanism   | Target  | Timeframe                         |
|-----------|---|---|--|---|-----------------------------------|
| Outcome   | 2) Total volume of actual water recycling deliveries resulting from funded projects | Determine total volume in acre-feet per year of actual recycled water deliveries by our funded projects | For all construction projects funded, track the volume in total acre-feet per year of actual annual deliveries using data provided by project proponents in the annual project reports. Data tracked will be analyzed to determine and report on the total actual volume in acre-feet per year of recycled water delivered by funded projects during the previous calendar year. The annual reports are due February 28 <sup>th</sup> following the first complete calendar year of operation. Subsequent reports are submitted thereafter following the calendar year covered.<br><br>Data will be tracked in the WRFAP Access Database and/or spreadsheet. | 175,000 acre-feet per year by 2010 <sup>4</sup> | March-June of every calendar year |
| Outcome   | 3) Planned versus actual water recycling deliveries for funded projects             | Determine percentage of planned deliveries that result in actual recycled water deliveries.             | Track total planned and actual recycled water deliveries in acre-feet per year using data provided by project proponents in the schedule of deliveries and annual reports. Calculate percentage by using the following formula:<br><br>Total Actual AFY/Total Planned AFY *100=%<br><br>Compare percentage to previous calendar year performance. The analysis will be tracked in a spreadsheet.   | >70%  | March-June every calendar year    |

<sup>4</sup> The target of 175,000 AFY was estimated by determining total planned deliveries for funded projects to date (~340,000 AFY) and multiplying the total by 60% to obtain an estimate for actual anticipated deliveries.

| Indicator | Measure                      | Description  | Tracking /Evaluation Mechanism   | Target  | Timeframe  |
|-----------|------------------------------|--|--|---|--|
| Outcome   | 4) Project economic analysis | Perform economic analysis prior to making funding determination for all proposed construction projects; utilize analysis as a funding criteria | <p>Phase I: WRFP staff will utilize previously established procedures to calculate the unit cost of proposed water recycling projects. This information will be considered when making a funding determination.</p> <p>Phase II: Evaluate economic feasibility for every proposed construction project and include copy of analysis in the project master file. Evaluate that each project recommended for funding is economically feasible. The most economically feasible alternative shall be the alternative that the analysis determines to have the lowest cost (present worth or equivalent annual value), and this alternative will be given primary consideration unless other nonmonetary benefits are overriding.</p> | 100% of projects funded are economically feasible | Phase I: February 2007-December 2009<br>Phase II: Starting December 2008; continuous thereafter. |
| Outcome   | 5) Statewide Benefits        | Determine local and state benefits for each proposed construction project  | <p>Using information from economic analysis and other relevant information, determine if proposed construction project results in local benefit or a statewide benefit (i.e. provides state water supply benefits).</p> <p>Only projects that provide statewide benefits will be funded. Funding will be limited to Category I and II projects as defined in the 2004 WRFP Guidelines.</p>   | 100% of projects provide a statewide benefit      | Starting December 2008; continuous thereafter  |

| Indicator | Measure  | Description   | Tracking /Evaluation Mechanism  | Target                         | Timeframe   |
|-----------|--|---|---|--------------------------------|---|
| Input     | 6) Time to review, approve and manage projects | Determine time to review, approve and manage water recycling planning studies and construction projects from application review to project closeout.  | <p>Phase I: Track average staff hours by recording hours to perform various key activities during the funding process for a selected group of projects varying in complexity; staff hours will be tracked and averaged using a spreadsheet.</p> <p>Phase II: Once economic/financial analyses procedures are implemented, record hours to review and evaluate economic feasibility for a selected group of proposed projects.</p> | Assess average staff time, hrs | <p>Phase I: January-December 2007; every two calendar years thereafter</p> <p>Phase II: Starting December 2008; every two calendar years thereafter</p> |
| Output    | 7) Completeness Review of Applications         | Assess time to review applications submitted and perform a completeness review. A completeness review is performed to determine whether the application is complete or additional information is needed from the applicant. | <p>Track average time in days to review an application from date received to date a completeness review is completed and applicant is notified via letter of the status of their submittal.</p> <p>Time will be tracked by using a spreadsheet to log the date applications are received and the date a letter is mailed to applicant regarding status of application.</p>  | 30 days                        | Starting January 2007; Continuous thereafter  |

| Indicator | Measure   | Description   | Tracking /Evaluation Mechanism  | Target   | Timeframe                                    |
|-----------|---|---|---|--|--|
| Output    | 8) Approval to Advertise-Construction Project             | Assess time to issue an approval to advertise from the date plans & specifications (P&S) are submitted to the WRFP to the date approval to advertise is issued. | Track average time in days to approve a construction project from the date P&S are submitted to the WRFP by the applicant.<br><br>Time will be tracked using a spreadsheet to log the date the P&S are received and the date approval to advertise is issued. | 60 days  | Starting January 2007; Continuous thereafter |
| Output    | 9) Number of Funding commitments and total amount awarded | Determine total number and funding amounts of grants and loans awarded per funding source.  | Track funding commitments and amounts using the WRFP Access Database and/or appropriate spreadsheet.  | Assess total grant and loan amounts awarded per funding source, \$ | Continuous                                   |

## **Tracking/Evaluation Mechanism for Key Strategic Projects**

Progress in goal and objectives of each key strategic project will also be tracked. For each key strategic project, progress in completing each activity and any obstacles encountered will be tracked using a spreadsheet.

