



## INTRODUCTION

This report summarizes the Fiscal Year (FY) 2000 Water Conservation Field Services Program (WCFSP) activities for the Bureau of Reclamation's (Reclamation) Mid-Pacific Region (Region). Since the Program's inception in FY 1997, it has become a cornerstone of the Region's water conservation efforts. The WCFSP compliments the other regional water conservation activities which include: water management planning under the Central Valley Project Improvement Act of 1992 (CVPIA) and the 1982 Reclamation Reform Act (RRA); technical assistance provided through Reclamation in agreement with the Cal Poly Irrigation Training and Research Center (ITRC) to assist the region's water users in improving their water management; and the implementation of CALFED Bay Delta's (CALFED) Water Use Efficiency Program (WUE Program) to improve the regions adjoining the San Francisco Bay Delta through improved water management.

The WCFSP has been widely accepted by water users throughout the region and has accelerated water conservation planning efforts and the implementation of Best Management Practices (BMPs). The WCFSP has also helped demonstrate that an incentive-based program can lead to the successful adoption of innovative water conservation improvements. Planning assistance has been provided in areas in which Water Management Plans (Plan) had not been prepared in the past. The WCFSP has led to the opening of several new water education centers in the Region that serve to inform the public of the importance of limited water resources and the need to use water wisely. The WCFSP, through demonstrations and implementation activities, has helped to increase the acceptance of several water conservation practices including canal system automation, water auditing, the use of data gathering equipment, and mobile irrigation system laboratories.

It is anticipated that the WCFSP will be a key component in CALFED's WUE Program implementation strategy. The CALFED WUE Program is also an incentive-based program co-managed by the California Department of Water Resources (DWR) and Reclamation. Three area offices are located within the CALFED's WUE Program solution area. The WCFSP will be implemented in a coordinated manner with the CALFED WUE Program where objectives are found to be consistent. The CALFED WUE Program is based on quantifying the benefits from improved water management, which include ecosystem restoration and water quality. The WCFSP and CALFED Programs are based on the realization that water conservation benefits may not only be derived through water savings but also through water management improvements that can benefit society and the environment.

During the last year there were reduced water supplies in the Klamath and Lahontan Basins that resulted in shortages for agricultural water users and environmental uses. With the continuing threat of reduced water supply, along with increased efforts for environmental restoration in these areas, improved water management will play an increasing role in optimizing the water resources. Funding from the WCFSP has been used to develop and implement Plans, increase district efficiencies, and better measure the limited supplies in these areas.

As water supplies continue to be shifted to attain a balance between agricultural, urban, and environmental resources, the WCFSP will continue to be an essential tool to make the most out of limited water resources. In the upcoming years, increased emphasis will be given to identifying



activities that reduce water demands while increasing the multiple benefits that can be derived from efficient water management.

## **WATER CONSERVATION FIELD SERVICES PROGRAM**

Reclamation has concluded the fourth year of the WCFSP. The WCFSP is designed to provide technical assistance and funding to water districts and other water users. The primary goals are: to encourage water conservation, assist water agencies to develop and implement effective water management and conservation plans; coordinate with state and local conservation program efforts; and foster improved water management on a regional, statewide, and watershed basis.

Over \$1.8 million was spent Region-wide on the WCFSP for grants and cooperative agreements. Participating agencies invested an additional \$1.4 million on these projects with the funding from all sources totaling approximately \$3.2 million.

### **AREAS OF EMPHASIS IN THE WCFSP INCLUDE:**

- Water Management Planning
- Conservation Education
- Demonstration of Innovative Technologies
- Implementation of Conservation Measures

#### ***Water Management Planning***

Planning is required of most water service contractors under Section 210(b) of the RRA. The CVPIA required the establishment of Criteria for evaluating Plans prepared by Central Valley Projects (CVP) Contractors (Contractors). There are still a few districts that have not prepared Plans. Area Office staff have contacted each of these districts and in many cases have provided technical and/or financial assistance to help them prepare Plans. It still is anticipated that the majority of these districts will complete their Plans by the end of FY 2001.

In addition, 5-year plan revisions are being submitted to Reclamation. These revisions update the contractors' last plan and are due ever five years under RRA. Under CVPIA contractors also are required to submit annual updates that describe implementation of BMPs identified in their plans. In 2000, approximately 10 plans were submitted and deemed adequate. In 2001, it is expected that another 30 plans will be submitted.

