

# Management's Discussion and Analysis

The fiscal year (FY) 2004 presentation of Management's Discussion and Analysis (MD&A) discusses FY 2004 highlights and future challenges for delivering water, delivering power, other programs and benefits, and management excellence. The MD&A also provides performance measure highlights and financial analysis.

The Bureau of Reclamation's FY 2004 goals were developed to ensure that we continue to accomplish our mission to meet water and power contracts while balancing a range of competing water demands. The Commissioner's four overarching priorities provided the framework Reclamation followed to meet our FY 2004 accomplishments, and they will be used to respond to future challenges and goals.

## Delivering Water

One of Reclamation's primary missions is storing and delivering water. We continually strive to improve our water management capability to meet the constant challenges presented by growing populations, developing economies, and erratic weather while delivering water to our contractors.

During FY 2004, Reclamation managed the delivery of 28.8 million acre feet of water from 677 facilities, including reservoirs, canals, and diversion works, operating and maintaining many of these facilities in partnership with our contractors to deliver project water. Reclamation is responsible for operating and maintaining 245 of these facilities. In FY 2004, we spent over \$130 million on maintenance-related activities, primarily facility component replacements and extraordinary maintenance, improving reliability and extending the useful lives of these facilities many years into the future.

Of the 677 facilities, there are 432 transferred works. These are Reclamation-owned facilities for which the operation and maintenance responsibilities have been transferred to our contractors. These facilities were operated and maintained by the contractors to ensure continued reliable water deliveries to their individual water users.

Finally, Federal titles to 4 projects were transferred during FY 2004 to operating contractor beneficiaries through legislation enacted by Congress. Title transfers are a means of conveying

### Commissioner's four overarching priorities:

1. Ensure the reliable delivery of water under Reclamation's contracts.
2. Optimize power generation, consistent with project purposes.
3. Incorporate other considerations, such as recreation, fish and wildlife, environment, and Native American trust responsibilities, into our water and power operations.
4. Identify and plan for future consumptive and nonconsumptive water supply needs by identifying unmet needs in the next 25 years.

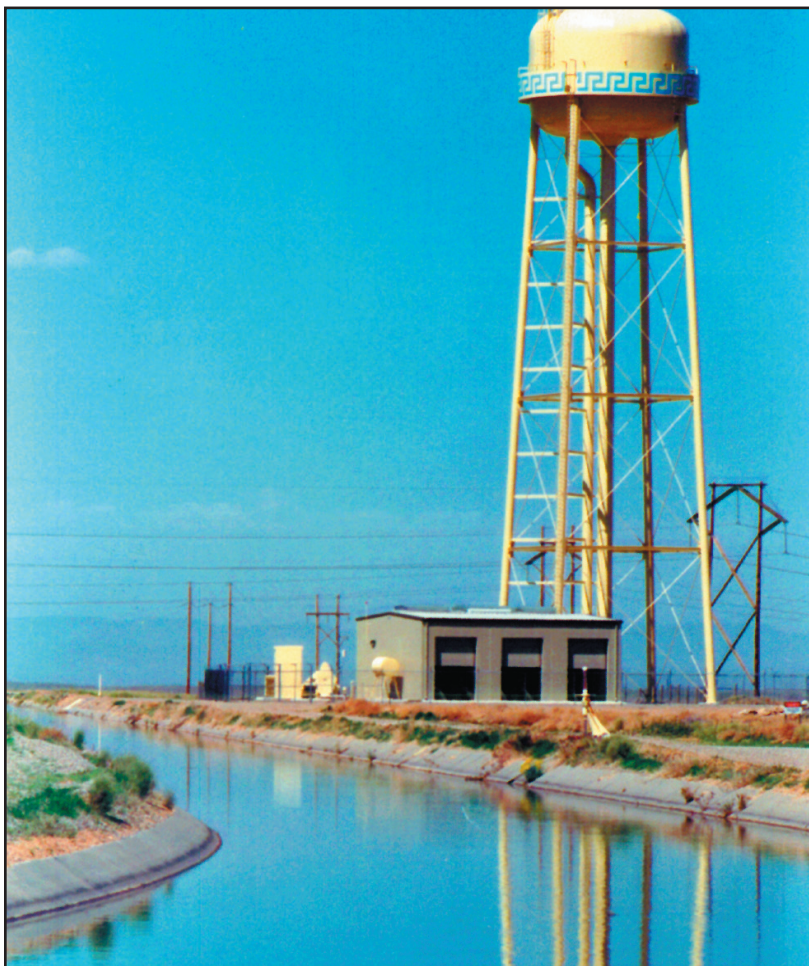
facility ownership to those who benefit from them, paid for their construction, and currently operate and maintain them.