## **REPORTING**

Progress in achieving the WRFP's strategic goal and objectives as well as the goal and objectives of each key strategic project and any obstacles encountered will be reported to WRFP staff and DFA management on a quarterly and annual basis. Quarterly reporting to DFA staff and management will occur via e-mail and/or meetings. A written report will be prepared annually and presented to WRFP staff and DFA management. The written report will document progress in achieving goals and objectives by evaluating performance data and report on operational/process activities and resources. In addition, the written report will identify obstacles encountered and propose potential solutions and/or changes to be implemented. The annual report will also summarize the status of all funding sources and document the total amount of grants and loans awarded, the total number of projects funded and fund balances. The first annual report will attempt to set performance targets for performance measures where no adequate target could be previously set due to lack of sufficient information. These targets may be finalized once Strategic Project #3 is completed.

## **RISKS, CONCERNS, AND CONFLICTS**

The implementation of strategic projects #1 and #2 could encounter some opposition. Below is a brief discussion of some of the potential concerns for each of these strategic projects.

**Strategic Project #1:** In the past, local agencies opposed requirements that projects be economic from a statewide perspective as a condition for funding. Establishing an economic analysis criterion can result in rejection of funding for some projects or portions of projects. However, an economic analysis incorporating monetary as well as non-monetary benefits will bring a wide range of projects. There was also a concern that performing an economic analysis can result in an administrative burden.

**Strategic Project #2:** The beneficiary pays concept potentially could be opposed by the water industry since it could lead to reduced state funding shares for some water recycling projects. DWR has implemented a form of this concept in at least one funding program. Overall funds for the WRFP will remain the same; distribution to specific project types may change.

## PLAN UPDATES AND REVISIONS

The plan will be updated every two years, or more frequently as needed.

## REFERENCES

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## ABBREVIATIONS AND ACRONYMS

|                      |  |
|----------------------|--|
| AF                   | acre-foot, acre-feet   |
| AFY                  | acre-feet per year   |
| BDO                  | Boards, Departments and Offices in Cal/EPA                               |
| BDPAC                | CALFED Bay-Delta Public Advisory Committee                               |
| Cal/EPA              | California Environmental Protection Agency                               |
| CALFED               | State (CAL) and federal (FED) agencies participating in Bay-Delta Accord |
| CEQA                 | California Environmental Quality Act                                     |
| CPL                  | Competitive Project List   |
| CWC                  | California Water Commission  |
| CWCGP                | Clean Water Construction Grant Program                                   |
| DFA                  | Division of Financial Assistance   |
| DHS                  | California Department of Health Services                                 |
| DWR                  | California Department of Water Resources                                 |
| hr, hrs              | hour, hours  |
| IRWMGP               | Integrated Regional Water Management Grant Program                       |
| Leg.                 | California State Legislature   |
| NA                   | not applicable   |
| NEPA                 | National Environmental Policy Act  |
| P&S                  | plans and specifications   |
| PY                   | personnel year   |
| RAC                  | Research Advisory Committee  |
| Regional Water Board | Regional Water Quality Control Board                                     |
| ROD                  | CALFED Programmatic Record of Decision                                   |
| RRIF                 | Renewable Resources Investment Fund                                      |
| RWQCB                | Regional Water Quality Control Board                                     |
| SRF                  | State Revolving Fund Loan Program  |
| State Water Board    | State Water Resources Control Board                                      |
| SWRCB                | State Water Resources Control Board                                      |
| Task Force           | 2002 Recycled Water Task Force   |
| TBD                  | to be determined   |
| USEPA                | United States Environmental Protection Agency                            |
| USBR                 | United States Bureau of Reclamation                                      |
| WRFP                 | Water Recycling Funding Program  |
| WUE                  | Water use efficiency   |

## **APPENDIX A: SUMMARY OF RECYCLED WATER TASK FORCE RECOMMENDATIONS**

The Recycled Water Task Force was initiated in 2002 as directed by Assembly Bill 331 (Statutes of 2001). The mission of the Task Force as established in Assembly Bill 331 was to evaluate the current framework of State and local rules, regulations, ordinances, and permits to identify the opportunities for and obstacles or disincentives to increasing the safe use of recycled water. The Task Force consisted of 40 members representing federal, State, and local government, public health professionals, private sector and nonprofit entities, and others. The Task Force was chaired by former Board Member Richard Katz of the State Water Board and was administered by staff from the DWR and the State Water Board. In June 2003 it issued *Water Recycling 2030: Recommendations of California's Recycled Water Task Force*, which contained 55 recommendations covering 26 issues. Attached is a table with a summary of key issues and recommendations, which have direct involvement by the State Water Board. The table also includes the status of State Water Board actions and State Water Board recommendations for future action. Many of the recommendations require funding and staffing that has not been available. Thus, many recommendations have been in abeyance. Through the implementation of this Strategic Plan, the State Water Board can begin to work towards efforts that support some of the Task Force recommendations. The WRFPP will coordinate with the DWR to provide information regarding our efforts in implementing specific Task Force recommendations. The DWR was recommended by the Task Force to take the lead role of tracking efforts by all agencies to implement the recommendations.