#### ***Conservation Education***

The Region's WCFSP continues to emphasize public and water user education to increase awareness of the need to manage to limited water resources. Several water education centers have either been established with Reclamation funding or currently receive funding and assistance through the WCFSP. Educational assistance in water management is also directed at water education teacher training, on-site water user training and irrigation short courses at the ITRC for water district personnel and farmers. Funding assistance has been provided to several urban water districts to augment their public water conservation information efforts including the development of water management-related web sites and newsletters.



### ***Demonstrations of Innovative Technologies***

Demonstrations lead to the implementation of technologies that are new to an area. In the past few years, demonstrations of hand held data loggers for data acquisition and processing and Supervisory Control and Data Acquisition (SCADA) systems have resulted in a wider adoption of these technologies in the Region. Demonstrations over the last year have focused on these technologies as well as urban interior and exterior water audits, water efficient gardens and residential landscapes.

### ***Implementation of Water Conservation Measures***

District system automation continues to be a focal area of the WCFSP with technical and funding assistance resulting in accelerated adoption. The results have been improved district control of water supplies, which has led to reduced system spills and more timely water deliveries. The WCFSP has also helped to improve irrigation efficiency on farms and urban landscapes by increasing the number of mobile lab system evaluations and the number of weather stations used to determine crop and landscape water consumptive use. With this information in hand, farmers and landscape managers can adjust water schedules to meet the precise needs of crops and plants. Other areas of assistance included installation of variable frequency drive pump units, water measurement devices, and piping.

## **PARTNERSHIPS – BRIDGING THE HEADGATES**

The creation of partnerships with local, state, and federal entities continues to be a vital component of the WCFSP. Partnerships have allowed Reclamation to leverage existing resources with those of other entities. These partnerships have also resulted in greater acceptance of the WCFSP as well as the acceptance of other programs with similar goals. The Bridging the Headgates Memorandum of Understanding with the Natural Resources Conservation Service (NRCS), National Association of Conservation Districts (NACD) and National Association of State Conservation Agencies (NASCA) has helped to reinforce Reclamation's working relationship with these and other entities. For example, over the last year, Reclamation has:

- Worked with Resource Conservation Districts (RCD), Universities, and the NRCS to establish irrigation mobile labs,
- Partnered with the University of California Cooperative Extension (UCCE) to provide on farm workshops and the development of a California Irrigation Management Information System (CIMIS) weather station,
- Cooperated with the Center for Irrigation Technology at Fresno State (CIT), the UCCE, and the California DWR to refine a web based irrigation scheduling program, and
- Partnered with a local RCD to reduce seepage by piping a section of canal.



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## CENTRAL CALIFORNIA AREA OFFICE

### Local Program Description

The water service area of the Central California Area Office (CCAO) consists of the Solano Project and four distinct and separate parts of the CVP: the Folsom Unit, the Sly Park Unit, the Auburn-Folsom South Unit of the American River Division, and the New Melones Unit of the East Side Division. The CVP service area contains about 9,000 acres currently receiving irrigation water, while the Solano Project has 62,000 acres in irrigation. Current annual deliveries average about 14,600 acre-feet (AF) of irrigation water and 45,700 AF of municipal and industrial (M&I) water by the CVP features and 168,000 AF of irrigation water and 9,000 AF of M&I water for the Solano Project. Within the CCAO, approximately 25 water service contracts are administered.

Stretching from the foothills of the Sierra Nevada mountains west to the Pacific Ocean, the CCAO has an enormous diversity in types of soils, climates, crops, wildlife, recreation, and size of towns and cities. Some of the fastest growing areas in the nation are located within the boundaries of the CCAO. This population growth and natural diversity increases the pressure on the supply of both surface and ground water. The passage in 1992 of Public Law 102-575, Title 34, of the CVPIA, required that 800,000 AF of CVP yield be diverted from traditional uses and dedicated to environmental restoration purposes. This further increases competition for already limited water supplies in the American River and the East Side Divisions.

Because of the competing water interests described above, and the uncertainty of any future construction of water supply projects, there is a need to manage and stretch the available existing water supplies to meet M&I, agricultural, recreational, and environmental needs. Education, flexibility, and demonstration of new technologies will be the keys to meeting all the water needs. The goal is to lead the way through the WCFSP in meeting these needs and to work as partners with all the different water interests.

