

2007 CALFED ANNUAL REPORT

The End of Stage 1 : The First 7 Years





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STATE

The Resources Agency

California Bay-Delta Authority

California State Parks

Delta Protection Commission

Department of Conservation

Department of Fish and Game

Department of Water Resources

Reclamation Board

San Francisco Bay Conservation
and Development Commission

Environmental Protection Agency

Water Resources Control Board

Department of Public Health

Department of Food and Agriculture

FEDERAL

Department of the Interior

Bureau of Reclamation

Fish and Wildlife Service

Geological Survey

Bureau of Land Management

Environmental Protection Agency

Army Corps of Engineers

Department of Agriculture

Natural Resources Conservation Service

Forest Service

Department of Commerce

National Marine Fisheries Service

Western Area Power Administration

TABLE OF CONTENTS

Director’s Message	1
Stage 1 Progress and Recommendations	5
Challenges	23
2007 Legislation in Review	33
Oversight, Governance and Outreach	41
Program Financing	51
Glossary of Acronyms	55

CALFED’s 2007 Annual Report is also published online,
downloadable as a PDF at www.calwater.ca.gov



Two-thirds of California's population – a total of 25 million people – rely on water that passes through the Delta. The Delta and its tributaries supply 33 percent of the Bay Area's water, 23 percent of Kern County's water and 30 percent of Southern California's water. In some parts of the state, reliance on Delta water is 100 percent.



DIRECTOR'S MESSAGE

Seven years ago, when the CALFED Record of Decision was signed by state and federal agencies agreeing to join together for the estuary's benefit, the year 2007 seemed a long way off. Those signatories agreed to accept the responsibility for working toward the clarification of two major questions pending at the time: does the state need additional surface storage and is through-Delta conveyance still working?

Interestingly, these are the two leading topics in the water world that were still on our minds as 2007 wound to a close. Yes, Stage 1 of the CALFED Record of Decision (ROD) has ended and our seven-year period of study and analysis of these two issues has come to a rather dramatic conclusion.

Late last year, Gov. Arnold Schwarzenegger declared to all that the state's water resources,

and, in particular, the California Delta, were top priorities. In an executive order issued in September 2006, he said a solution must be found to fix the Delta's problems, and established his Delta Vision Blue Ribbon Task Force to take on the issues. For the CALFED agencies, this was like having reinforcements sent to the battlefield.

In documenting the end of Stage 1 through a detailed report and in the Delta Vision Blue Ribbon Task Force report, *Our Vision for the California Delta*, both efforts reached the same conclusion: the current method of conveying water through the Delta is not sustainable and cannot achieve the objectives designated seven years ago by the CALFED ROD.

What we are saying in unison, joined almost daily by more and more voices of concern, is that the Delta as we know it is suffering from so many problems that it is

Scientists have told us there is a two-in-three chance over the next 50 years that a major earthquake could immediately liquefy so many of the Delta's levees as to cause massive contamination of our largest water supply.

no longer a reliable source of water for two-thirds of Californians.

Scientists have told us there is a two-in-three chance over the next 50 years that a major earthquake could immediately liquefy so many of the Delta's levees as to cause massive contamination of our largest water supply. There are invasive species of plants and animals that prey on the Delta's desirable species and eat their food, making the Delta the most invaded ecosystem in the world and thrusting its native species into a struggle for life. There is the insidious rise of temperature and sea level across the



Joe Grindstaff
Director
California Bay-Delta Authority

globe that threatens ultimately to inundate the Delta's levees and towns, causing massive flooding and sending highways, railroads, utility corridors, docks, homes and businesses to a watery grave. Urban encroachment is changing the character of life in the Delta and putting more people at risk of flooding.

Now is the time to act on behalf of the 25 million Californians who get at least some of their water from the Delta; for farmers who tend more than 3.5 million acres of the most productive farm land in the world; and to the corporate giants of our state who provide the world with high-tech electronics,

Academy Award-winning movies and the world's best wines.

We must take quick, near-term actions while we move forward with longer-range solutions. We must quickly act to reduce the risk to our water supply, residents and transportation infrastructure and prevent further decline in pelagic species. For the longer-term, we must develop and implement a plan to revitalize the Delta's ecosystem, we must initiate environmental compliance studies on conveyance methods and we must fund other integrated components of surface and groundwater storage, conservation and recycling. Finally, we must

have a strategic plan for long-term sustainability and strong governance of the Delta.

From whatever perspective you bring to California water issues, whether you are a farmer, an urban water district member or an environmentalist, you know the time has come to act. The Delta can wait no longer for relief and California cannot prosper without the Delta's water.



P. Joseph Grindstaff

Director

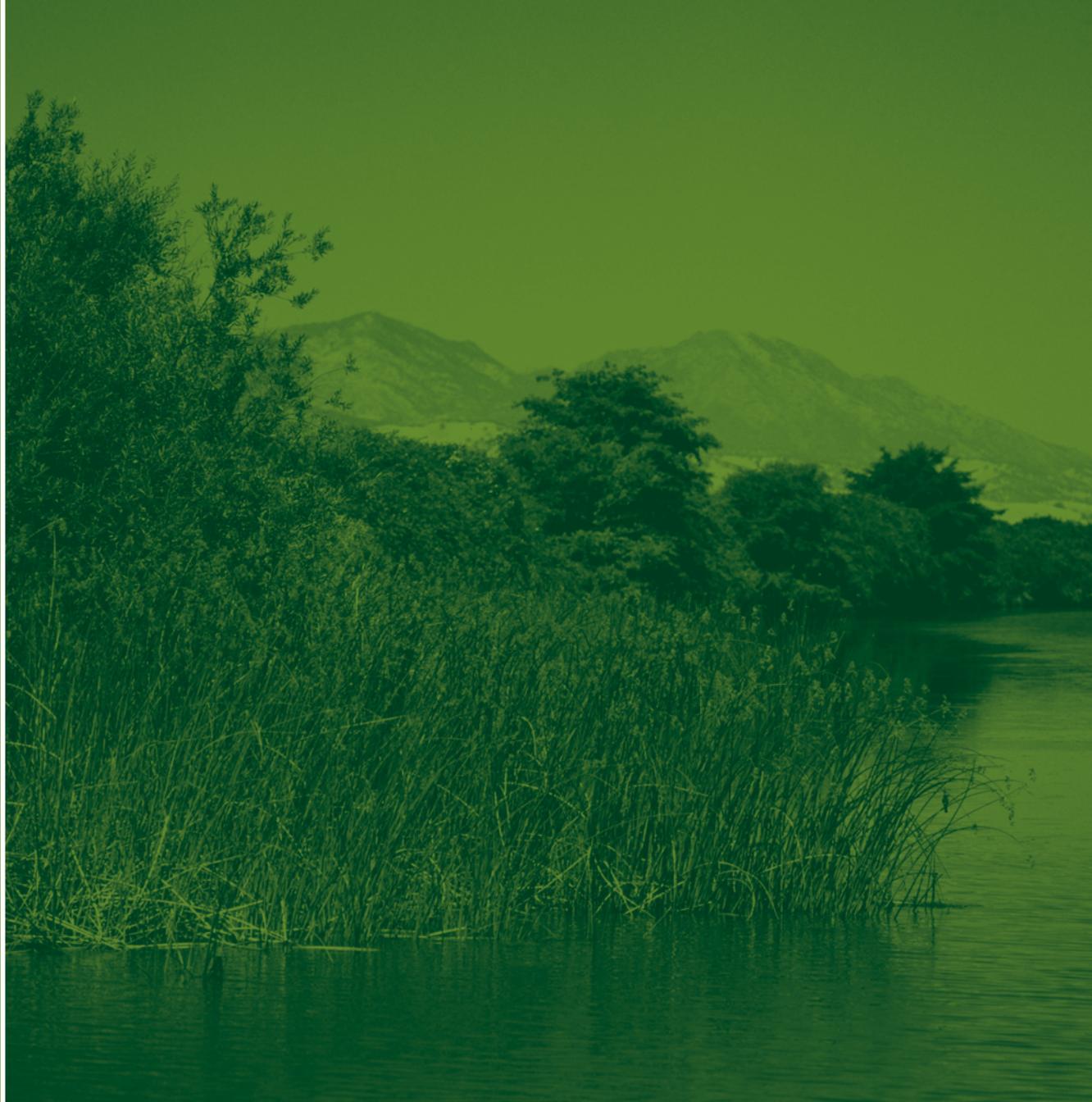
California Bay-Delta Authority





Now is the time to act on behalf of the 25 million Californians who get at least some of their water from the Delta; for farmers who tend to more than 3.5 million acres of the most productive farm land in the world; and to the corporate giants of our state who provide the world with high-tech electronics, Academy-Award winning movies and the world's best wines.

The Delta occupies more than 700,000 acres, of which nearly half is devoted to agriculture. It contains more than 1,000 miles of levees, 57 reclaimed islands and numerous channel islands.



STAGE 1 PROGRESS AND RECOMMENDATIONS

- *Two-thirds of Californians – 25 million residents – rely on water from the Delta*
- *Delta water helps irrigate California's vast Central Valley that produces 50 percent of the nation's fruits and vegetables*
- *Eighty percent of the state's commercial fishery species live in or migrate through California's Bay-Delta*
- *The California Bay-Delta provides habitat for more than 750 species, including 31 listed as threatened or endangered*

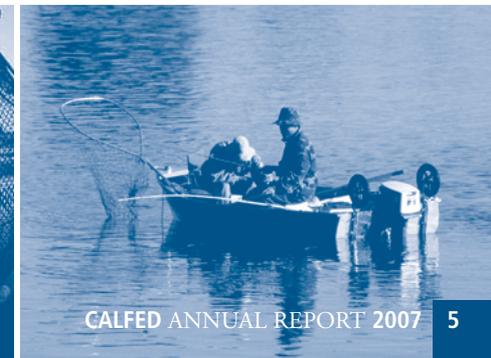
SUMMARY

State and federal agencies in the CALFED Bay-Delta Program adopted a Record of Decision (ROD) for the Programmatic Environmental Impact Statement and Report (EIS/EIR) in August 2000. This action committed the Program to a 30-year plan to meet objectives for levee system integrity, ecosystem restoration, water supply reliability and water quality. The agencies also agreed to a preferred program alternative – including moving water across the Delta in what is known as “through-Delta conveyance” – and required an evaluation of its performance at the

end of the ROD's first seven years (Stage 1) of the 30-year proposed plan of action.

In general, the CALFED Program has worked well toward meeting its objectives during the first seven years, particularly in areas outside the Delta. Investments have developed more than 1 million acre-feet of new water and promise to deliver up to another 350,000 acre-feet of groundwater; dams and barriers have been removed upstream to help with fish passage; water quality has been improved in the San Joaquin River and approximately \$120 million has been invested in new technology and source control projects aimed at improving water quality.

Sprinkler irrigation brings water to thirsty Delta crops, left. Major crops in the Delta include corn, grain, hay, alfalfa, safflowers, pears, wine grapes and pasture. State and federal scientists constantly monitor Delta fisheries, center. Eighty percent of California's commercial salmon fishery is dependent on the Bay-Delta system. The Delta is a favorite spot for sportfishing, with 300 marinas visited by 500,000 boaters annually, right.



Progress within the Delta has been limited. More than 130,000 acres of habitat have been protected and/or restored, \$60 million funneled to local districts for levee maintenance and repairs and 1.4 million cubic yards of dredge material used to stabilize Delta levees. Additionally, tributary restoration upstream has been successful in enhancing salmon runs in some areas, as well as floodplain restoration to help many threatened native species. Work supported by the CALFED Science Program has found that increasing permanently flooded shallow-water habitat in the Delta, assumed to favor native species, has proven to favor exotic species.

Wetlands in the Delta provide a home to plant and animal life.



Subsequent emphasis in the Delta has been on research to improve our understanding of how the ecosystem functions. As a result of this research, many beliefs about how the Delta functions have been replaced and a new paradigm for restoration that focuses on spatial and temporal variability is emerging. As part of Stage 2 planning, the CALFED Ecosystem Restoration Program (ERP) implementing agencies have prepared a Draft Conservation Strategy to guide future restoration actions based on past experience and emerging knowledge, incorporating the new paradigm above, as well as climate change and sea level rise.

In the past four years there has been a dramatic decline in abundance of the pelagic (open water) species in the Delta, including the threatened delta smelt, which has reached its lowest recorded levels. This decline, combined with increasing knowledge and awareness of future challenges, including climate change and sea level rise,

seismic risk and population growth, calls into question whether current uses of the Delta are sustainable. It further leads to the conclusion that the preferred program alternative for conveyance – through-Delta conveyance as originally envisioned – is unlikely to achieve its objectives.

The four CALFED Program objectives outlined in the ROD remain valid for all efforts to develop and manage a sustainable Delta. The Stage 1 report evaluates progress across all areas of the CALFED Program. (An in-depth view of CALFED actions undertaken can be found in Program Plans by Program Element at http://www.calwater.ca.gov/calfed/plans/program_plans.html.)