**RECYCLED WATER TASK FORCE RECOMMENDATIONS  
STATUS OF STATE WATER BOARD ACTIONS AND RECOMMENDATIONS FOR FUTURE ACTIONS**

Note: The numbers of the recommendations correspond to the numbers assigned by the Recycled Water Task Force. The recommendations were divided by the Task Force into two categories—Key Recommendations and Other Important Recommendations. Only the recommendations where the State Water Resources Control Board (SWRCB) is an implementing agency are listed. "NA" indicates not applicable.

| Recommendation  | Implementing Agency | Time Frame     | Status  | Recommendation for Water Board Future Action/Steps                         |
|---|---------------------|----------------|---|--|
| <b>* * * KEY RECOMMENDATIONS * * *</b>  |                     |                |   |  |
| <b>{1.1} Funding for Water Recycling Projects.</b>  |                     |                |   |  |
| 1. State funding for reuse/recycling should be increased beyond Proposition 50 and other current sources.   | Leg./SWRCB          | Jul.-Dec. 03   | The WaterReuse Association has used data provided by SWRCB to support new state bond initiatives. | Continue to encourage additional state bond funds for water recycling.     |
| 2. The California Water Commission, in cooperation with DWR and SWRCB, is strongly encouraged to seek federal cost sharing legislation for water recycling. | CWC/ DWR/<br>SWRCB  | Jul.03-ongoing | Efforts to date have not been successful in encouraging federal cost sharing legislation.         | SWRCB should encourage federal funding in a program with uniform criteria. |

| Recommendation   | Implementing Agency                           | Time Frame  | Status  | Recommendation for Water Board Future Action/Steps   |
|--|---|---|---|--|
| <p><b>{2.1} Community Value-based Decision-making Model for Project Planning.</b></p> <p>1. Increase public participation through vigorous outreach, augmenting the notification requirements stipulated by CEQA and NEPA.</p>   | <p>SWRCB/DWR<br/>BDPAC<br/>Local agencies</p> | <p>Jul.03-ongoing<br/>Jan.04-Jan.05</p>   | <p>Recommendation not yet implemented.</p>  | <p>Determine existing statutory authority with respect to state loans and grants to require public information and outreach during planning in order to receive state loans and grants. Conduct legal review with DWR. If legal review reveals no additional statutory authority needed, then revise guidelines to require public participation during planning.</p> |
| <p><b>{2.2} Leadership Support for Water Recycling.</b></p>  | <p><u>State Support</u></p>                   | <p>1. Take a leadership role on water recycling</p> <p>a. Develop common language of referring to treatment levels and uses.</p> <p>b. Set standard signage for regulatory use.</p> | <p>Unknown</p>  | <p>SWRCB will track progress of this recommendation and provide input to DHS as appropriate.</p>   |
| <p>c. Develop a consistent position on water recycling.</p> <p>d. Convey its mission to maximize recycled water use throughout all government levels via interagency collaboration.</p> <p>e. Facilitate projects and communicate the rules clearly to local health offices.</p> | <p>DWR/SWRCB/<br/>DHS</p>                     | <p>Sep.03-Jan.05</p>  | <p>Division of Water Quality has drafted guidance for implementing state statutes, regulations, and policies for recycled water projects to establish more uniform interpretation. Approval expected in January 2007.</p> | <p>Assign DFA representative to coordinate with DWQ to ensure consistent implementation of guidance document once finalized.</p>   |
| <p>f. Encourage recycled water use by using it in public agency buildings to flush toilets,</p>  | <p>State/local gov.</p>                       | <p>Jul.03-ongoing</p>   | <p>NA</p>   | <p>NA</p>  |

**Recommendation****Implementing Agency****Status****Recommendation for Water Board Future Action/Steps**

and to irrigate city parks.

2. Provide funding for public education and outreach.

No SWRCB direct action. SWRCB funded research on understanding public concerns and on marketing strategies for non-potable water reuse, the results of which should help public education and outreach.

Recommend that any new bonds for recycled water projects include public information and outreach as eligible expenditures.

State/local gov. Jul.03-ongoing

3. Work closely with local agencies on water recycling to include: technical assistance, greater education and clarification on recycled water use policy, coordination of existing and new recycled water informational programs.

SWRCB responds to requests for information and guidance on DHS and RWQCB permitting requirements. No information materials produced by SWRCB.

Continue information transfer and provide guidance to local agencies.