## Water 2025: Preventing Crises and Conflict in the West

**FY 2004 Highlights** The Western Water Initiative was proposed in the President's 2004 budget and led to the development of the Department of the Interior's *Water 2025: Preventing Crises and Conflict in the West* (Water 2025), announced by Secretary Norton in June 2003.

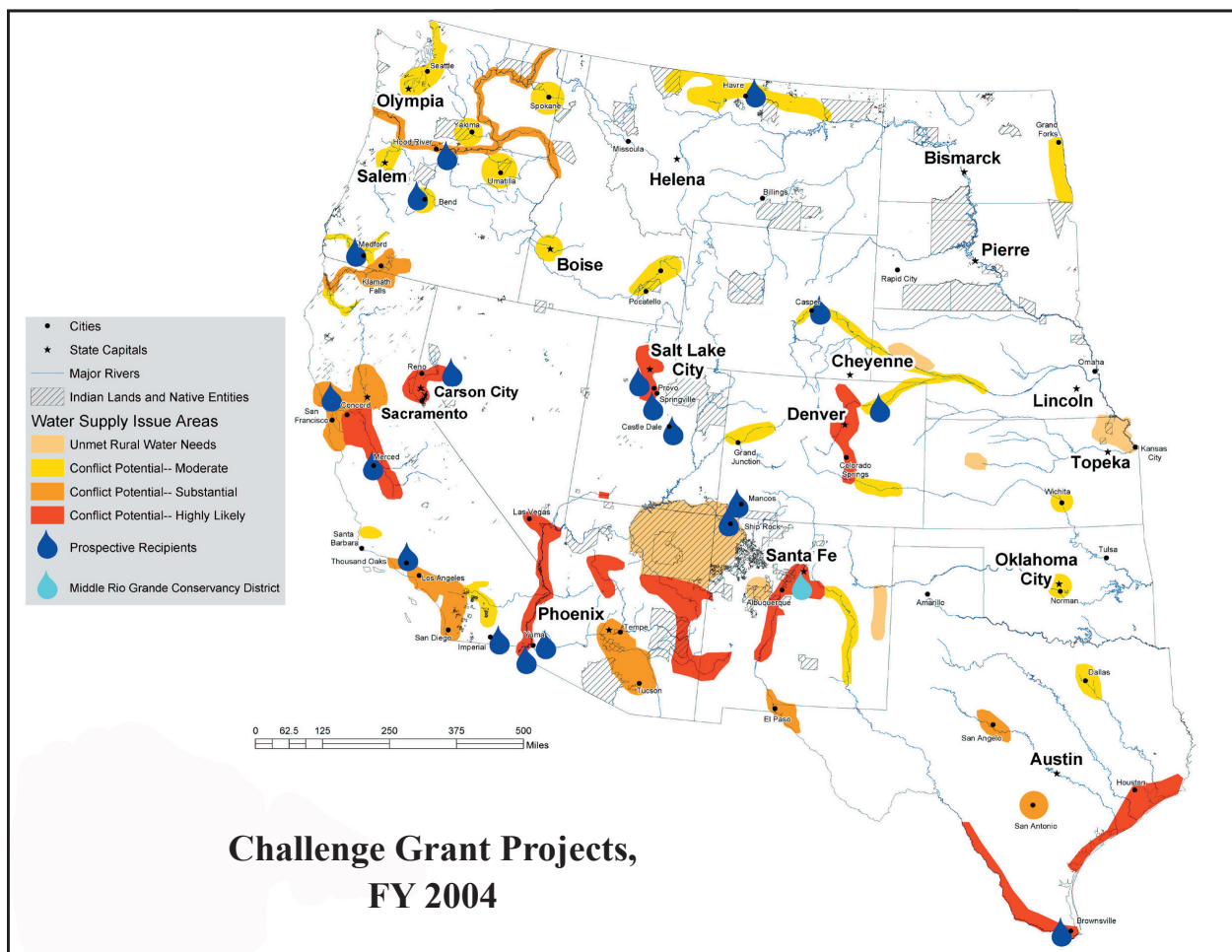
The objective of Water 2025 is to help manage scarce water resources and to develop partnerships to nourish a healthy environment and sustain a vibrant economy in the West. These partnerships will encourage voluntary water banks and other market-based measures, promote the use of new technology for water conservation and efficiency, and remove institutional barriers to increase cooperation and collaboration among Federal, State, tribal governments or organizations, and private entities.