This report outlines a plan to build on the interagency cooperation and work already underway, and incorporate direction provided by the Governor's Delta Vision, the Bay-Delta Conservation Plan (BDCP) and other initiatives to help implement a long-term management plan for a sustainable Delta.

CONCLUSIONS

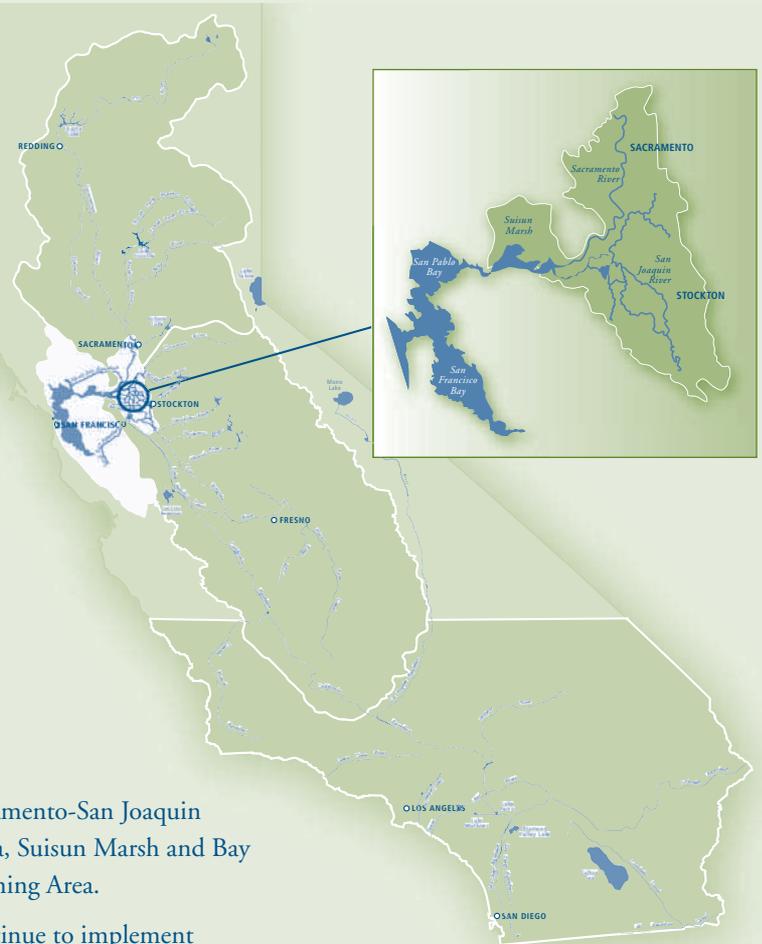
- California's population and demand for water are increasing.
- Climate change and sea level rise will increase the risk to the state's water supplies.
- The Delta is increasingly a troubled estuary with key species in decline.
- Damage from earthquakes to Delta levees and infrastructure could be catastrophic.
- Through-Delta conveyance has not met its objectives, making it necessary to consider conveyance alternatives.
- Implementation of the CALFED Program will be influenced by other efforts, including Delta Vision and BDCP.

RECOMMENDATIONS

Long-term financing for high-priority programs and projects is supported by the state and solutions are being sought through proposed funding mechanisms:

- Take near-term actions to prevent further decline in its pelagic species and reduce risks to water supply and infrastructure in the Delta to improve the sustainability of the ecosystem.
- Adopt a Strategic Plan for long-term sustainable uses of the Delta.
- Initiate environmental compliance studies on alternate methods of conveyance.
- Fund surface and groundwater storage, conservation and recycling projects consistent with integrated regional water management principles.
- Complete and implement the Ecosystem Restoration Program Conservation Strategy for the

The CALFED Solution Area



Sacramento-San Joaquin Delta, Suisun Marsh and Bay Planning Area.

- Continue to implement CALFED actions upstream of the Delta.

BACKGROUND

The Sacramento-San Joaquin Delta is complex. It is both habitat and hub of the state's major water supply system. The Delta is home to more than 750 plant and animal species, 31 of which are threatened or endangered. Thus, the estuary is both a critical ecosystem and of significant importance to the state's water supply and economy. This dual purpose greatly complicates the problem of sustaining the state's prosperity while conserving the Delta's native species.

California's water "wars" came to a head in the years of 1987-1992, when a six-year drought slowed water deliveries, water quality deteriorated and two fish species unique to the Delta – the Delta

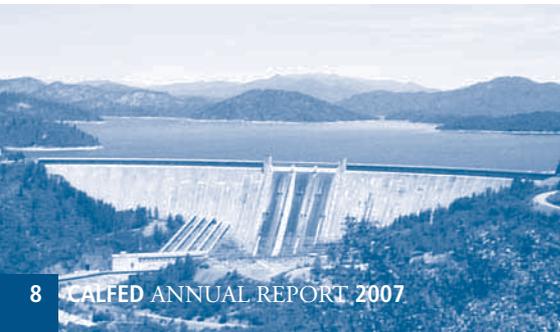
smelt and winter-run Chinook salmon – were pushed to the brink of extinction. The year 1994 began an important decade for California water, which resulted in the signing or enactment of several key agreements, bond measures and state and federal legislation.

In August of 2000, the CALFED ROD and an accompanying memorandum of understanding were executed by 13 state and federal implementing agencies. It was an agreement that all parties would work collaboratively to achieve four principle goals: levee system integrity, ecosystem restoration, water supply reliability and water quality. In addition to these four program objectives, the CALFED ROD also established

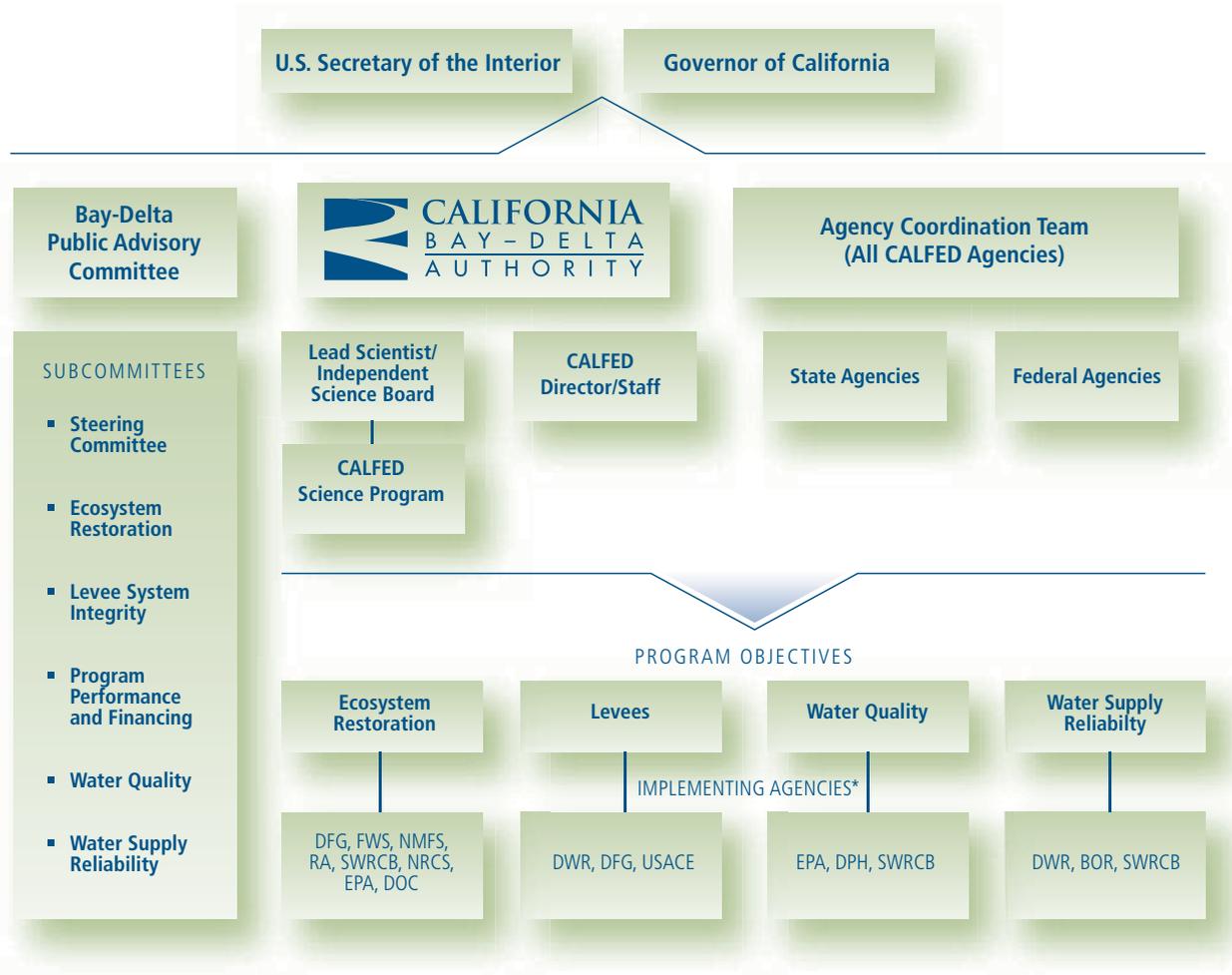
11 Program Elements, including the CALFED Science Program, established to improve and increase the scientific basis for sound decision making. Later, 12 more state and federal agencies signed onto an implementation agreement for a total of 25 collaborating state and federal CALFED agencies.

Completion of the first seven years of the CALFED Bay-Delta Program marks a point in its 30-year lifespan when key decision making was required. At this juncture, the CALFED ROD requires an assessment of program progress and a reconsideration of whether the through-Delta conveyance that was originally selected in the ROD has been effective.

Shasta Dam is a major storage facility on the Sacramento River, left. Discovery Bay is one of many communities in the Delta that also relies on its water, center. The California Aqueduct is an integral part of the state's water system, right.



CALFED BAY-DELTA PROGRAM STRUCTURE



*BOR–U.S. Bureau of Reclamation; DFG–State Department of Fish and Game; DOC–State Department of Conservation; DPH–Department of Public Health; DWR–State Department of Water Resources; EPA–U.S. Environmental Protection Agency; FWS–U.S. Fish and Wildlife Service; NMFS–National Marine Fisheries Service; NRCS–Natural Resources Conservation Service; RA–California Resources Agency; SWRCB–State Water Resources Control Board; USACE–U.S. Army Corps of Engineers

PROGRAM ASSESSMENT

Consistent with the ROD requirement, an end-of-Stage 1 assessment of the CALFED Program was conducted under the direction of the Secretary for Resources and the Director of the CALFED Program. The following is a summary of Program accomplishments in the areas of levee system integrity, ecosystem restoration, water supply reliability and water quality.

The Sacramento River is the state's largest, flowing from the flanks of Mount Shasta to the Pacific Ocean.



New groundwater storage and recycling projects are expected to provide a projected 687,000 to 860,000 acre-feet of new water.



WATER SUPPLY RELIABILITY

(Includes Storage, Conveyance, Environmental Water Account, Water Use Efficiency and Water Transfers)

GOAL: Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.

Since the ROD was signed, more water has been reliably delivered than in the years of crisis that led to the establishment of the CALFED Program. New groundwater storage and recycling projects are expected to provide a projected 687,000 to 860,000 acre-feet of new water. Favorable hydrology and implementation of projects to increase operational flexibility have resulted in meeting the target of 65 to 70 percent of contract amounts for

water deliveries to the Central Valley Project (CVP) south-of-Delta water users in most years since the ROD was signed.

Effective management of the Environmental Water Account (EWA) has meant that there were very few instances in which water demand led to uncompensated water supply reductions for either Delta fish conservation or water users from 2000 until the summer of 2007, when concern for delta smelt protection led to a voluntary halt in pumping for 10 days. However, an independent science review found uncertainty in EWA benefits to the Delta ecosystem.

With the issues of pelagic species conservation, climate change and other factors on the horizon threatening to increase uncertainty

for water supply reliability, the ROD's expectations that conveyance progress would be achieved after seven years, when in fact, the expected progress has not been met, appears to be in increased jeopardy. Impacts on water supply reliability punctuated the year with court cases that took issue with the demise of delta smelt and other threatened species in state and federal pumps (*Watershed Enforcers v. California Department of Water Resources*, Alameda County Superior Court) and the balancing of water

deliveries versus the Delta ecosystem and smelt survival (*NRDC v. Kempthorne*, U.S. District Court for the Eastern District of California). They are what prompted the shut-down of the state pumps and slow-down of federal pumps for an unprecedented 10-day period. The Governor's Delta Vision Blue Ribbon Task Force, charged with finding a sustainable plan to manage the Delta for the next 30- to 50-year period, clearly stated that the current method of through-Delta

conveyance was not working.