DWR/SWRCB/  
DHS Jul.05-ongoing

**{2.4} State-sponsored Media Campaign.**

1. Develop a water issues information program for radio, television, and print.
2. Work with organizations that have produced videos on water issues, including recycled water, and fund updates and expanded programming and encourage cable television networks to broadcast these videos regularly throughout the State.
3. Prepare op ed pieces for publication in newspapers throughout the State.
4. Retain an advertising agency/public relations firm to assist in the development of short messages with specific information on urgent topics such as drought, conservation, pollution prevention, water quality, stormwater,

Recommendation not yet implemented.

SWRCB will coordinate with DWR and track progress of this recommendation.

State Agencies Jul.04-ongoing

State Agencies Jul.05-ongoing

State/Local Jul.04-ongoing

State Agencies Jul.04-ongoing

| Recommendation  | Implementing Agency              | Time Frame      | Status  | Recommendation for Water Board Future Action/Steps   |
|---|----------------------------------|-----------------|---|--|
| <p>wastewater, or recycled water including indirect potable reuse. (Emphasis should be inclusive of the locales' diversity).</p>  |                                  |                 |   |  |
| <p><b>{4.2} Incidental Runoff.</b></p>  |                                  |                 |   |  |
| <p>1. The SWRCB should convene a committee to review the legal requirements of federal and State statutes and regulations that relate to the regulation of incidental runoff and to determine the regulatory and enforcement options that are available to Regional Water Quality Control Boards.</p> | SWRCB                            | Jul. 03-Jan. 04 | SWRCB conducted legal analysis, conducted stakeholder meeting, issued memorandum (February 24, 2004) to RWQCBs providing appropriate options on incidental runoff regulation and enforcement. | No further action.   |
| <p><b>{4.3} Uniform Interpretation of State Standards.</b></p>  |                                  |                 |   |  |
| <p>1. The SWRCB should appoint and empower a key person to provide oversight of the water recycling permits issued by the various regional boards. This person would act as an ombudsman to facilitate recycling and arbitrate conflicts.</p>   | SWRCB                            | Aug. 03-ongoing | Staff person within Division of Water Quality at the SWRCB has been identified to provide oversight of water recycling permits.   | No further action.   |
| <p>2. DHS needs to take steps to ensure uniform interpretation of regulations on water recycling.</p>   | No specific SWRCB role assigned. |                 | Unknown   | SWRCB will track progress and coordinate with DHS if appropriate.  |
| <p>3. Conduct legal review to determine local regulatory authority on water recycling.</p>  | No specific SWRCB role assigned. |                 | Unknown   | SWRCB will track progress and coordinate with DHS if appropriate.  |
| <p>4. Investigate the water recycling programs in Florida to determine whether there are concepts that should be adopted in California.</p>   | SWRCB/DHS WaterReuse             | Jan. 04-Feb. 04 | No SWRCB action.  | Appoint staff within Div of Financial Assistance's Water Recycling Funding Program to investigate Florida's water recycling program. |
| <p>5. The RWQCBs should be more proactive during the planning of recycled water projects so</p>   | RWQCB                            | Jul. 03-ongoing | Unknown.  | Survey RWQCBs to document how they are   |

| Recommendation   | Implementing Agency | Time Frame     | Status  | Recommendation for Water Board Future Action/Steps  |
|--|---------------------|----------------|---|---|
| <p>issues can be addressed before design commences.</p>  |                     |                |   | <p>meeting objectives of Task Force recommendation.</p>   |
| <p>6. Each RWQCB should have a resident expert on water recycling to provide consistency in permitting and coordinate with other RWQCBs in maintaining consistency.</p>  | RWQCB               | Jul.03-ongoing | Unknown.  | <p>Survey RWQCBs to document how they are meeting objectives of Task Force recommendation.</p>                                |
| <b>{4.4} Water Softeners.</b>  |                     |                |   |   |
| <p>No specific SWRCB role assigned.</p>  |                     |                | <p>In 2003 Legislature passed AB 334 to ease the ability of local agencies to regulate water softeners.</p>   | NA  |
| <b>{5.1} Uniform Analytical Method for Economic Analysis.</b>  |                     |                |   |   |
| <p>a) Identify a set of desirable characteristics for an economic feasibility analysis framework based on true benefits and costs for recycled water projects in California.</p>   |                     |                | <p>SWRCB partially funded research project to develop an economic framework for evaluating the benefits and costs of water reuse. Final report submitted by WasteReuse Foundation in August 2006.</p> | <p>Implement Key Strategic Project #1 (Develop Economic/Financial Analyses Guidance) outlined in the WRFP Strategic Plan.</p> |
| <p>b) Review existing frameworks to find the commonalities and gaps based on the characteristics from a) above; add components to the framework that fill in the gaps.</p>   |                     |                |   |   |
| <p>c) Develop a practical and implementable process to identify and include non-market benefits and costs into the framework.</p>  | DWR / SWRCB         | Sep.03-Aug.04  |   |   |
| <p>d) Develop a mechanism to increase the opportunity for identifying equitable capital and operational funding schemes according to the beneficiaries based on allocation of the benefits and costs in the economic analysis.</p> |                     |                |   |   |
| <p>e) Develop guidance to conduct an economic feasibility analysis.</p>  |                     |                |   |   |
| <p>f) Develop a mechanism for information from the economic feasibility analysis to feed into the</p>  |                     |                |   |   |