### Goals

The primary goal of this WCFSP continues to be improving urban and agricultural water management, thereby maximizing the benefits of the limited water resources in the area. With a rapidly growing urban population and environmental concerns about further water development in the area, it is critical that current resources are well managed. The CCAO has a greater percentage of urban agencies in its service area than any other area office in the Region. The range of water conservation experience ranges from those who are leaders in the field to those who have not yet undertaken the most basic water conservation measures (i.e., measurement and volumetric pricing). The CCAO has a unique opportunity to cooperate with the pioneers in the urban water conservation field in further developing and refining water conservation programs, while helping less experienced districts develop water management programs.

### *Objectives*

The WCFSP comprises the following objectives designed to achieve the goal of improved water management.

- Planning Assistance which provides technical assistance and financing to districts and groups preparing Plans
- Public outreach which provides education and training to district personnel and customers
- Demonstrations of BMPs which are tailored for implementation in the area
- Implementation of conservation measures through financial assistance and partnerships to accelerate the adoption of BMPs

## **Activities**

### ***Conservation Planning***

Some districts in the area require assistance in completing a Plan. The WCFSP provides funds and technical assistance through Reclamation staff and/or consultants to these districts to assist in plan development. In addition, various districts are in the process of updating their Plans under the 5-year update requirement. Assistance will be provided to update and continue to implement Plans.

## **Demonstration of Innovative Conservation Technologies**

### ***Conservation Education***

The large population base in the area provides a significant opportunity to educate the public on water conservation. Education and training efforts target schools, districts and communities. Included in this activity is funding for the CCAO public outreach specialist to expand the WCFSP outreach to community organizations and schools. Funding will include public education and outreach materials. The American River Water Education Center (ARWEC) at Folsom Dam which was dedicated on May 26, 1999, and is rapidly becoming a focal point for the area. Visitorship is expected to grow from 13,000 visitors per year to 50,000 visitors per year within 2 years. The visitor center at New Melones Dam now includes a water conservation display which was developed in conjunction with the existing archeological, wildlife and natural history displays. Future work will focus on xeriscapes, low water use irrigation methods, and development of an outreach program. In addition, a partnership has been created among Reclamation, water districts, public organizations, and two universities to create a water education center near Reclamation's Lake Berryessa project.

The CCAO continues to work with local water districts and school districts in the design and implementation of a water-auditing program. A curriculum has been developed for second and third grade students which will allow students to audit all aspects of water in their lives. This audit will include the amount of water they use, the quality of the water, where it comes from and how to use it wisely. Materials are being developed which will prepare the students to perform a water audit of their school facilities. The program will also include a module in which students audit the use of water at home. The curriculum will incorporate science and math skills which are part of the students' overall curriculum. This demonstration program will provide the students and their parents with a greater appreciation of how they use water, and the actions they can take at home to use water more efficiently. Similar programs have been implemented in other areas outside the Region. Materials from these programs may be tailored to a program to meet the needs of the local school district. The program will provide an example that can then be shared with other school districts in the Region. The development of the ARWEC at Folsom Dam allows for further development of this program.



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### ***WCFSP Monitoring***

Results of the WCFSP are monitored throughout its implementation to determine on an ongoing basis the progress of each activity. This will also provide an opportunity to make changes to maximize the benefit of each activity. The stakeholder workgroup is actively involved in monitoring the WCFSP's success and making recommendations on improvements.

Annual water conservation updates from participating districts were reviewed. In addition, numbers of tours, visitors, and demonstrations are also monitored. Where possible, water savings and water sales resulting from the WCFSP's implementation are monitored. Final reports are required from participating districts and agencies to document the findings from each project and recommendations for future projects.



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## KLAMATH BASIN AREA OFFICE

### Local Program Description

The Klamath Project provides water to over 240,000 acres of farmland, 2 national wildlife refuges, endangered species and Native American Trust Assets both in California and Oregon. In an average water year the project supply will not be able to meet all water needs.

The Klamath Basin Area Office (KBAO) is in the process of a Stream Adjudication. During the interim, Reclamation is developing a long-term operation plan that will provide for more predicable water supplies. The WCFSP is gaining momentum in the promotion of water conservation with Reclamation Contractors and others interested in the WCFSP.