In urban areas, investments in water use efficiency, recycling and storage have helped stabilize demand for Delta water. This has softened the impact of short-term reductions in Delta exports for some users. Unfortunately, water conservation grant programs to help local communities reduce their demand for Delta water were not funded at the level originally expected and so have not contributed as much to a reduction in demand as anticipated.

The state relies heavily on water that flows through the Delta. In fact, two-thirds of all Californians get at least some of their water from the Delta.



CALFED-supported scientific research is providing increasing evidence that the export pumps are having an adverse effect on pelagic fish species, including the threatened Delta smelt. Furthermore, current research suggests that Delta outflow during the summer and fall months may affect the quality and distribution of habitat required by pelagic fishes. As a result, increases in Delta exports, as described in the CALFED ROD, have not been implemented, and there is growing

doubt whether existing export levels can be maintained. To date, surface storage projects identified in the ROD that could capture surplus flows at times of minimum risk to the environment have been delayed as cost-sharing partners for these projects are not likely to come forward until there is more certainty on how water will be conveyed south of the Delta in future years. These and other factors pointing to future reductions in water supply reliability and

the inability of current infrastructure and water management policies to meet the needs of a growing population contribute to the conclusion that “business as usual” for water management in California is not sustainable.

Funding: In Stage 1, CALFED planned to invest more than \$5.5 billion in projects supporting the water supply reliability objective. To date, Program funding has totaled approximately \$2.8 billion as detailed in Figure 1:

FIG. 1. CALFED WATER SUPPLY RELIABILITY PROGRAM EXPENDITURES FOR STAGE 1 (IN MILLIONS)¹

Years 1 to 7				
Program Element	Federal	State	Local	Total
Conveyance	\$ 40,997,000	\$ 104,032,403		\$ 145,029,403
Environmental Water Account	\$ 32,185,000	\$ 180,685,191		\$ 212,870,191
Storage	\$ 56,661,000	\$ 347,732,001	\$ 861,000,000	\$ 1,265,393,001
<i>Groundwater²</i>	<i>\$ 6,185,000</i>	<i>\$ 275,066,000</i>	<i>\$ 861,000,000</i>	<i>\$ 1,142,251,000</i>
<i>Surface Water</i>	<i>\$ 50,476,000</i>	<i>\$ 72,666,001</i>		<i>\$ 123,142,001</i>
Water Supply Reliability	\$ 515,000	\$ 24,046,594		\$ 24,561,594
Water Transfers	\$ 505,000	\$ 2,342,000		\$ 2,847,000
Water Use Efficiency	\$ 125,287,000	\$ 251,955,996	\$ 864,971,000	\$ 1,242,213,996
Grand Total	\$ 256,150,000	\$ 910,794,185	\$ 1,725,971,000	\$ 2,892,915,185

¹ Source: Agency yearly funding submissions. Local amounts are estimated attributable to CALFED and are a portion of the total local investment that contributes to the Bay-Delta system.

Lessons Learned

Uncertainty for continued water supply reliability:

Emerging information on climate change suggests that without changes in water management strategy, water supplies will not be as reliable in the future. Changes in climate may alter patterns of delivery from the watershed and reduce the snowpack used as winter storage. Rising sea level could also make it more difficult to prevent seawater intrusion into the central Delta. These factors could adversely affect project operations, the delivery of water to replenish south-of-Delta storage and the transport of water from sellers upstream of the Delta to buyers downstream under the current through-Delta conveyance system. Maintenance of a reliable water supply will require strategies to deal with these emerging risks.

Better understanding of the

Delta: Much has been learned about the Bay-Delta system relevant to

water supply reliability. Delta hydrodynamics are much better understood regarding the way ocean and bay water mixes into riverine water of the Delta. We are aware now that the basic geometry of Delta waterways determines local and regional water quality parameters. Research has also revealed the catastrophic effect on water exports that a massive failure of Delta levees caused by an earthquake would have.

Improved participation in water use efficiency needed:

Programs to promote water use efficiency must be fully funded and implemented so that water use efficiency will continue to improve. Low participation has occurred in the agricultural community. It is questionable whether the existing levels and programs of incentive-based conservation are sufficient to achieve the levels of conservation needed in the future.



Emerging information on climate change suggests that without changes in water management strategy, water supplies will not be as reliable in the future.



ECOSYSTEM RESTORATION

GOAL: Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta system to support sustainable populations of diverse and valuable plant and animal species.

One of the cornerstones of the CALFED Ecosystem Restoration Program (ERP) has been the development of a common vision or single “blueprint” for ecosystem restoration. The blueprint was intended to ensure that ERP implementing agencies were all working toward common goals. To date, the blueprint has been implemented through a large number of competitive and directed grants and through work accomplished by the agencies. The ERP was also instrumental in developing a framework for adaptive management that has been adopted by the other CALFED Program components.

Numerous important projects, ranging from targeted research to

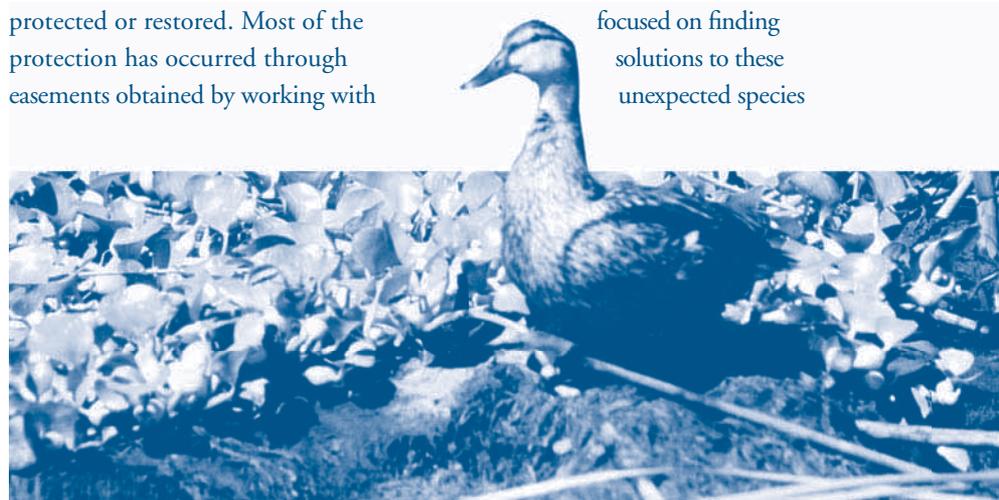
full-scale restoration, have been implemented under ERP. Full-scale tributary restorations upstream from the Delta provide the potential to achieve benefits to native fisheries. Significant investments in fish screens, temperature control, fish passage improvements and improvements in upstream habitats have improved the outlook for some salmon populations in the Central Valley.

CALFED ERP agencies have been successful at acquiring and protecting important lands in the Delta and along its tributary rivers and streams. To date, more than 130,000 acres of habitat targeted for important species have been enhanced, protected or restored. Most of the protection has occurred through easements obtained by working with

local landowners and communities. CALFED’s ERP has protected more than 54,000 acres of agricultural lands for their value as habitat.

In the Delta, the emphasis has been on targeted research and pilot projects to improve understanding of how to accomplish restoration. As a result, little actual habitat restoration to benefit aquatic species has actually been implemented compared to what has been accomplished in upstream areas for salmon. While understanding has increased dramatically, key species have continued to decline. Abundance counts of some, like the threatened delta smelt, are at all-time low levels.

Funding and research have focused on finding solutions to these unexpected species



declines. Research has not found any single source for the decline of these species, suggesting the decline is due to a number of complex causes.

CALFED-funded research on the Delta has fundamentally changed how scientists now understand Delta functioning. For example, in the past it was believed that the hydrology of the Delta was driven by freshwater inflows, but now it is known that hydrology is dominated by tidal flows, especially in the western and central Delta. In the past it was believed that entrainment in the export pumps was the primary cause of the decline of native species in the Delta. Now it is known that export pumping is only one of a number of important factors affecting the abundance of native species. Multiple factors, including export

pumping that reverses the flows in Old and Middle rivers, and discharges of toxic substances, such as pesticides, into the Delta, have an impact on native species survival.

Sustaining the native fauna of the Delta is a complex problem. In the past, it was assumed that invasive species were relatively unimportant. Now it is known that some invasive species like the overbite clam (*Corbula amurensis*) are having profound effects on the structure and function of the ecosystem.

The Delta is now regarded as one of the most invaded ecosystems in the world, and exotic species like the overbite clam out compete native

species for food. The overbite clam has a high food uptake rate and a low selenium clearance rate, resulting in high selenium accumulation. Selenium concentrations in overbite clams have been shown to exceed the levels known to cause negative reproductive effects in higher trophic animals that feed on clams, sturgeon and waterfowl. During Stage 1, our understanding of the problem of species and ecosystem restoration in the Delta has become clearer, but practical solutions remain elusive.

Funding: As described in the ROD, CALFED planned to invest more than \$1 billion in the ERP objective during Stage 1. To date, Program funding has neared this target, totaling approximately \$900 million and funding an estimated 550 projects.

A female mallard, far left, finds the Delta to be a comfortable home. The Delta is home to more than 750 species of plants and animals. This is a typical riparian scene of the Delta that has not been armored with rock, left. There are more than 1,000 miles of earthen levees in the Delta, forming 57 reclaimed islands, numerous tracts and channel islands. The Great Blue Heron, center, is the Delta's largest native water bird. Pond weeds floating atop Delta waters provides habitat for insects and algae, right.



Lessons Learned

Need to clarify future direction for restoration actions:

ERP has developed the Draft ERP Conservation Strategy for the Sacramento-San Joaquin Delta, Suisun Marsh and Bay Planning Area, that clarifies the goals, objectives and measures in the ERP Strategic Plan to guide future work. Delta Regional Ecosystem Restoration Implementation Plan models developed as part of Stage 1 will provide a solid science-based framework for assessing proposed restoration actions. Further implementation of adaptive management will ensure objective assessment of projects implemented.

Many Delta levee banks have been reinforced or armored with rock called rip-rap to combat erosion.



Better understanding of the Delta system and impact of management actions:

The Delta ecosystem is, and will continue to be, intensively managed into the future. Management actions coupled with targeted research have improved our understanding of the Delta as a dynamic system. The multiple and interacting effects of Delta inflows, export pumping, toxic chemicals, invasive species and Delta hydrology on sensitive aquatic species are now better understood, although solutions to restore native species remain elusive. Continued research, adaptive management and a broadly based ecosystem perspective appear to be the best approach to finding a sustainable balance between human and environmental needs for water.

Better understanding of linkages – restoration, species, and water quality: At the beginning of Stage 1, increasing the amount of shallow-water habitat in the Delta was the preferred

restoration action. However, as restoration projects were developed, CALFED Science monitoring projects found that shallow-water habitats favored exotic species, could reduce drinking water quality due to increased levels of dissolved organic carbon, and could cause mercury to undergo a chemical change (mobilization) to a form (methylate mercury) that can be consumed by organisms. Emphasis has now switched to seasonally or tidally flooded habitat rather than permanently flooded habitat. Seasonally or tidally flooded habitats seem to provide excellent feeding and growing opportunities for a number of native species and also contribute to the overall productivity of the estuary. However, intermittently-flooded habitats also contribute to mercury methylation and benefit non-native species (e.g., Prospect Island), demonstrating that there are no simple fixes for the Delta.

Importance of invasive species: During Stage 1 of CALFED's ERP, it became apparent that invasive species were a much more serious problem and obstacle to restoration than had been appreciated. A much more aggressive program of prevention, early detection, eradication and intensive management will be needed in the future. One idea that has emerged from Delta research is that variation in habitat characteristics over time and space may improve conditions for native species and help them cope with the high diversity of non-native species that have invaded the estuary.

The CALFED Water Quality Program set a goal of continuous improvement of Delta water quality for all uses, including in-Delta, drinking water, environmental and agricultural uses



WATER QUALITY

GOAL: Provide good water quality for all beneficial uses.

The CALFED Water Quality Program set a goal of continuous improvement of Delta water quality for all uses, including in-Delta, drinking water, environmental and agricultural uses. Since the CALFED ROD was signed, drinking water quality standards at the tap have generally been met, but little or no improvement has yet occurred in Delta source water quality. Advances in treatment technology have allowed water users to remain in compliance despite an increasingly challenging water quality and regulatory environment.

The CALFED agencies were uncertain at the time the ROD was signed as to the degree of water quality improvement that could be achieved using through-Delta conveyance and therefore scheduled an assessment at the end of Stage 1 to reevaluate progress toward the target levels for organic carbon and bromide. The assessment was completed in October 2007 and it was determined that specific water quality targets had not been met and most likely would not be met. The assessment also determined that the most practical way forward would be various strategies for providing an "equivalent level of public health protection" through a multi-barrier approach.