| Recommendation  | Implementing Agency   | Time Frame             | Status   | Recommendation for Water Board Future Action/Steps  |
|---|---|------------------------|--|---|
| <p>financial feasibility analysis and funding decision making.</p> <p>g) Develop appropriate benchmarks for comparing the incremental costs of developing recycled water with the cost of developing an equivalent amount through fresh water projects.</p>   |   |                        |  |   |
| <p><b>{6.1} Research Funding.</b></p> <p>Expand funding sources to include sustained state funding for research on cost-effective treatment, testing and monitoring methods, development of innovative/emerging technologies, study of emerging issues and fundamental scientific principles addressing technology, and public and environmental health related to water reuse.</p> | <p>No specific SWRCB role assigned but Task Force included using existing mechanisms.</p> |                        | <p>SWRCB has an on-going research funding program using Proposition 13 bond funds, see Appendix D of WRFPP Strategic Plan for list of funded projects to date.</p> | <p>Implement Key Strategic Project #6 (Promote, Coordinate and Finance Water Recycling Statewide Efforts) outlined in the WRFPP Strategic Plan. Continue using bond funds to sponsor research, including objectives identified in this Task Force recommendation.</p> |
| <p><b>{6.2} University Academic Program for Water Recycling.</b></p> <p>Encourage an integrated academic program on one or more campuses for water recycling research and education, which is expected to generate well-educated practitioners on water recycling production, quality, and use, using state research funds as an incentive.</p>                                     | <p>State</p>  | <p>Jul.03-Dec.03</p>   | <p>Recommendation not yet implemented by SWRCB.</p>  | <p>Implement Key Strategic Project #6 (Promote, Coordinate and Finance Water Recycling Statewide Efforts) outlined in the WRFPP Strategic Plan. Work with UC Davis or other UC campus to identify and fund a potential water recycling research program.</p>          |
| <p>* * * <b>ADDITIONAL IMPORTANT RECOMMENDATIONS</b> * * *</p>  |   |                        |  |   |
| <p><b>{1.2} Funding Coordination.</b></p> <p>a) The SWRCB will facilitate a newly established Water Recycling Funding Coordination Committee (Committee) to coordinate</p>  | <p>SWRCB/DWR/ DHS/USBR</p>  | <p>Jan.04- ongoing</p> | <p>Recommendation not yet implemented by SWRCB.</p>  | <p>Implement Key Strategic Project #6 (Promote, Coordinate and Finance Water Recycling Statewide</p>  |

**Recommendation for Water Board Future Action/Steps**

**Status**

**Implementing Agency**

**Time Frame**

applicant's funding needs with the appropriate funding agencies.

- b) The Committee will establish quantifiable objectives to be used in the review of a proposed project. Objectives shall include 1) the local, regional, and State benefits, and 2) non-water supply benefits, resulting from the project.
- c) The Committee will work cooperatively with funding agencies, streamlining project selection within one agency while ensuring an open process for setting selection criteria.
- d) The Committee shall maintain a listing of local, State and federally funded projects. The list should include detailed project cost and water supply yield information.

Efforts) outlined in the WRFP Strategic Plan. SWRCB should take lead to work with other funding agencies and convene a funding agency coordination group.

**{1.3} Regional Planning Criterion.**

State funding agencies should use information from completed regional studies when determining the prioritization of funding for those projects encompassed under an existing regional plan.

SWRCB water recycling funding staff have not used existing regional plans to guide decisions or advice to local agencies. Regional water recycling plans may receive consideration in Integrated Regional Water Management Program.

SWRCB Div of Financial Assistance staff should become familiar with existing regional studies and the issues, analyses, and recommendations included in these studies.

SWRCB/DWR/ DHS/USBR Jan.04- ongoing

**{1.4} Funding Information Outreach.**

Public information to support education and outreach efforts should be provided by having funding agencies:

- a. Present public funding availability at conferences
- b. Establish annual water recycling funding information workshop to assist in preparing funding application packages for all

Information on Proposition 50 funding was provided through workshops and the Internet. Div of Financial Assistance sponsored state funding fair with participation of many agencies and water and wastewater funding programs.