### Goals

- Increase water supplies
- Encourage Irrigation Districts in the development and implementation of Plans
- Encourage more efficient use of water
- Improve water supply reliability
- Conserve water for other uses

### Activities

The KBAO is working with irrigation districts through grants from the WCFSP or through direct technical assistance to encourage the development of Plans and implementation of BMPs.

On October 31, 1998, Reclamation completed the purchase of Agency Lake Ranch (Ranch). The Ranch enhances the storage capacity of Upper Klamath Lake by allowing for the delivery of approximately 7,000 Acre-feet of water. The feasibility of increasing storage at the Ranch is being studied, as well as increasing storage at other facilities on the project.

Through a cooperative agreement with the Oregon DWR and the US Geological Survey, a groundwater study is being conducted in the basin. The study will help determine availability of alternate sources of water during water short years.

In cooperation with the ITRC, technical assistance for design of management practices and on site training is provided. Three classrooms in the local school district were provided with material to promote water conservation.

A well-water augmentation program was implemented this year with an additional 2,248 Acre-feet of water made available for in-stream flows for threatened and endangered fish species.

There is new interest in canal lining projects being investigated by the Tule Lake, Langell Valley and Malin Irrigation districts.



In cooperation with Pacific Power and Light, investigations of the possibility of developing a pump-testing program are underway.

### ***Conservation Planning***

Ten irrigation districts totaling 148,358 acres are required to have Plans. All districts have been contacted either individually or through a public meeting to discuss development of Plans. Two districts have received on site assistance to develop plans and 7 districts have received grants under the WCFSP to hire a consultant to develop management plans.

### ***Conservation Education***

On-site training was provided by the ITRC for water measurement and canal operations, and approximately 30 district and Fish and Wildlife Service employees attended.

A grant was provided to the University of California Cooperative Extension Service Intermountain Research and Extension Center to provide an irrigation education program for agriculturists in the Klamath Basin. Three classrooms in local school districts were provided with water educational material.

### ***Demonstration of Innovative Conservation Technologies***

A second AgriMet station was installed with real-time phone in weather data available for local growers. The station will provide local farmers with Evapotranspiration (ET) data which they can use to improve irrigation scheduling to meet crop irrigation needs and real-time temperature which helps determine irrigations for frost protection.

A landscape design was developed for the KBAO by the CIT demonstrating water efficient landscaping.

### ***Implementation of Conservation Measures***

- A grant was provided to the Klamath Water Users Association to develop a water marketing program for the Klamath Basin.
- In cooperation with the Pine Grove Irrigation District, a grant was provided to replace an open ditch with a buried pipeline.
- In cooperation with Langell Valley Irrigation District, a grant was provided to install measurement devices at turnouts to improve water management.
- In cooperation with the Tule Lake Irrigation District, a grant was provided to develop a tail water recovery program and to develop a measurement program for pumps.
- In cooperation with the Klamath Soil and Water Conservation District, a grant was provided to determine Native American Irrigation needs.
- In cooperation with the ITRC, on site assistance was provided to irrigation districts for improvement of distribution systems.
- In cooperation with the Natural Resources Conservation Service and Crater Lake Nation Park, 1 Snow Telemetry (SNOTEL) site was installed to improve operations.



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## LAHONTAN BASIN AREA OFFICE

### Local Program Description

The Lahontan Basin Area Office (LBAO) covers most of Northern Nevada and portions of California and encompasses an area of 80,000 square miles. Areas of emphasized interest include the Lake Tahoe Basin, Truckee River Basin, Carson River Basin, Humboldt River Basin, and the Walker River Basin. Reclamation projects exist in the first four listed basins.

Nevada has been described as the driest state in the nation in terms of rainfall. The basins described above reside entirely in the Great Basin and terminate in desert lakes or wetlands. There are no drains to the ocean. In their natural state, the rivers are ephemeral with short periods of high runoff and long periods of little or no flow and are subject to frequent and prolonged drought. The water supply is dependant on mountain snow pack and storage facilities. The combination of rapid population growth, agricultural uses, threatened and endangered species, and Native American uses of water, has produced a contentious and litigious atmosphere concerning the use of water. These issues make a water conservation program important in Northern Nevada, and presents unique and challenging opportunities in the implementation of the water conservation program.