The CALFED ROD calls for consideration of additional conveyance actions, including an isolated facility, if water quality targets are not being met.



Ensuring that Delta levees are stable is a constant, ongoing and costly process.

The CALFED ROD's Water Quality Plan included actions, such as source water and treatment technology, that were intended to provide a level of water quality needed to meet more stringent drinking water quality standards than are currently in place. Increased knowledge of human health risk and improvements in technology may drive the need to strengthen future drinking water quality standards as new disinfection byproducts are found and their effects better understood. Given prospective future challenges to provide good drinking water from the Delta, it is likely that Delta water will require improvements in system management, drinking water treatment and water distribution systems, so Delta water will continue to be safe for drinking within acceptable levels of human health risk.

The ROD also called for the program to assist implementing agencies with their efforts to reduce the impacts of a number of pollutants and water quality conditions, including mercury, selenium, pesticides and low dissolved oxygen conditions. Substantial progress has been made toward both understanding and addressing these water quality issues. An example of this progress is the effort underway to reduce the amount of mercury in the aquatic food web. Research has resulted in a better understanding of how mercury is methylated in the Bay-Delta system and how this affects wildlife and human health. Areas that are intermittently flooded, such as tidally-influenced shallow water, can be primary sites for mercury methylation. The creation of this type of habitat may result in adverse ecosystem effects.

In addition to mercury, CALFED agencies made progress in understanding and reducing the impacts to water quality from low-dissolved oxygen in the San Joaquin River deep-water ship channel near Stockton, pesticides and toxicity and the bioaccumulation of selenium. For the most part, these issues are being addressed through development of total maximum daily loads.

Funding: CALFED agencies proposed investing approximately \$950 million during Stage 1 in water quality programs. Of this investment, more than \$500 million was planned to come from state and federal sources and the remainder from local sources. Actual spending during Stage 1 from state and federal sources was approximately \$125 million.



Lessons Learned

Significant source improvement work:

The ROD set a goal of 50 micrograms per liter for bromide and 3 milligrams per liter for total organic carbon, that could be accomplished through source water improvement in the Delta or through other actions, provided they achieve an equivalent level of public health protection. While expenditures outside the Delta on water treatment and other actions were significant, these water quality targets have not been met, nor are they likely to be met in the Delta with the current through-Delta conveyance structure.

Conflict between Water Quality and Ecosystem Restoration:

There is a conflict between water quality for drinking and agriculture, and ecosystem restoration in the Delta. Current scientific ideas about improving ecological functions in the Delta are focused on increasing short- and medium-term variability in floodplain inundation, restoring intertidal-marsh habitat, increasing water residence time and restoring variable salinity. These actions will result in reductions to water quality for drinking or agricultural use over large parts of the Delta.

Better understanding of human health risks: The human health risks associated with trace contaminants in drinking water, including a broad spectrum of disinfectant byproducts, are not fully understood. Despite meeting current regulatory standards, risks to human health from Delta drinking water remain. It seems likely that regulatory standards for drinking water will become progressively stricter so that future provision of safe and affordable drinking water will depend on improved source water quality.

The Delta's navigable waters are a major shipping route for large vessels using the Ports of Stockton and Sacramento. Here, a large vessel passes under the Rio Vista Bridge.

The risk of catastrophic levee failure in the Delta is better understood, as is the likelihood that failures will affect the functions of the Delta. Some new research indicates a two-in-three chance of catastrophic levee failure within the next 50 years.



LEVEE STABILITY

GOAL: Reduce the risk to land use and associated economic activity, water supply, agriculture and residential use, infrastructure and the ecosystem from catastrophic breaching of Delta levees.

The Levee System Integrity Program provides long-term protection for multiple Delta resources by maintaining and improving the integrity of the extensive Delta levee system. The five main components of the Levee System Integrity Program are:

- Delta Levee Base Level Protection Plan - Improve and maintain existing Delta levees to meet the Army Corps of Engineers PL 84-99 levee standard.
- Delta Levee Special Improvement Projects - Enhance flood protection for key islands that provide statewide benefits to the ecosystem, water supply, water quality, economics, infrastructure, etc.

- Delta Levee Subsidence Control Plan - Implement best management practices to correct subsidence adjacent to levees and coordinate research to quantify the effects and extent of inner-island subsidence.
- Delta Levee Risk Assessment - Quantify the major risks to Delta resources from floods, seepage, subsidence and earth quakes; evaluate the consequences and develop recommendations to manage the risk.
- Delta Levee Emergency Management and Response Plan – Enhance existing emergency management and response capabilities to protect Delta resources in the event of a disaster.

The Levee System Integrity Program has been substantially under funded in its first seven years. Funds earmarked for levee improvements in Propositions 13 and 50 were actually used to replace the state's share of levee maintenance, which was originally provided by annual state budget allocations. As a result, levee maintenance programs were funded, but long-term levee improvements defined under the CALFED ROD were under funded.

Funding to reimburse local maintenance districts for eligible expenditures has reduced the rate of catastrophic levee failure during Stage 1. In 2006, Propositions 1E and 84 were approved by voters, authorizing a combined \$275 million specifically for Delta flood control projects, a portion of the \$680 million earmarked for flood subvention and more than \$3 billion in additional funding for flood control projects statewide, including those associated with the Delta. It is anticipated that these funds will be

used to begin to improve Delta levees to withstand increasing stresses anticipated from future seismic events and climate change.

Substantial progress has been made for reusing dredge material to help stabilize Delta levees and improving the Delta Emergency Response Plan. A Levee Risk Analysis was conducted and resulted in the launching of a study called Delta Risk Management Strategy, which is now underway and showing promise of providing important information on statewide risks associated with Delta levee failure.

Funding: Projected Levee Program expenditures in Stage 1 were anticipated to be \$444 million. Actual Program funding from state and federal sources was approximately \$140 million, with a federal share of \$1.4 million. Of the state's contribution, approximately \$60 million was spent to reimburse local districts for about half of their expenditures on levee maintenance.

Lessons Learned

Better understanding of levee

failure risk: The risk of catastrophic levee failure in the Delta is better understood, as is the likelihood that failures will affect the functions of the Delta. Some new research indicates a two-in-three chance of catastrophic levee failure within the next 50 years.

Stabilizing Delta levees is very

difficult and costly:

Stabilizing Delta levees requires importing mineral soils from areas outside the Delta. Adding mineral soils for additional height can actually result in subsidence of the levee structure from the additional weight. Serious consideration must be given to the cost effectiveness of stabilizing levees throughout the Delta.

Sea level rise may overwhelm

Delta levees:

Most Delta levees have small margins of safety. Climate change is likely to lead to more frequent severe flood events in the Delta, and sea level rise may overtop existing levees.

This levee protecting Franks Tract unexpectedly gave way on a clear day in June of 2004, costing \$100 million to reclaim.



The Delta is home to more than 750 species of plants and animals, including 52 mammals, 22 reptile and amphibian species, 225 birds, 54 species of fish and 260 invasive species.



CHALLENGES

The future of California's Delta is more important than ever. It is one of the leading issues facing California. Water management has always been one of the state's most pressing and complex issues, and concern over the Delta as an integral component of California's water management infrastructure is at an all-time high.

THE FUTURE OF THE DELTA

Pelagic Organism Decline. Pelagic or open water fish have been declining in abundance for several decades. Four species – delta smelt (listed as threatened), longfin smelt, threadfin shad and striped bass – have experienced steep declines beginning around 2002. Intensive research was initiated through the Interagency Ecological Program to determine the causes of these declines and several factors have been identified.

The pelagic organism decline is very complex and potentially relates to many ongoing issues in the Delta. For example, suitable habitat for the species has declined significantly, especially in the eastern and western areas of the Delta. Further, invasive species, such as the overbite clam (*Corbula amurensis*), have reached high numbers in the western Delta, where it filters out most of the food needed by resident pelagic fish species. Toxic substances in the water may also relate to this issue, directly affecting the health of the fish and their food. Finally, state, federal and local water project operations are known to cause fish mortality when they draw water toward their intakes and pull in fish, nutrients and food organisms out of the Delta. In particular, the decline of delta smelt is creating serious consequences for water withdrawal and export. The complexity of this issue has made solutions that will halt or reverse the decline elusive.

Earthquake Vulnerability. For the most part, the Delta's 1,100 miles of levees are unengineered dirt structures that have weathered erosion from water and intrusion from vegetation for 150 years. Many Delta levees have been

The future of California's Delta is more important than ever. It is one of the leading issues facing California.





Sand-bagging crews work to shore up levees as winter waters rise. While levees have additional height to handle rising waters, there is concern that sea level rise due to global warming could lead to levee impacts.

repaired and restored by local, state and federal agencies. Issues with their stability, however, continue to plague the Delta. The Delta and Suisun Marsh lie near major faults that are capable of generating moderate to strong ground shaking, particularly in the western Delta. On the basis of research conducted since the 1989 Loma Prieta earthquake, the U.S. Geological Survey and other scientists conclude that there is a 62 percent probability of at least one magnitude 6.7 or greater quake striking the San Francisco Bay region before 2032, with the capability of causing widespread damage.

The latest Delta Risk Management Strategy study prepared by URS Corporation for the Department of Water Resources reported that a major earthquake in or near the Delta would potentially be catastrophic, with the likelihood of a 25 percent chance that 30 or more islands would fail simultaneously from a seismic event within the next 25 years. As a result, export of Delta water could be shut down for 16 to

23 months with a loss of 6.5 million acre-feet to 9.3 million acre-feet.

Invasive Species. The Delta is home to more than 250 non-native invasive species, some of which are a threat to its current ecosystem. Man has introduced invasive species into the Delta by something as simple as emptying an aquarium or launching a boat. Many non-native species have been brought to the Delta in ballast water from ocean-going ships. All aspects of the ecology of the Delta have been significantly altered by invasive species. These ecological changes are impacting important and protected native species by limiting food availability and changing native habitats. Invasive species now dominate all habitats within the Delta, accounting for 95 percent or more of Delta biomass.

Global Warming – Sea Level Rise – Land Subsidence. Over the last 100 years, the sea level at California's Golden Gate Bridge has been rising by an average rate of about 0.08 inches per year and now

is about 7 inches higher than it was in 1920. Recent scientific evidence predicts the trend to warmer global temperatures will accelerate melting of glaciers, which will release more water into the oceans. In addition, warmer ocean temperatures cause water to expand, further raising sea level. Global warming and the accompanying decrease of the world's snowpack means that sea level rise will have permanent and far-reaching impacts in the Delta. Scientists who are studying these effects predict a 2° to 12°F temperature increase by 2100, a loss of one-third of the world's snowpack by 2050 and up to a 3-foot rise in sea level by 2100. These are serious issues for the Delta, most of which has subsided to between 5 and 25 feet below sea level.

Warmer temperatures and a higher sea level also have important implications for species and ecosystems. Large parts of Suisun Marsh will be transformed from freshwater to saltwater marsh and marsh habitats will be squeezed

against upland urban and industrial development. Saltwater will intrude further into the Delta, reducing low salinity habitats preferred by some species to narrow zones within leveed channels. This will create the need to protect and enhance habitat that serves multiple functions and is not focused management for single species groups. Saltwater intrusion also will jeopardize the freshwater that the state's agricultural economy relies on for irrigation. Higher water temperatures will make the Delta intolerable to some native species and more attractive to some non-native invaders.

Climate Change – More Winter Flooding. Flooding from heavy winter rains and spring runoff is a near-annual event in the Delta, and most winter flood seasons impact levees. Flooding can cause levee overtopping and accelerate levee erosion and piping, which is erosion within a levee caused by water channeling through cracks. This leads to instability, seepage and levee breaks.

Scientists predict that California's climate will become warmer during this century. Storm runoff is likely to become more intense and snow lines higher with more winter precipitation falling in the mountains as rain instead of snow. Average winter flows to the Delta are likely to become larger in the future, which could increase flooding.