Appoint a key person within the Div. of Financial Assistance to maintain state funding information on the SWRCB Web site. Implement Key Strategic Project #6 (Promote, Coordinate and Finance Water Recycling Statewide Efforts) outlined in the WRFP

SWRCB Jan.04 - ongoing

| Recommendation   | Implementing Agency  | Time Frame | Status  | Recommendation for Water Board Future Action/Steps   |
|--|--|------------|---|--|
| <p>state/federal funding sources.<br/>c. One common website.</p> | <p><b>{1.6} Project Performance Analysis.</b> Provide funding agencies with the resources to perform comprehensive analysis of past recycling performance (costs and benefits) and projection of future performance.</p> |            | <p>No new bond funds have been secured for this task. State Water Board research funds through the WaterReuse Foundation were used to develop inventory of projects statewide that beneficially use municipal wastewater. However, no documentation of benefits and true costs was developed.</p> | <p>Encourage funding for this recommendation in new water bond proposals. If funds become available, the SWRCB should lead a state and federal funding agencies committee to define scope of analysis and coordinate joint effort.</p>   |
|  |  |            |   | <p>In the meantime, SWRCB will implement Key Strategic Project #3 Perform Project Performance Analysis outlined the WRFPP Strategic Plan. The WRFPP will perform a comprehensive performance analysis of a select group of previously funded completed projects to compare the planned benefits, costs and recycled water deliveries with actual performance</p> |

| Recommendation | Implementing Agency | Time Frame | Status | Recommendation for Water Board Future Action/Steps |
|----------------|---------------------|------------|--------|--|
|----------------|---------------------|------------|--------|--|

**{5.2} Economic Analyses.**

1. Local agencies encouraged to perform economic analyses even if they are not seeking state or federal funding.

No SWRCB role assigned.

SWRCB funded WaterReuse Foundation report on economic framework for evaluating benefits and costs that can assist local agencies.

NA

2. Include a financial and an economic analysis as two of the funding criteria in State and federal funding programs.

Funding Agencies

Jan.-04-ongoing

Under existing WRFP Guidelines, a construction financing plan is required for all construction grant and loan applications. A revenue program is required for construction loan applications. In addition, a cost-effectiveness analysis is recommended, but is not a funding criterion.

Implement Key Strategic Project #1 (Develop Economic/Financial Analysis Guidelines) outlined in the WRFP Strategic Plan. Include financial and economic analysis as funding criteria in the WRFP once guidelines are revised and adopted.

Reference: State of California, *Water Recycling 2030: Recommendations of California's Recycled Water Task Force*, Department of Water Resources, Sacramento, June 2003

## APPENDIX B: WATER RECYCLING FUNDING SOURCES

Since the mid-1970s, California has made an effort to promote water use efficiency through the Federal Clean Water Act and passage of several bond measures. In 1987, the Amendments to the Federal Clean Water Act created the *State Revolving Fund (SRF) Loan Program*, which provides low-interest loans to public agencies for planning, design and construction of wastewater treatment facilities and water recycling projects. In 1978, 1979, 1984, 1988, 1996, 2000 and 2002, California passed several bond laws and created a fund, which provided loans and grants for planning and construction of water recycling projects.

In 1978, the voters passed the **Clean Water and Water Conservation Bond Law of 1978 (1978 Bond Law)**, which provided \$50 million for grants for pollution control, water conservation, and water recycling projects. Approximately \$11.2 million of this amount was used by the State Water Board to fund four water recycling projects.

In 1979, the **Renewable Resources Investment Fund (RRIF)** was created to provide money for fish habitat, forest resources, soil conservation, water recycling, and other renewable resources. To initiate this program the Legislature provided \$10 million from the General Fund, including \$4.5 million to the State Water Board for water recycling, with which one project was funded. It was hoped that the RRIF would be sustained by a bond measure, Proposition 1 in June 1980, but it did not pass.

The **California Safe Drinking Water Bond Law of 1984 (1984 Bond Law)**, authorized the State Water Board to provide \$25,000,000, plus the first \$30,000,000 in principal and interest paid for loans for wastewater facilities, in low-interest loans for the design and construction of water recycling projects. The fund from this bond issue was set up as a perpetual revolving fund such that repayments can be used for new loans for water recycling projects.

The **California Clean Water and Water Reclamation Bond Law of 1988 (1988 Bond Law)** authorized the State Water Board to provide \$40 million for loans for design and construction of water recycling projects. Initially repayments from 1988 Bond Law loans were deposited in the state General Fund to repay the bond debt. This was changed in the 1996 Bond Law, as described below.

**The Safe, Clean, Reliable Water Supply Act (1996 Bond Law, Proposition 204)** established the 1996 Water Recycling Subaccount and provided \$60 million for low-interest loans for design and construction of water recycling projects and for grants for facilities planning of recycling projects. The State Water Board administers the funds. The Water Recycling Subaccount serves as a revolving fund such that loan repayments from loans from this subaccount are available for new loans but not for planning grants. The 1996 Bond Law also provided that repayments from water reclamation loans under 1988 Bond Law would be

deposited in the 1996 Water Recycling Subaccount for new loans and planning grants. As of the date of the 2000 Bond Law, discussed below, all remaining 1988 and 1996 funds and future loan repayments became subject to the rules for the 2000 Bond Law.