Navajo Irrigation Project, located near Farmington, New Mexico, delivers irrigation water to lands that produce small grains, hay, forage, vegetables, and fruits.



Reclamation's FY 2004 allocation included a congressional earmark for three projects. Based upon this earmark, we provided approximately \$3 million to the Ohio View Consortium, the Desert Research Institute in Nevada, and the Middle Rio Grande Conservancy District in New Mexico. Of the remaining Water 2025 funding, \$4 million was awarded through the Challenge Grant program.

The goal of the Challenge Grant program is to support realistic, cooperative approaches and tools that will have the highest likelihood of successfully addressing water challenges in the river basins facing the greatest risk for conflict and crises over water. For the FY 2004 Challenge Grant program, Reclamation received more than 100 proposals representing more than \$98 million in water delivery system improvements across the West. The response to the grant program underscores the significance of Water 2025 to Western water users and proves the success of the Challenge Grant concept. It also demonstrates a widespread eagerness to work collaboratively to improve the way water is managed across the West and to address local needs. These conservation improvements are part of our efforts to prevent crises and conflict over limited water resources in



### The Six Principles of Water 2025

1. Recognize and respect State, tribal, and Federal water rights, contracts, and interstate compacts or decrees of the United States Supreme Court that allocate the right to use water.
2. Maintain and modernize existing water facilities so they will continue to provide water and power.
3. Enhance water conservation, use efficiency, and resource monitoring to allow existing water supplies to be used more effectively.
4. Use collaborative approaches and market-based transfers to minimize conflicts.
5. Improve water treatment technology, such as desalination, to help increase water supply.
6. Use existing water supply infrastructure to provide additional benefits for existing and emerging needs for water.

the region. Reclamation's Challenge Grant program is an excellent example of how leveraging the Federal investment provided tremendous benefits: \$4 million in grants helped fund projects that totaled almost \$30 million in on-the-ground water delivery system improvements.

President Bush requested \$20 million for Reclamation and an additional \$1 million for the U.S. Geological Survey for Water 2025 in FY 2005. This is an increase of \$12.5 million over Western Water Initiative funds enacted in FY 2004.

**Future Challenges and Goals** Water 2025 provides a framework to help anticipate potential water conflicts and stretch water supplies. It is based on six principles (left) and five realities found below.

Water is the lifeblood of the American West and the foundation of its economy. Today, the American West is the fastest growing region in the country, and water is its scarcest resource. Several interrelated realities pose potential water management challenges for Reclamation.

***Reality Number 1: Explosive Population Growth in Arid Areas***

Some areas in the Western United States receive less than one-fifth of the annual precipitation that other areas of the country enjoy. Explosive population growth is occurring in areas where water supplies are limited and the demand for water is increasing. Urban growth in the West presents water management challenges that must be met if we are to avoid bitter conflicts that may have significant adverse social, economic, and environmental impacts.

***Reality Number 2: Existing Water Supplies Are Inadequate***

Today, in some areas of the West, existing water supplies are, or will be, inadequate to meet the water demands of people, cities, farms, and the environment, even under normal water supply conditions. Increasing populations in many areas, combined with increasing water demand for recreation, scenic value, and fish and wildlife habitat, have resulted in conflicts throughout the country, especially in the arid West.

***Reality Number 3: Over-Allocated Water Supplies Can Cause Crisis and Conflict***

Recent crises in the Klamath River and Middle Rio Grande basins—where farmers, cities, Native Americans, and fish and wildlife all were impacted by the water shortages—vividly demonstrate the consequences of failing to address competing demands of people and the environment for a finite water supply. The Nation cannot afford repeated water crises. The social, economic, and environmental consequences of water supply crises are too severe.