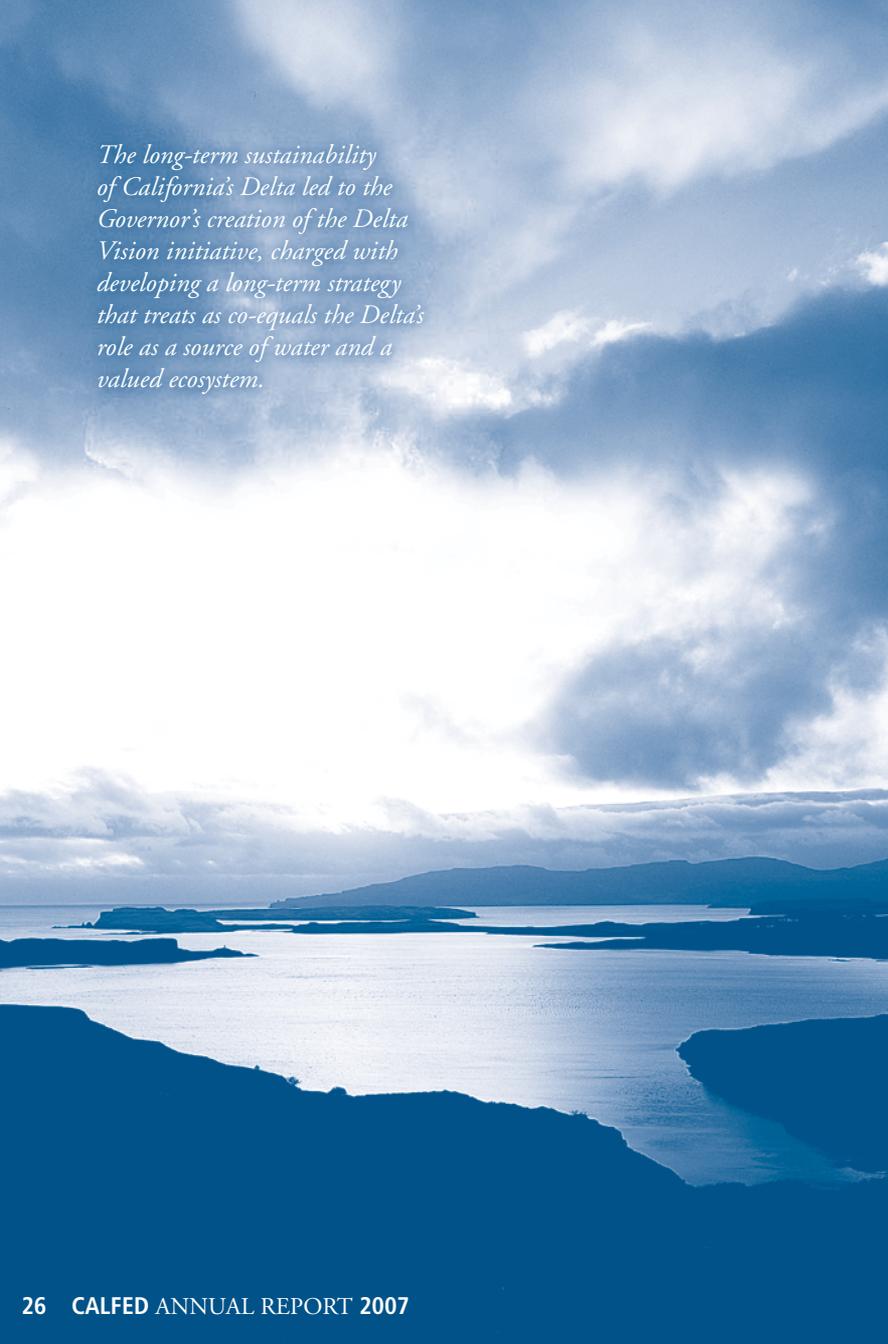
Increasing Population in California. Forecasts indicate that California's population may reach 60 million by 2050 and 90 million by 2100. In addition, it is estimated that the combined population of the six Delta-Suisun counties will more than double by 2050. This growth in population will change the nature and timing of demand for water resources and influence the future of the Delta. More people will mean more demand for water and will result in more wastewater and urban runoff discharges into the Delta.

Increasing population will also add pressure for urban develop-

Increasing population will also add pressure for urban development, resulting in more agricultural land being converted to urban land and further extension of the urban development encircling the Delta.

ment, resulting in more agricultural land being converted to urban uses and further extension of the urban development encircling the Delta. This situation will also mean the loss of water for agriculture due to increased reliance of urban users on water transfers and cost increases for water as competition for supplies increases. The need to then rely more heavily on groundwater raises other issues, among them the fact that some crops may not grow in the more salty groundwater. Pressure to permit urban development in both the primary and secondary zones of the Delta will increase. Also, the challenge of protecting urban development from seismic failure of levees will increase.





The long-term sustainability of California's Delta led to the Governor's creation of the Delta Vision initiative, charged with developing a long-term strategy that treats as co-equals the Delta's role as a source of water and a valued ecosystem.

CONCLUSIONS

In August 2000, the CALFED ROD for the Programmatic EIS/EIR laid out a 30-year plan to meet the Program Objectives for levee system integrity, ecosystem restoration, water supply reliability and water quality. As Stage 1 of the CALFED Program ends, the following conclusions have been reached based on the results of Stage 1 implementation and information that is now available:

California's population and demand for water is increasing – Forecasts indicate that California's population may reach 90 million by 2100. More people will mean more demand for water, greater impacts to existing water resources and an increasing strain on Delta resources. As is, California's existing water infrastructure is struggling to meet the state's current needs and will not be able to meet the demands of the future. To do so, Californians must support a comprehensive plan that includes improved conveyance of Delta waters, increased surface

and groundwater storage and programs aimed at increasing regional self-sufficiency.

Climate change and sea level rise will increase the risk to the state's water supplies – Climate change and the corresponding rise in sea level will have significant adverse impacts in the Delta. Scientists expect California's climate to become warmer during this century. Storm runoff is likely to become more intense, with higher snow lines causing more winter precipitation to fall in the mountains as rain rather than snow. Average winter flows to the Delta are likely to become larger in the future, which will cause more flooding. As sea level rises and winter storms become more intense, fragile Delta levees will be overwhelmed. This will result in the loss of Delta islands to flooding and will put the state's largest water supply at risk.

Seismicity and risk of levee failures – A growing body of information supports the fact that

Delta levees are at risk of catastrophic failure due to earthquakes on faults in or near the western Delta. Such a failure would lead to near-instant contamination of the state's water supply from saltwater intrusion, a disruption in operation of state and federal pumps and shutdown of the Delta infrastructure of highways, railroads, navigation channels, ports and utility supply lines. Homes, business and agricultural lands would be flooded and recovery would take years and cost billions.

Restoring ecosystem function in the Delta remains a challenge – Large scale restoration of upstream tributaries and floodplains has been initiated and is continuing successfully. In the Delta, emphasis on targeted research has greatly

increased understanding of Delta ecosystem processes, but restoration solutions remain elusive. As in the years preceding CALFED, there remains a conflict between water exports and ecosystem protection in the Delta. The decline in pelagic fishes has highlighted this conflict and the uncertainty surrounding any proposed solutions. Major investments in large-scale experimentation and adaptive management may be needed to clarify how ecosystem function can be improved, given the highly-altered nature of the Delta.

Species invasions need to be controlled – Non-native invasive species constitute one of the greatest obstacles to recovering native species in the Delta. Preventing new invasions and containing and

Non-native invasive species constitute one of the greatest obstacles to recovering native species in the Delta. Preventing new invasions and containing and managing existing invasions are essential if viable populations of some native species are to be sustained.

managing existing invasions are essential if viable populations of some native species are to be sustained. Containing aquatic invasive species is particularly challenging. Current scientific thinking is that managing the Delta to increase spatial and temporal habitat variability may improve conditions for native species, while undoubtedly posing tradeoffs for other Delta constituencies, including agriculture.

The delta smelt is the Delta's most threatened fish species, far left. This 3-inch-long fish is considered a bellwether for the Delta ecosystem. The water hyacinth is an invasive plant species that requires annual eradication efforts to keep it from choking out native species, center. Eradication control programs keep unwanted plant species in the Delta at bay without harming its ecosystem, right.





Chinook salmon swim through the Delta and upstream to their spawning grounds in the upper reaches of the Delta's watershed.

Through-Delta Conveyance needs to be reassessed – A growing body of information related to risk of levee failure, water quality, fish losses at export pumps and rising sea level raises questions about the ability of through-Delta conveyance to meet future water and environmental management objectives. Alternative conveyance methods need to be identified and their costs and benefits assessed to ensure that the water management infrastructure is able to meet future needs of water supply and water quality. The Delta Vision Blue Ribbon Task Force ordered this assessment in late 2007, to be completed by mid-2008.

MOVING FORWARD

The time is now for Californians to make the difficult decisions and take actions to ensure that the state's water and environmental needs are met. CALFED anticipated a reevaluation of the preferred alternative at the end of Stage 1. In doing so, it allowed for the possibility for changes in programs and projects that would best enable the agencies to meet the still-valid CALFED goals of a reliable supply of water from the Delta, improved water quality for both the ecosystem and for drinking, a restored ecosystem and improved levee stability.

Two major efforts now underway will set the stage for how we move forward in the Delta. The challenges of managing a sustainable Delta and providing for the state's water future will be met through cooperative commitment of state and federal CALFED agencies and collaborative efforts with Delta landowners.

ONE VISION FOR THE DELTA

Delta Vision is a broad initiative designed to study the Delta from all perspectives – not only as a source of water or a valued ecosystem. It was created by Executive Order of the Governor and given the ultimate task of developing a strategy for the Delta's sustainable future by the end of 2008.

The Sacramento-San Joaquin Delta is a unique natural resource of local, state and national significance. Although it builds on work done through the CALFED Bay-Delta Program, Delta Vision has broadened the focus of past efforts within the Delta to recommend actions to address the full array of natural resource, infrastructure, land use and governance issues necessary to achieve a sustainable Delta. Delta Vision is based on a growing consensus among scientists, and also supported by recent legislation and other information, indicating that:

- Environmental conditions and current Delta “architecture” are not sustainable.
- Current land and water uses and related services dependent on the Delta are not sustainable based on current management practices and regulatory requirements.
- There is growing consensus that the Delta is dependent upon a levee system that is aging and deteriorating.
- Factors outside of our control will significantly change the Delta during the coming decades. These include seismic events, land subsidence, sea level rise, increasing temperature, more intense winter storms, species invasions and population growth.
- Current fragmented and complex governance systems within the Delta are not conducive to effective management of its fragile environment in the face of

the cumulative threats identified above.

- Failure to act to address identified Delta challenges and threats will lead to potentially devastating environmental and economic consequences of statewide and national significance.

A key component of Delta Vision was the appointment of an independent Blue Ribbon Task Force by the Governor that is responsible for recommending future actions to achieve a sustainable Delta. The Task Force has extensively evaluated the existing and proposed land and water uses, ecosystem functions and processes, and management practices in the Delta. Alternative Delta management scenarios are being identified and studied. By applying the best available scientific information, and input provided by experts and the public during its open meetings, the Task Force has recommended natural values and functions,

services and management practices that should be considered priorities for future management as part of a sustainable Delta.

The Strategic Plan that emerges from Delta Vision will identify and evaluate alternative measures and management practices that would be necessary to implement Delta Vision recommendations. These implementation recommendations will involve considering changes in the use of land and water resources, services to be provided within the Delta, governance, funding mechanisms and ecosystem management practices. The final Task Force Strategic Plan recommendations will be submitted to the public and the Delta Vision Committee by October 31, 2008. The Delta Vision Committee will submit its report on the final Delta Strategic Plan to the Governor and Legislature by December 31, 2008.

The Delta Vision Strategic Plan will define actions, including those that will be implemented in Stage 2 of the CALFED Program.

CONSERVATION PLANNING

State and federal agencies, along with stakeholders, are developing a conservation plan for the Delta. The Bay-Delta Conservation Plan (BDCP) is intended to provide state and federal endangered species authorizations for the state and federal water projects and their contractors. The BDCP is being developed by a steering committee of state and federal water management and resource agencies, water contractors and non-governmental organizations. When approved, it will provide for conservation of the

covered species, water supply reliability, regulatory assurances and funding assurances for implementation of conservation actions. These actions would contribute to implementation of many parts (water quality, supply and ecosystem) of the CALFED Bay-Delta Program. While not intended to be a comprehensive approach to ecosystem restoration of the Delta, the BDCP is focused on the conservation of species closely associated with aquatic habitats that may be affected by water conveyance through the Delta.

The completed BDCP is expected to cover a subset of species and habitats within CALFED's purview and provide a mechanism to address improvements. A BDCP Planning Agreement has been completed and the draft BDCP is scheduled for completion in late 2008. BDCP parties reached points of agreement at the end of 2007 that evaluation of a dual conveyance option provided the greatest potential for meeting water supply and ecological goals of the plan.