In March 2000, California voters approved the ***Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act (2000 Bond Law, Proposition 13)***. This bond law established the 2000 Water Recycling Subaccount and authorized the State Water Board to provide \$40,000,000 for loans and grants for design and construction of water recycling projects and for water recycling research and demonstration projects. Of the original \$40,000,000 appropriation, 50 percent is allocated for construction grants, 41 percent for construction loans and planning grants, and the remainder for administration (3%), research and development (3%), and bond processing (3-3.5%). The 2000 Bond Law also directs unallocated funds and loan repayments from the water recycling subaccounts of 1988 and 1996 Bond Laws to be transferred and deposited in the 2000 Water Recycling Subaccount. All repayments are deposited into the 2000 Water Recycling Subaccount for new loans, grants, and administration in the same allocation just described.

In November 2002, voters passed the ***Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (2002 Bond Law, Proposition 50)***, which authorized funding for water recycling projects that meet the goals and objectives of the California Bay-Delta Program (CALFED) and are consistent with the CALFED Record of Decision. The legislature appropriated \$57,000,000 under ***Proposition 50, Chapter 7*** to be administered by the State Water Board. Of this amount, 94 percent (or \$52,155,000) is allocated for construction grants and the remainder for administration (3%) and bond processing (3%).

The ***State Revolving Fund (SRF) Loan Program*** can provide low interest loans to public agencies for planning, design and construction of projects that prevent pollution of waters of the state including projects that recycle water and are cost-effective when compared to the development of new sources of water. The program is funded by federal grants, State general obligation bonds funds, and revenue bonds. The SRF is a perpetual revolving fund allowing the repayments to be used for new loans.

### **Geographic Distribution of Proposition 13 and 50 funds**

The 2000 Bond Law established a requirement allocating a minimum of 60 percent of the funds deposited into the 2000 Water Recycling Subaccount, including residual funds from previous bond issues, for Proposition 13 construction loans and grants and planning grants to projects within the Southern California counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. By policy the State Water Board established a geographic allocation for Proposition 50 funds: a minimum of 40 percent to projects within the same Southern California counties, and a minimum of 40 percent of funds is allocated to projects within the remaining counties. The remaining 20 percent of Proposition 50 funds may be distributed to projects within any county.

**APPENDIX C: SUMMARY OF KEY STRATEGIC PROJECTS & ALIGNMENT WITH STRATEGIC PLAN AND RECYCLED WATER TASK FORCE RECOMMENDATIONS**

| <b>Key Strategic Projects</b>  | <b>Supports Guiding Principles</b> | <b>Supports Objective 1: Funded projects are cost-effective</b> | <b>Supports Objective 2: Funded projects result in a statewide benefit</b> | <b>Supports Objective 3: Planned deliveries</b> | <b>Supports Recycled Water Task Force Recommendation</b>   |
|--|------------------------------------|---|--|---|--|
| 1. Develop an Economic/Financial Analyses Guidance                               |                                    | √   |  |   | {1.2} Funding Coordination<br>{5.1} Uniform Analytical Method for Economic Analysis.<br>{5.2} Economic Analyses.                                       |
| 2. Develop a Beneficiary Pays Framework  |                                    |   | √  |   | {5.1} Uniform Analytical Method for Economic Analysis  |
| 3. Perform Project Performance analyses of previously and future funded projects |                                    |   |  | √   | {1.6} Project Performance Analysis.  |
| 4. Develop Standard Operating Procedures   | √<br>(transparent and consistent)  |   |  |   |  |
| 5. Develop a WRF Training Program  | √<br>(raise level of expertise)    |   |  |   |  |
| 6. Promote, Coordinate and Finance Water Recycling Statewide Efforts             |                                    |   | √  |   | {1.2} Funding Coordination.<br>{1.4.1} Funding Information Outreach<br>{6.1} Research Funding<br>{6.2} University Academic Program for Water Recycling |