**Reality Number 4: Aging Water Facilities Limit Management**

**Options** Most of the Federal infrastructure that manages the finite usable water supply in the West is approaching 50-60 years of age, and some facilities are almost a century old. Many water supply facilities in the West continue to use 19<sup>th</sup> century technology to attempt to meet 21<sup>st</sup> century problems. In some instances, canals can lose up to 50 percent of their irrigation water through seepage.

**Reality Number 5: Crisis Management Is Not Effective** Crisis management is not an effective solution for addressing long-term, systemic water supply problems.

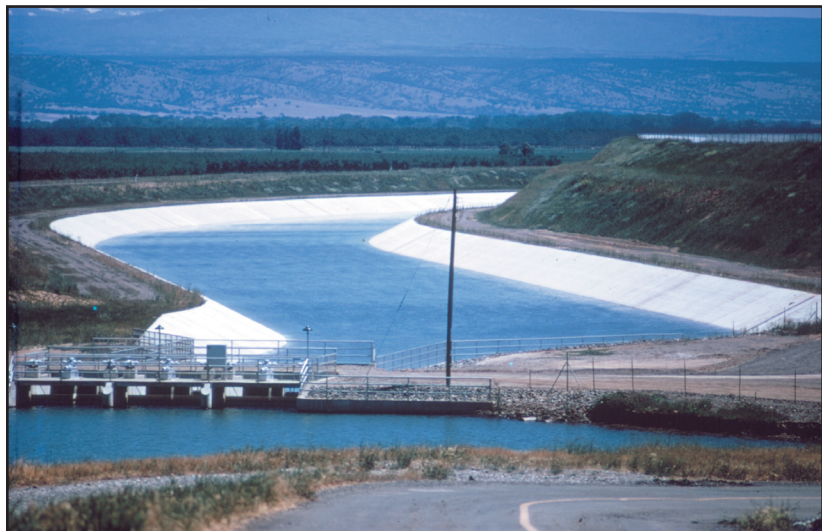
Water shortages can be resolved only by increasing water use efficiencies, reducing or eliminating existing water uses, developing alternative sources, or storing additional water. Collaborative efforts under Water 2025 will minimize water crises by providing a balanced, practical approach to water management for the next century.

Water 2025 is intended to focus sustained attention on measures that can be put in place before extended drought or other pressures push communities toward divisiveness and conflict.

**Water 2025 Tools**

Water 2025 includes four reality-based tools to help us proactively manage scarce water in the West.

**Water Conservation, Efficiency and Markets** The increased use of simple tools like water measurement structures, automated control structures, and computer-based system monitoring can allow water users either to stretch their water supplies further or to make part of their supplies available on a willing seller/willing buyer basis for otherwise unmet demands.



Lined canals save water by reducing seepage.

Explosive population growth and emerging water demand to meet Endangered Species Act environmental restoration goals will typically define the extent and severity of water supply related conflicts. The experience of the Klamath River basin in FY 2001 provides an example of the consequences of attempting to use regulatory mechanisms to reallocate water from existing uses to

emerging needs. The value of market-based approaches as an alternative is proven by the success of CalFed, the new Klamath water bank, the operation of the Central Valley Project in California, the ag-to-urban transfers in southern California, and the 50-year-old water market in northern Colorado.

**Collaboration** When it comes to water, some degree of certainty is needed to plan for and meet long-term objectives to serve people, agriculture, and the environment. Endless litigation rarely, if ever, achieves this goal. In contrast, the information provided by long-term or multiyear biological opinions, environmental impact statements, and similar studies provides the scientific and cultural certainty needed to make rational decisions and support financial investments made to provide water for multiple uses. These long-term biological opinions, statements, and studies are developed through collaboration with other Federal and State agencies and vested stakeholders, and are reviewed by subject matter experts and the public.



**Technology** In some areas, demands on limited surface water supplies can be reduced by developing alternative water supplies. A range of alternative water supply technologies exists, including desalination, advanced water treatment, water recycling, and reuse. While all of these technologies are important, Interior and Reclamation have chosen to focus on seawater and brackish ground water desalination. In addition, brackish water desalination may provide a cost-effective alternative to Interior's/Reclamation's developing rural drinking water systems throughout the West.