LISTED THREATENED (T) AND ENDANGERED (E) SPECIES OF CALIFORNIA'S DELTA

INVERTEBRATES

Apodemia mormo langei - **Lange's metalmark butterfly (E)**
Branchinecta conservatio - **Conservancy fairy shrimp (E)**
Branchinecta longiantenna - **longhorn fairy shrimp (E)**
Branchinecta lynchi - **vernal pool fairy shrimp (T)**
Desmocerus californicus dimorphus - **valley elderberry longhorn beetle (T)**
Elaphrus viridis - **delta green ground beetle (T)**
Lepidurus packardi - **vernal pool tadpole shrimp (E)**

FISH

Acipenser medirostris - **green sturgeon (T)**
Hypomesus transpacificus - **Delta smelt (T)**
Oncorhynchus mykiss - **Central Valley steelhead (T)**
Oncorhynchus tshawytscha - **Central Valley spring-run Chinook salmon (T)**
Oncorhynchus tshawytscha - **winter-run Chinook salmon, Sacramento River (E)**

AMPHIBIANS

Ambystoma californiense - **California tiger salamander, central population (T)**
Rana aurora draytonii - **California red-legged frog (T)**

REPTILES

Masticophis lateralis euryxanthus - **Alameda whipsnake, or striped racer (T)**
Thamnophis gigas - **giant garter snake (T)**

BIRDS

Rallus longirostris obsoletus - **California clapper rail (E)**
Sternula antillarum browni - **California least tern (E)**

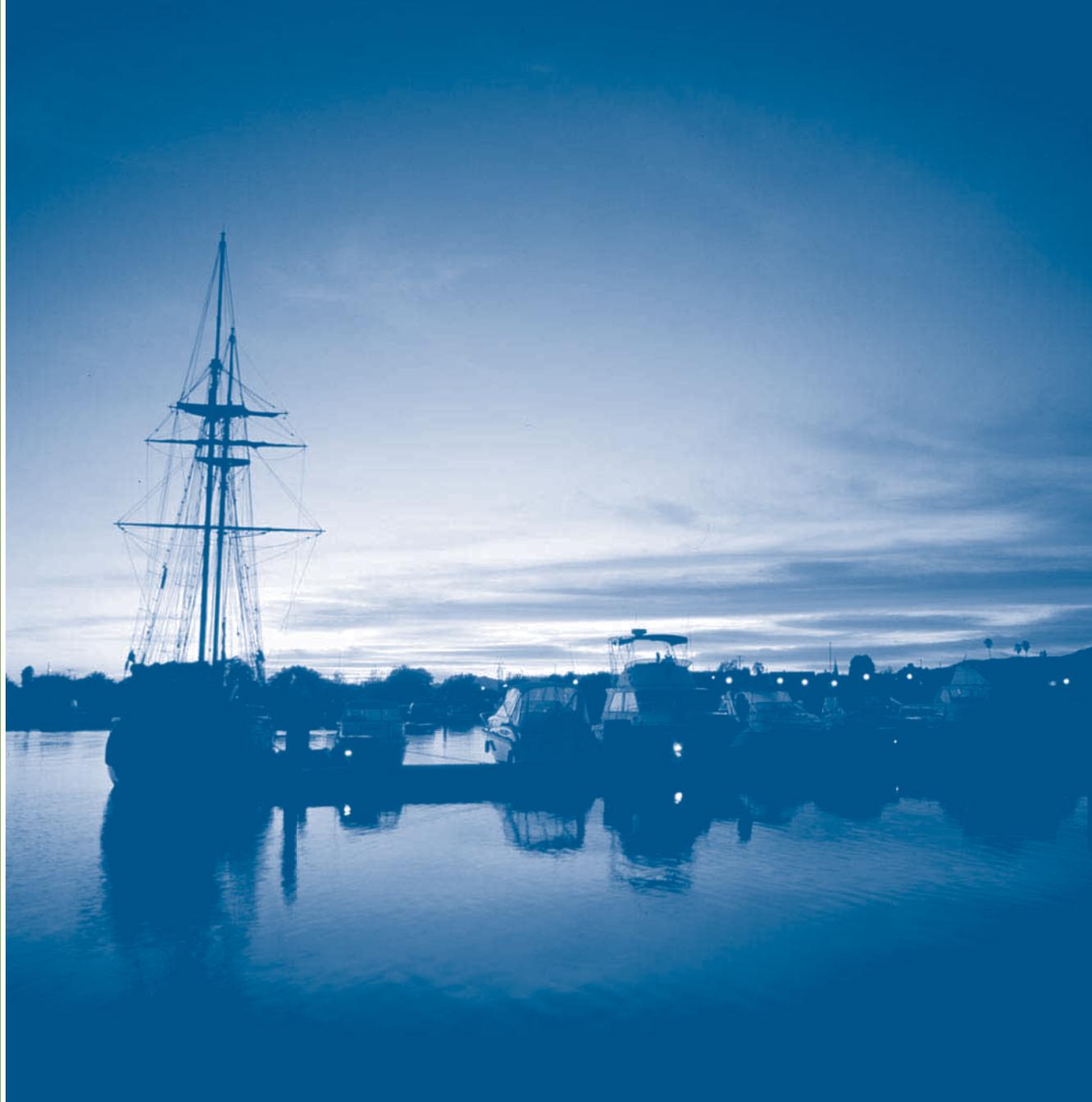
MAMMALS

Reithrodontomys raviventris - **salt marsh harvest mouse (E)**
Sylvilagus bachmani riparius - **riparian brush rabbit (E)**
Vulpes macrotis mutica - **San Joaquin kit fox (E)**

PLANTS

Amsinckia grandiflora - **large-flowered fiddleneck (E)**
Castilleja campestris ssp. succulenta – **succulent, or fleshy owl's-clover (T)**
Cordylanthus mollis ssp. mollis - **soft bird's-beak (E)**
Erysimum capitatum ssp. angustatum - **Contra Costa wallflower (E)**
Lasthenia conjugens - **Contra Costa goldfields (E)**
Neostapfia colusana - **Colusa grass (T)**
Oenothera deltoides ssp. howellii - **Antioch Dunes evening-primrose (E)**
Orcuttia tenuis - **slender Orcutt grass (T)**
Orcuttia viscida - **Sacramento Orcutt grass (E)**
Tuctoria mucronata - **Solano grass, or Crampton's tuctoria (E)**

Delta water supports California's \$33 billion agricultural economy, which supplies 50 percent of the nation's fruits and vegetables, and 25 percent of its dairy products. Major crops grown in the Delta include corn, grain hay, alfalfa, tomatoes, asparagus, fruit, safflower, pears, wine grapes and pasture land.



2007 LEGISLATION IN REVIEW

This report highlights key legislation affecting CALFED and its state implementing agencies.

FLOOD MANAGEMENT

AB 5 (Wolk) Flood management (Chapter 366)

This bill requires local agencies responsible for project levees to prepare annual reports describing the condition of the levees and requires the preparation of local flood safety plans. The bill also requires the Department of Water Resources (DWR) to prepare a schedule for mapping areas at risk of flooding in the Sacramento and San Joaquin River drainages; requires DWR to prepare a flood control system status report for the State Plan of Flood Control and to advise the Legislature, prior to December 31, 2008, of the schedule for completing the report; requires DWR to provide a written

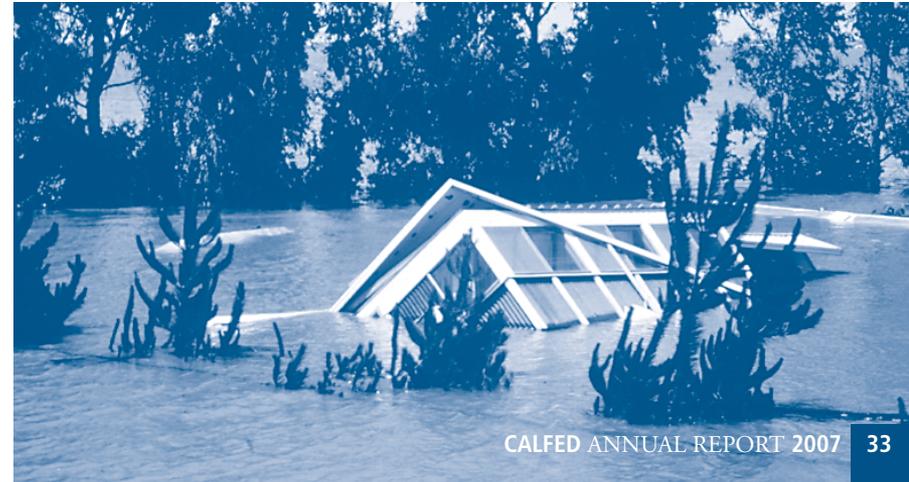
notice to each property owner whose property lies within a levee flood protection zone; requires DWR to prepare maps for levee flood protection zones designating lands where flood levels would exceed three feet if a project levee failed; and requires DWR to develop cost-sharing formulas for allocating Proposition 1E and Proposition 84 funds to local agencies for repairs and improvements of project facilities. The bill establishes the Central Valley Flood Protection Board at nine members, including two ex-officio members who chair the Senate and Assembly water policy committees.

AB 70 (Jones) Flood liability (Chapter 367)

This bill provides that a city or county may be required to contribute its fair and reasonable share for property damage caused by a flood under certain circumstances,

including where a court finds the city or county actions increased state exposure to liability for property damage, the increased liability exposure was a result of the city or county unreasonably approving new development, the new development was approved in an undeveloped area, the undeveloped area was protected by a state flood control project that was not already designated for development, or the city or county failed to comply with applicable duties and requirements set forth in existing law.

Historically, the Delta has been subject to seasonal winter flooding due to heavy rains and high tides.





Preparing for flooding, especially in the Delta, is a major priority and the subject of legislation and other initiatives.

AB 156 (Laird) Flood control (Chapter 368)

This bill requires DWR to prepare a schedule for mapping areas at risk of flooding and prepare a status report on the State Plan of Flood Control; requires notification of property owners of flooding hazards; requires preparation of maps for levee flood protection zones; requires local agencies to prepare reports on the condition of project levees in their jurisdiction; requires local agencies to adopt flood safety plans as a condition for receiving state funds for levee upgrades; allows DWR to participate in the design of environmental enhancements associated with federal flood control projects and in the construction of environmental enhancements for which the state is authorized to participate; clarifies maintenance area formation procedures; and provides specified exemptions from Public Works Board and Office of Administrative Law approval for emergency levee repairs.

AB 162 (Wolk) Land use: water supply (Chapter 369)

This bill requires that the land use element of a city or county general plan identify areas subject to flooding as identified by floodplain maps prepared by the Federal Emergency Management Agency (FEMA) or DWR; requires that the conservation element identify rivers and other waters, flood corridors, riparian habitat, and land that may accommodate floodwater for purposes of groundwater recharge and storm water management the next time local officials revise the housing element after January 1, 2009; and requires the safety element, upon revision of the housing element after January 1, 2009, to identify flood hazard zones and establish policies to minimize flood risk for new development. The bill also requires cities and counties to consult with the Central Valley Flood Protection Board when revising the safety element.

SB 5 (Machado) Flood management (Chapter 364)

This bill requires DWR to prepare the Central Valley Flood Protection Plan to include floodplain maps, a status report on the flood control system and an assessment of the structural integrity of the system. In addition, the bill requires local governments, by a specified date, to revise general plans to address flood risks, collaborate with local flood agencies to identify parcels that may be protected by a flood protection plan or other flood management facilities, develop funding mechanisms to finance local flood responsibilities and notify property owners about flood risk and flood insurance. In addition, development permits and agreements and subdivision maps must include provisions for urban areas to achieve a 200-year level of flood protection by 2025.

SB 17 (Florez) Flood protection (Chapter 365)

This bill renames the Reclamation Board the Central Valley Flood Protection Board, recasts various provisions of law regarding its operations, membership and prescribed duties, adds evidentiary hearing provisions, adds conflict of interest requirements for board members, requires a report on the status of the State Plan of Flood Control, requires the board to write a strategic flood protection plan, and requires the board to review and comment on local and regional land use plans.

WATER RESOURCES POLICY

AB 26 (Nakanishi) Flood control: natural community conservation plan

This bill would require the Department of Fish and Game and The Reclamation Board to prepare a natural community conservation plan for flood control projects located in the Sacramento and San Joaquin Drainage District

and to prepare a long-term streambed alteration agreement. The bill would exempt from streambed alteration agreements and notice provisions a flood control or flood management activity identified in any implementation agreement for the plan. Held in Assembly Appropriations Committee.

AB 41 (La Malfa) Water resources: bond proceeds

This bill would declare legislative intent that funds derived from Propositions 1E and 84, consistent with voter intent, be expended in the most cost-efficient and effective manner to address the critical lack of adequate surface water storage in

The need for more surface water storage capacity in California is linked to the future changes in weather patterns from global warming. One proposal under consideration is an off-stream reservoir near Sites, California.





The strengthening of Delta levees is a major concern for the safety of residents and the state's water supply.

California. The bill specifically identifies the Temperance Flat and Sites Reservoir projects as holding the greatest promise for providing new surface storage. In addition, the bill would exempt the construction of these facilities from California Environmental Quality Act requirements. Held in Assembly Natural Resources Committee.

AB 1404 (Laird) Water measurement information (Chapter 675)

This bill requires DWR, the State Water Resources Control Board (SWRCB), and the Department of Public Health to coordinate the collection, management and use of agricultural and urban water measurement information provided to each agency and prepare and submit a report to the Legislature by January 1, 2009, evaluating the feasibility, estimated costs and potential means of financing a coordinated water measurement database.