**APPENDIX D: WATERUSE FOUNDATION RESEARCH FUNDING**

| <b>Project Number</b> | <b>Project Title</b>   | <b>Total WRF Budget<sup>i</sup></b> | <b>SWRCB Budget</b> | <b>Actual/Anticipated Completion Date</b> |
|-----------------------|--|-------------------------------------|---------------------|---|
| WRF-01-001            | Develop Low Cost Analytical Method for Measuring NDMA  | \$250,000                           | \$33,750            | Published December 2005                   |
| WRF-01-002            | Removal and/or Destruction of NDMA in Wastewater Treatment Processes   | \$350,000                           | \$105,000           | Published May 2006                        |
| WRF-01-004            | Understanding Public Concerns of Indirect Potable Reuse Projects   | \$305,000                           | \$60,000            | Website Active July 2006                  |
| WRF-02-001            | Rejection of Wastewater-Derived Micropollutants in High-Pressure Membrane Applications Leading to Indirect Potable Reuse | \$221,500                           | \$62,250            | Published May 2006                        |
| WRF-02-002            | Investigation of NDMA Fate and Transport   | \$546,000                           | \$50,000            | Published July 2006                       |
| WRF-02-003            | Filter Loading Evaluation for Water Reuse  | \$400,000                           | \$65,000            | 2007                                      |
| WRF-02-004            | National Database on Water Reuse Facilities  | \$357,600                           | \$100,000           | December 31, 2006                         |
| WRF-02-006            | Concentrate Disposal Research Projects (JWR&DTF Projects)  | \$385,000                           | \$50,000            | December 31, 2006                         |
| WRF-02-007            | Comparative Study of Recycled Water Irrigation and Fairway Turf  | \$10,000                            | \$5,000             | Published 2003                            |
| WRF-02-011            | A Protocol for Developing Water Reuse Criteria with Reference to Drinking Water Supplies                                 | \$10,000                            | \$5,000             | Published 2005                            |
| WRF-03-001            | Pathogen Removal and Inactivation in Reclamation Plants - Study Design   | \$100,000                           | \$37,500            | December 31, 2006                         |
| WRF-03-005            | Marketing Strategies for Non-Potable Recycled Water  | \$150,000                           | \$56,250            | October 2006                              |
| WRF-03-006            | Economic Analysis of Sustainable Water Use - Benefits and Cost   | \$230,000                           | \$75,000            | September 2006                            |
| WRF-03-009            | Reclaimed Water Aquifer Storage and Recovery: Potential Changes in Water   | \$200,000                           | \$75,000            | December 31, 2006                         |

| Project Number | Project Title   | Total WRF Budget <sup>i</sup> | SWRCB Budget | Actual/Anticipated Completion Date |
|----------------|---|-------------------------------|--------------|------------------------------------|
|                | Quality   |                               |              |                                    |
| WRF-03-014     | Development of Indicators and Surrogates of Chemical Contaminants and Organic Removal in Wastewater and Water Reuse   | \$300,000                     | \$20,250     | February 2007                      |
| WRF-04-008     | Understanding Mental Models of Water: Origins, Quality, Contamination, Naturalness, and Risk  | \$140,000                     | \$46,667     | May 1, 2008                        |
| WRF-04-010     | Extend the IRP Process to Include Water Reuse and Other Non-Traditional Waters  | \$110,000                     | \$36,667     | February 1, 2007                   |
| WRF-04-011     | Application of Microbial Risk Assessment Techniques to Estimate Risk Due to Exposure to Reclaimed Waters – Phase 1  | \$125,000                     | \$41,667     | June 1, 2007                       |
| WRF-04-012     | Development of a Guidance Document for Applying Sound Statistics for Exploring, Interpreting, and Presenting Microbial Data Associated with Reclaimed Water Systems | \$89,878                      | \$30,000     | February 1, 2007                   |
| WRF-04-013     | Improved Sample Collection and Concentration Method for Multiple Pathogen Detection   | \$175,000                     | \$58,333     | May 31, 2007                       |
| WRF-04-014     | Decision Support System for Selection of Satellite vs. Regional Treatment for Reuse   | \$135,000                     | \$45,000     | April 2007                         |
| WRF-04-017     | Reaction Rates and Mechanisms of AOP Technologies for Water Reuse   | \$120,000                     | \$40,000     | June 30, 2007                      |
| WRF-05-002     | Microbiological Quality and Biostability of Reclaimed Water Following Storage and Distribution  | \$300,000                     | \$123,288    | TBD                                |
| WRF-05-003     | Alternative Viability/Infectivity Surrogates for Giardia for Which Cell Culture Infectivity   | \$250,000                     | \$102,740    | TBD                                |

| Project Number | Project Title  | Total WRF Budget <sup>1</sup> | SWRCB Budget       | Actual/Anticipated Completion Date |
|----------------|--|-------------------------------|--------------------|------------------------------------|
|                | Assays Are Not Available   |                               |                    |                                    |
| WRF-05-004     | Development of Surrogates to Determine the Efficacy of Soil Aquifer Treatment Systems for the Removal of Organic Chemicals   | \$200,000                     | \$82,190           | TBD                                |
| WRF-05-005     | Identifying Hormonally Active Compounds, Pharmaceutical Ingredients, and Personal Care Product Ingredients of Most Health Concern From Their Potential Presence in Water Intended for Indirect Potable Reuse | \$100,000                     | \$41,095           | TBD                                |
| WRF-05-008     | The Effect of Salinity on the Removal of Contaminants of Concern during Biological Water Reclamation   | \$99,675                      | \$35,287           | November 14, 2007                  |
| WRF-05-009     | Dewatering Reverse Osmosis Concentrate from Water Reuse Applications Using Direct Osmosis  | \$80,000                      | \$50,750           | January 31, 2007                   |
| WRF-05-010     | Oxidative Destruction of Organics in Membrane Concentrates   | \$90,000                      | \$30,064           | December 31, 2007                  |
| WRF-05-011     | Assessment of the Potential Presence of Chemical Contaminants in Water Produced by Desalination Systems  | \$60,000                      | \$36,250           | May 21, 2008                       |
| <b>Total</b>   |  | <b>\$5,889,653</b>            | <b>\$1,599,998</b> |                                    |

<sup>1</sup> Does not include in-kind services contributed by project participants.