**Removing Institutional Barriers and Enhancing Interagency Coordination** Many times, the roadblocks to successfully preventing water crises are a result of governmental policies or laws that are disincentives to or prohibit the implementation of solutions. Simple



Drip irrigation (opposite page, top) is more efficient than sprinkler irrigation (opposite page, bottom) or furrow irrigation (left), because it applies water directly to the crop. However, drip irrigation is more expensive to install.

changes in policy or passing legislation in the Congress might pave the way to success in these instances. Also, Federal agencies do not always approach problems in a coordinated manner. Such coordination, through cooperative interagency approaches, is many times critical to finding success in preventing water conflicts and crises in the West.

## **Colorado River Water Delivery Agreement**

In October 2003, Secretary Norton officially signed the Colorado River Water Delivery Agreement (Agreement), a landmark pact that began a new era of cooperation on the river by fulfilling a promise

California made more than 70 years ago. Reclamation's Lower Colorado Region performed technical data analyses, hydrologic studies, and other services in support of the development of the Agreement.

The Agreement, also signed by officials of four California water agencies, provided assurances of long-term water supplies and cleared the way for market-based transfers and other essential tools to meet the growing water needs of the region.

Under the Agreement, California will take specific, incremental steps over the next 14 years to reduce its overreliance on Colorado River water to live within its authorized annual share of 4.4 million acre-feet, thus allowing the other six Colorado River Basin States to protect their authorized shares to meet their future needs.

## **Expanding Water Supplies**

While we cannot create more water, there are ways to increase and optimize the amount of usable water we have.

Water 2025, through its principles, realities, and tools, is focusing on many of these options. For example, conservation by one sector may provide additional water supplies for other sectors. Reuse of water, water transfers, and water banks are other ways of stretching our existing water supplies. Eliminating excessive water consumption by invasive species is another area that has the potential for expanding available water supplies. One of the more innovative areas being explored is obtaining usable water from sources that have previously been unsuitable for consumption. Desalination and advanced water treatment of seawater and brackish groundwater are areas that Reclamation is researching to find lower cost technologies to benefit areas in need of additional water supplies. It is important that we find and use all available options during times of abundance, as well as during times of drought and shortage; it is only through advanced planning and preparation that we will have adequate water supplies to meet increasing demands and cope with drought.

### ***Alternative Sources of Usable Water***

**FY 2004 Highlights** Desalination and advanced water treatment may become components of the solution to the Nation's future water needs. It is our belief that our research and demonstration investments could contribute to a water supply that is safe, sustainable, affordable, and adequate. Beginning in 2002, Reclamation and Sandia National Laboratories facilitated and participated in an Executive Committee that produced a Desalination



and Water Purification and Technology Roadmap report as requested by the Congress. The report was finished in 2003 and was submitted to the Congress. That same year, Interior requested, through Reclamation, that the National Research Council review the report and provide comments. In the review report published in 2004, the National Research Council recommended that work continue in the desalination and advanced water treatment programs to facilitate technological advancements and nurture novel ideas to enhance supplies and reduce the costs of current technologies.

An example of efforts to speed the innovation and transfer of desalination technologies to the marketplace is the development of the Tularosa Basin National Desalination Research Facility in Alamogordo, New Mexico. The research facility, when completed, will focus on testing new technologies for the desalination of brackish ground water, studies of concentrate management issues, studies of small-scale systems for rural and remote application, and integration of renewable energy into the desalination process.

Artist's rendition of Tularosa Basin National Desalination Research Facility, Alamogordo, New Mexico.



**Future Challenges and Goals** Reclamation is planning to facilitate future work in six research areas: membranes, thermal, alternative technologies, reuse/recycling, concentrate management, and cross-cutting technologies. The work would be carried out collaboratively with desalination experts and funding from the Federal and State government and the private sector. Reclamation would also serve as a clearinghouse for desalination information to communicate research activities and results, as well as inform the public about the benefits, affordability, and environmental considerations of desalination.

Now that we know drinking water can be obtained from brackish ground water, seawater, and other impaired waters, we are researching combinations of conventional and advanced processes to maximize pure water production and to harvest marketable products from the remaining salt solution. We will also be looking at ways to address the environmental concerns of energy usage, entrainment, entrapment, and concentrate discharge in coastal areas; the hydrogeology concerns about the effect pumping poor-quality aquifers has on the good aquifers in the same region; and the social