AB 1420 (Laird) Water demand management measures: grant and loan funds (Chapter 628)

This bill requires the terms and eligibility for any grant or loan to an urban water supplier awarded or administered by DWR, the SWRCB or the California Bay-Delta Authority (CBDA) be conditioned on the implementation of the water demand management measures described in urban water management plans. In addition, the bill would specify the programs and projects eligible for grants and loans, would require the development of grant and loan criteria and would establish a standard of excellence for water conservation.

AB 1489 (Huffman and Wolk) Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006

This bill would require the Secretary for Resources to prepare and submit to the Legislature an annual report of Proposition 84 expenditures, would require DWR

to develop guidelines for integrated regional water management (IRWM) plan grants, and would require DWR to conduct a groundwater management plan study. Held in Senate Appropriations Committee.

AB 1507 (Emmerson) Alluvial Fan Task Force

This bill would require DWR to establish the Alluvial Fan Task Force to review the state of knowledge regarding alluvial fan floodplains and to prepare recommendations relating to alluvial fan floodplain management. DWR would be authorized to enter into an interagency agreement with an appropriate agency to oversee the task force. The task force would be required to develop a model ordinance on alluvial fan flooding and prepare and submit a specified report to the Legislature not later than December 30, 2008. These duties would be required to be carried out only to the extent funding is made available for those purposes from the federal government or private sources. The expenditure of state funds would only be permitted

as a condition of receiving federal funds. Held in Assembly Appropriations Committee.

SB 6 (Oropeza) Flood control

This bill would require the land use, open-space, safety and conservation elements of a local agency general plan to identify areas subject to flooding based on existing climate predictions regarding ocean levels, and would require a local agency to deny approval for a subdivision if its design is likely to increase flood risk based on existing climate predictions. Held in Senate Local Government Committee.

SB 8 (Kuehl) California Bay-Delta Authority Act (Vetoed)

This bill would have included environmental justice among the prescribed program elements of the CALFED Bay-Delta Program. The bill would have required the program implementing agencies, both individually and collectively, to implement the environmental justice program element.

SB 27 (Simitian) Clean Drinking Water, Water Supply Security and Environmental Improvement Act of 2007

This bill would enact the Clean Drinking Water, Water Supply Security, and Environmental Improvement Act of 2007, and would require the Secretary for Resources, on or before January 1, 2008, to begin implementing certain actions on behalf of the Sacramento-San Joaquin River Delta, including investing in emergency preparedness, funding projects to aid sustainability in the Delta, identifying critical levees to be strengthened and commencing Delta restoration projects. Held in Assembly Water, Parks and Wildlife Committee.

SB 34 (Torlakson) User fees and assessments: Sacramento-San Joaquin Delta flood control (Vetoed)

Existing law requires the Secretary for Resources, in collaboration with the Secretary for Business,



Water quality is monitored in the Delta.

Transportation and Housing, to develop a strategic plan to achieve a sustainable Sacramento-San Joaquin Delta. The plan is to include a strategic financing plan. This bill would have required the strategic financing plan for the Delta to include recommendations with respect to imposing fees under a beneficiaries pay principle.

SB 59 (Cogdill) Reliable Water Supply Bond Act of 2008.

This bill would have required the Secretary of State to submit the Reliable Water Supply Bond Act of 2008 to voters for approval to finance specified water storage projects, Sacramento-San Joaquin Delta sustainability projects, water use efficiency projects and ecosystem restoration projects with General Obligation bonds in the

amount of \$3.95 billion. Identifies Sites Reservoir and Temperance Flat Reservoir as the water storage projects to be constructed. Failed passage in Senate Natural Resources and Water Committee.

SB 378 (Steinberg) Disaster Preparedness and Flood Prevention Bond Act of 2006

This bill would establish program implementation provisions for Proposition 1E and require that

Water from the Delta flows south into Clifton Court Forebay before entering the state Harvey O. Banks Pumping Plant.



expenditures for levee repair and flood protection corridor projects done by DWR be deemed to be in response to an emergency for purposes of the Public Contract Code; require that inspections and evaluations of flood control projects include seismic evaluations; require DWR and the SWRCB to develop project solicitation and evaluation guidelines for the storm water flood management grant program; and require DWR to develop project solicitation and evaluation guidelines for levee and flood protection corridor grant programs. Held in Assembly Water, Parks and Wildlife Committee.

SB 732 (Steinberg) Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006

This bill would enact program implementation provisions for Proposition 84 and require DWR

to study reoperation of flood management and water supply facilities to reduce flood risks; require DWR to develop a real-time flood forecasting model; specify various requirements for the expenditure of bond funds for nature education, nature research facilities and state and local parks; establish a sustainable communities council in state government; and require all agencies disbursing funds to develop project solicitation and evaluation guidelines. Held in Assembly Water, Parks and Wildlife Committee.

SB 862 (Kuehl) Water resources (Vetoed)

This bill would enact statutory changes governing DWR programs relating to state water supply planning, urban water management planning and agricultural water management planning. The bill also impacts activities of the State Water Resources Control Board and local agencies.

SB 1002 (Perata) Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Vetoed)

This bill would have appropriated \$500.49 million from various bond funds to DWR to fund storm water flood management projects, feasibility studies for surface water storage facilities, Delta levee failure risk reduction projects, relocation of Sacramento-San Joaquin Delta water intake facilities, local groundwater assistance grants, study reoperation of flood and water supply systems, update the California Water Plan, fund Delta habitat restoration projects and fund projects to reduce ecosystem conflicts in the Delta. In addition, prior to commencing the Delta levee failure risk reduction projects, the approval of the California Bay-Delta Authority (CBDA) would have been required.



Measures to strengthen the Delta's ecosystem are an ongoing top priority.

The Delta is formed by the confluence of California's two largest rivers – the Sacramento and the San Joaquin – as the largest estuary on the Pacific Coast. The Delta includes two other rivers – the Mokelumne and the Cosumnes. These rivers and their tributaries carry approximately half the state's total annual runoff.



OVERSIGHT, GOVERNANCE AND OUTREACH

Oversight and governance of the CALFED Bay-Delta Program is provided by the California Bay-Delta Authority (CBDA), its governing board comprised of state and federal agency representatives, public members, a member of the Bay-Delta Public Advisory Committee and ex-officio legislative members. As CALFED's oversight body, CBDA is responsible for accountability, ensuring balanced program implementation, tracking and assessing of progress, ensuring the use of sound science to guide decision making, encouraging public involvement and outreach and coordinating and integrating related government programs.



Gary Hunt
Chairman
California Bay-Delta Authority
Bay-Delta Public
Advisory Committee

CBDA is responsible for accountability, ensuring balanced program implementation, tracking and assessing of progress, ensuring the use of sound science to guide decision making, encouraging public involvement and outreach and coordinating and integrating related government programs.

STATE AGENCY REPRESENTATIVES



Mike Chrisman
Secretary for Resources



Linda Adams
Secretary for Environmental
Protection Agency



A.G. Kawamura
Secretary of Food and Agriculture



John McCamman
Interim Director
Department of Fish and Game

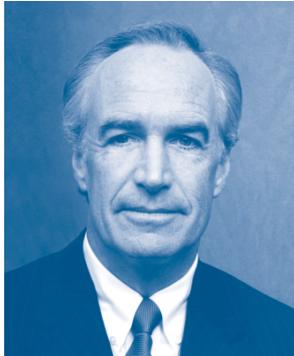


Sandra Shewry
Director
Department of Public Health



Lester Snow
Director
Department of Water Resources

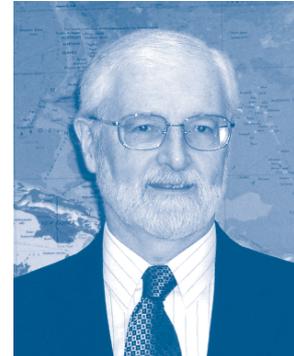
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Secretary of the Interior



Col. Thomas Chapman
Commander
Sacramento District
U.S. Army Corps of Engineers



Rodney R. McInnis
Regional Administrator
National Marine Fisheries Service



Wayne Nastri
Regional Administrator
Environmental Protection Agency



Mike Finnegan
Acting Regional Director
Bureau of Reclamation
Mid-Pacific Region



Steve P. Thompson
Manager
California-Nevada Operations Office
Fish and Wildlife Service

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Southern California Region



Patrick Johnston
Sacramento-San Joaquin Delta
Region



Bill Jones
San Joaquin Valley Region



Alfred Montna
Sacramento Valley Region



Vacant
San Francisco Bay Region

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Mark Holmes
Senate Appointee



Vacant
Assembly Appointee

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Chair
Senate Natural Resources
and Water Committee



Senator Bob Margett
Vice-Chair
Senate Natural Resources
and Water Committee



Assembly Member Lois Wolk
Chair
Assembly Water, Parks
and Wildlife Committee



Assembly Member Bill Maze
Vice-Chair
Assembly Water, Parks
and Wildlife Committee

THE BAY-DELTA PUBLIC ADVISORY COMMITTEE

The Bay-Delta Public Advisory Committee is the cornerstone of CALFED's public involvement. The 26-member body provides advice and recommendations on implementation of the CALFED Bay-Delta Program. Members represent a wide array of environmental, water, tribal and civic interest groups and serve as a key link among CALFED agencies, stakeholders and the public. Public involvement also comes to the CALFED Program through stakeholders representing environmental justice and tribal constituencies and concerns.

Gary Hunt

Chair
California Strategies

Denny Bungarz

Former Glenn County Supervisor

Patricia Acosta

Water Replenishment District of
Southern California

Gary Bobker

The Bay Institute

Christopher Cabaldon

Mayor of West Sacramento

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Kern County Water Agency

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Lillian Kawasaki

Los Angeles Department
of Water and Power

Leslie Lohse

Paskenta Band of Nomlaki Indians

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California Urban Water Agencies

Don Marciochi

Grassland Water District

Robert Meacher

Plumas County Supervisor

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Inverness, CA

Barry Nelson

Natural Resources Defense Council

Dan Nelson

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Authority

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Association of California Water
Agencies

Rudolph Rosen

Ducks Unlimited

Maureen Stapleton

San Diego County Water Authority

Walter Wadlow

Alameda County Water District

Thomas Zuckerman

Central Delta Water Agency

CALFED INDEPENDENT SCIENCE BOARD

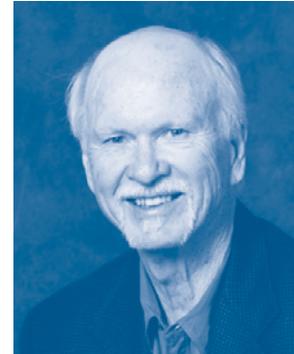
CALFED's Independent Science Board is a standing board of distinguished experts (scientists and engineers) with a range of multi-disciplinary expertise, including members with local experience and those with relevant external expertise. These experts help CBDA and the CALFED Science Program establish an independent and objective view of the science issues that underlie important policy decisions for the Bay-Delta. The Board provides guidance for strong and independent understanding of the science of the Bay-Delta.



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University of California, Davis



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Biomolecular Systems
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School of Science and Engineering
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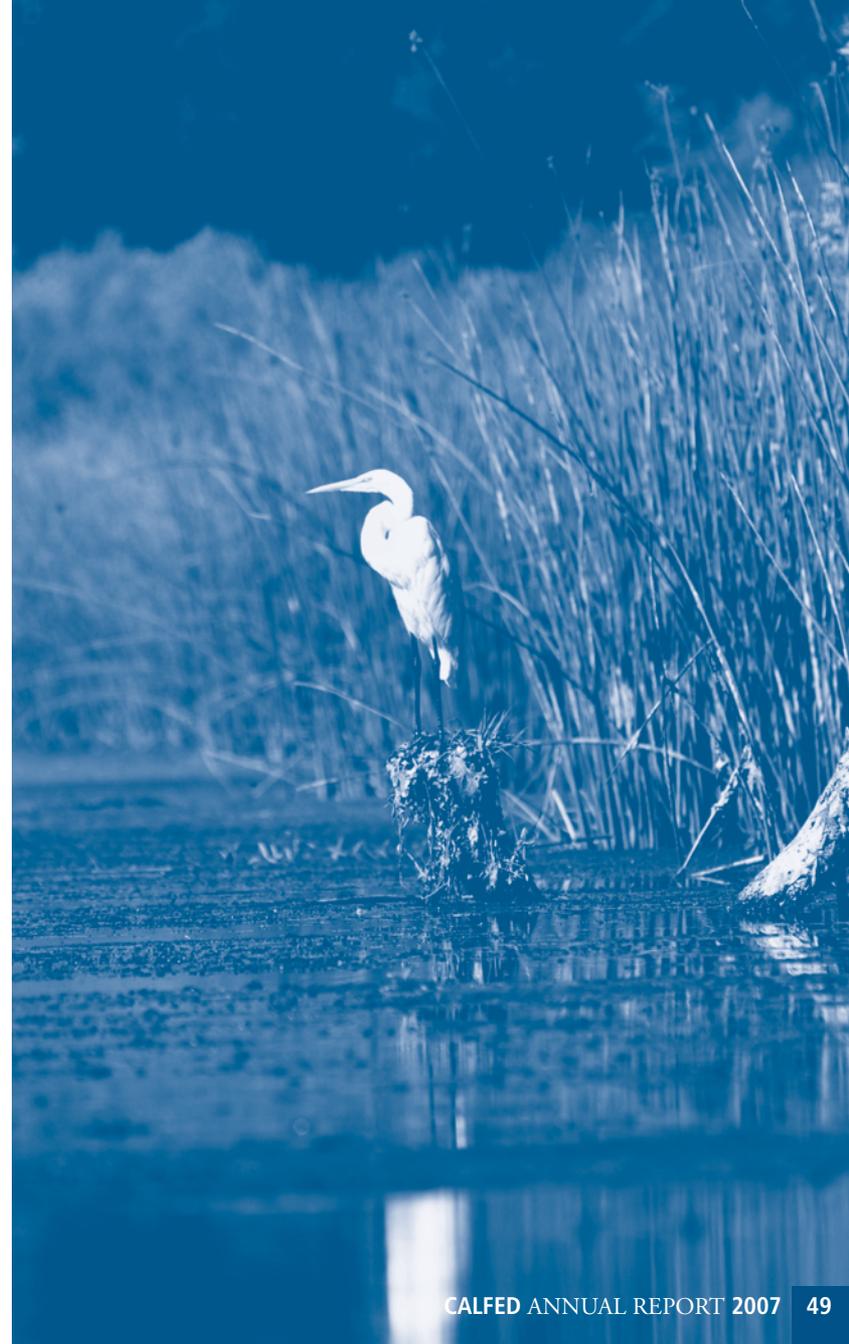
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Adjunct Professor
Scripps Institution of Oceanography
University of California
San Diego



Robert Twiss, Ph.D.
Professor
Graduate Center for Environmental
Design Research
University of California
Berkeley



Recreation is a big part of life in the Delta, with 12 million user-days annually. This includes visits to 290 shoreline recreation areas and 300 marinas by 500,000 boaters.

The Delta is an infrastructure hub for California. Six highways, hundreds of natural gas lines, five high voltage transmission lines, two shipping channels and three railroads run through it.



PROGRAM FINANCING

The following Year 7 Funding Table contains fiscal information provided by state and federal CALFED agencies.

The following Years 1-6 Funding Table contains fiscal information provided by state and federal CALFED agencies.

Year 7 represents fiscal year 2006-07 for the state agencies and fiscal year 2007 for the federal agencies. Funding included is only for those programs that are directly contributing to the CALFED objectives, commonly referred to as Category A programs or projects. The local cost-share funding information is also provided by the state and federal agencies and reflects an estimate of expected local cost shares associated with grant funds.



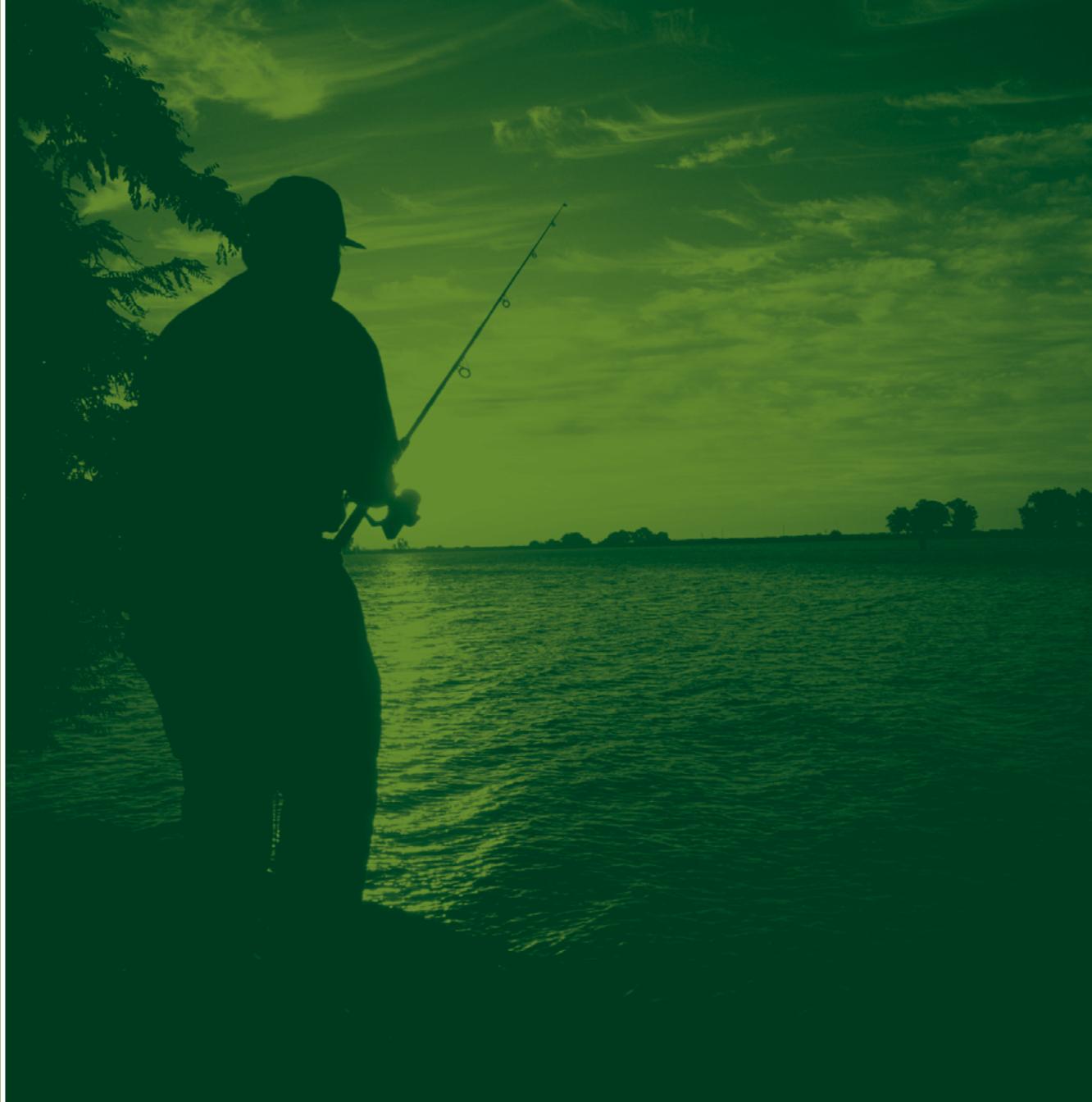
YEAR 1-6 FUNDING

Total Years 1 to 6	Years 1 to 6 State Spending					Years 1 to 6 Federal Spending				Water User/Local Funding			
	General Fund	Prop. 13	Prop. 50	Prop. 204	Other State Fund	State Subtotal	USBR	Other Federal	Federal Subtotal	SWP	CVPIA RF	Local Match	User/ Local Subtotal
128.9	9.5	33.8	0.5	0.0	0.0	43.7	27.2	0.0	27.2	50.0	8.0	0.0	58.0
678.4	15.4	15.9	41.1	298.5	6.1	377.0	41.6	24.8	66.4	15.2	147.1	72.7	235.1
195.8	60.5	0.0	56.8	54.5	0.0	171.8	23.2	0.8	24.0	0.0	0.0	0.0	0.0
124.3	6.1	0.0	60.4	38.3	0.0	104.8	0.1	0.9	1.0	2.0	0.0	16.5	18.5
58.5	50.5	0.0	0.1	0.0	0.2	50.9	5.9	1.7	7.7	0.0	0.0	0.0	0.0
110.3	17.9	0.4	10.6	0.0	4.9	33.7	25.7	10.5	36.2	39.4	0.0	1.0	40.4
1242.2	40.5	261.3	35.6	0.0	0.0	337.4	43.8	0.0	43.8	0.0	0.0	861.0	861.0
98.0	16.0	53.9	18.2	0.0	0.0	88.1	1.6	2.4	4.0	0.0	0.0	5.9	5.9
18.8	0.0	0.0	18.3	0.0	0.0	18.3	0.5	0.0	0.5	0.0	0.0	0.0	0.0
2.8	2.1	0.0	0.0	0.0	0.3	2.3	0.5	0.0	0.5	0.0	0.0	0.0	0.0
1046.7	20.8	56.6	129.8	0.0	9.6	216.8	111.0	0.0	111.0	0.0	0.0	719.0	719.0
111.6	12.3	17.8	53.2	0.0	1.1	84.4	0.0	3.4	3.4	0.0	0.0	23.9	23.9
3816.4	251.5	439.7	424.6	391.3	22.1	1529.2	281.1	44.6	325.6	106.6	155.1	1699.9	1961.6

YEAR 7 FUNDING

Total Year 7	Years 7 State Spending						Years 7 Federal Spending			Water User/Local Funding			
	General Fund	Prop. 13	Prop. 50	Prop. 204	Other State Fund	State Subtotal	USBR	Other Federal	Federal Subtotal	SWP	CVPIA RF	Local Match	User/ Local Subtotal
1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.8
16.2	0.4	3.8	0.0	0.0	0.0	4.3	5.9	0.0	5.9	6.0	0.0	0.0	6.0
1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	1.6
86.7	0.7	3.6	28.7	12.1	0.0	45.1	6.9	1.4	8.3	2.5	30.8	0.0	33.3
17.1	0.0	0.0	8.9	0.0	0.0	8.9	8.1	0.1	8.2	0.0	0.0	0.0	0.0
17.4	14.9	0.0	2.0	0.0	0.0	16.9	0.0	0.4	0.4	0.1	0.0	0.0	0.1
10.2	6.3	0.0	1.7	0.0	0.1	8.1	1.9	0.2	2.1	0.0	0.0	0.0	0.0
23.4	0.1	0.0	6.5	0.0	0.0	6.6	6.8	1.7	8.6	8.2	0.0	0.0	8.2
23.2	0.0	4.0	6.3	0.0	0.0	10.4	12.9	0.0	12.9	0.0	0.0	0.0	0.0
23.2	0.0	2.2	16.6	0.0	0.0	18.8	4.4	0.0	4.4	0.0	0.0	0.0	0.0
5.7	0.0	0.0	5.7	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
195.5	1.2	0.0	31.9	0.1	1.9	35.2	14.3	0.0	14.3	0.0	0.0	146.0	146.0
11.0	0.0	0.4	10.6	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
433.0	23.6	14.0	119.1	12.2	2.0	170.9	61.2	3.8	65.0	20.2	30.8	146.0	197.0

Eighty percent of California's commercial salmon fishery is dependent on the Bay-Delta system. Other major fish species of the Delta include striped bass, steelhead trout, American shad and sturgeon.



GLOSSARY OF ACRONYMS

ACRONYM FULL NAME

AB	Assembly Bill	EIR	Environmental Impact Report
BCDC	San Francisco Bay Conservation and Development Commission	EIS	Environmental Impact Statement
BDPAC	Bay-Delta Public Advisory Committee	EPA	U.S. Environmental Protection Agency
BDCP	Bay-Delta Conservation Plan	ERP	Ecosystem Restoration Program
BLM	U.S. Bureau of Land Management	FEMA	Federal Emergency Management Agency
BOR	U.S. Bureau of Reclamation	FWS	U.S. Fish and Wildlife Service
Cal-EPA	California Environmental Protection Agency	HCP	Habitat Conservation Plan
CALFED ROD	CALFED Record of Decision	IRWM	Integrated Regional Water Management
CBDA	California Bay-Delta Authority	NCCP	Natural Communities Conservation Plan
CSP	California State Parks	NMFS	National Marine Fisheries Service
CVP	Central Valley Project	NRCS	U.S. Natural Resources Conservation Service
DFA	State Department of Food and Agriculture	PL	Public Law
DFG	State Department of Fish and Game	RA	California Resources Agency
DHS	State Department of Health Services	RB	State Reclamation Board
DOC	State Department of Conservation	SB	Senate Bill
DOI	U.S. Department of the Interior	SWP	State Water Project
DPC	Delta Protection Commission	SWRCB	State Water Resources Control Board
DRERIP	Delta Regional Ecosystem Restoration Implementation Plan	USACE	U.S. Army Corps of Engineers
DWR	State Department of Water Resources	USGS	U.S. Geological Survey
		WAPA	Western Area Power Administration

A NOTE ABOUT THIS REPORT

This progress and recommendations report is based on two documents that coincided with the End of Stage 1. They have been updated to reflect year-end information, then summarized and condensed in this final form. They can be found in their entirety in the Program Administration section of the CALFED Library at www.calwater.ca.gov:

- CALFED End of Stage 1 Staff Report
- BDPAC Program Performance and Financing Subcommittee Report



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