In 1988, the United States developed Operating Criteria and Procedures (OCAP) for the Truckee-Carson Irrigation District (TCID), operators of the Newlands Project. That same year, because of the development and implementation of the OCAP, Reclamation established a field office in Fallon, Nevada on the Newlands Project. The Fallon Field Office was established, "for the sole purpose of providing technical and professional guidance to the TCID in all matters pertaining to water management in the Newlands Project." When the WCFSP was established in 1996, it was only natural that the responsibility for the program in the LBAO would be in the Fallon Field Office.

### Goals

- Continue partnerships with the NRCS, Resource Conservation Districts, and educational partners; such as the State of Nevada, Water Education Foundation, and 'The Water Course' at Montana State University
- Work with partners to continue education activities
- Conclude assessment studies by ITRC at the Washoe County Water Conservation District (WCWCD)
- Contact and work with WCWCD to have ITRC evaluate specific items as outlined in their May 9, 1998 report. The actions include requesting an agenda item on the Board of Directors meeting, presenting the findings of the last evaluation, outlining the proposed actions, and implementing the study measures
- Facilitate technology transfer
- Teach data gathering techniques for measurement stations
- Teach the use of computer design programs for broad crested weir design
- Provide information on educational opportunities



- Work with district personnel to identify measurement points and develop plans for the installation of measurement devices
- Explore water control strategies
- Provide educational programs at Pershing County Water Conservation District (PCWCD)
- Work with district personnel to implement Plans
- Work with district personnel to implement water measurement based on studies completed by ITRC
- Work with district personnel to implement pilot and proven water conservation measures

### **Activities**

The LBAO has responsibilities for four Reclamation projects; Truckee Storage, Washoe, Newlands, and Humboldt Projects. The Washoe Project is a single purpose project operated for the benefit of the endangered Cui-ui fish by regulating Truckee River flows. As such, there is little opportunity for water conservation activities on this project and it is therefore not included in the LBAO WCFSP. Opportunities for improved water management within the LBAO area of responsibility are being emphasized in the following projects.

#### ***Truckee Storage Project***

This Project consists of Boca Dam and Reservoir, which are operated by the WCWCD. Water is distributed through a number of ditch companies to water-right holders. These ditch companies are not under the administration of the District, making it particularly difficult to develop a meaningful water conservation plan. The District's sole responsibility is the operation and maintenance of Boca Dam and Reservoir. The District has shown a willingness to examine water conservation opportunities on a limited basis for the ditch companies but is wary of taking on responsibility for the ditch companies. Reclamation hopes to be able to address the following issues in the WCFSP:

- Quantifying delivery volumes
- Infrastructure issues associated with an old water delivery system
- WCWCD's water management process
- Conversion of agricultural water use to M & I water use
- Uncoordinated operation of several ditch companies

#### ***Humboldt Project***

This Project consists of Rye Patch Dam and Reservoir, Battle Mountain Pasture, Pitt-Taylor reservoirs, and the distribution system, which are operated by the PCWCD. Water conservation issues to be addressed are:

- Water measurement
- Water control
- Water conservation education for the PCWCD and the public
- Any inefficiencies with respect to water management

### ***Newlands Project***

The Newlands Project delivers water from the Carson and Truckee Rivers for irrigation and wetlands use in the Lahontan Valley. Because of inter-basin diversions of water, there are several competing interests for the limited water resource including Native Americans, project farmers, and urban interests. The Truckee River terminates in Pyramid Lake which is wholly within the Pyramid Lake Indian Reservation. Pyramid Lake is the home of the threatened Lahontan cutthroat trout and the endangered Cui-ui fish. These species figure closely into the culture of the Pyramid Lake Paiute Tribe. The Carson River terminates in the Stillwater Wetlands that are downstream of the Newlands Project. These wetlands are a part of the Pacific Flyway and are of international importance. As a result of the competing demands, the various stakeholders and interested parties have not been able to reach agreement on how to best manage their water resources.

Because of the government-imposed regulations and the implications of the Endangered Species Act, the WCFSP is used extensively to assist the Newlands Project in water conservation and management issues. Some of the issues to address include:

- Implementing a program for measurement of water delivered at headgates.
- Offering educational programs for both the public and the district.
- Improving the control of water.
- Providing incentives for water conservation.

### ***Public Education***

One of the biggest institutional barriers to achieving water conservation goals in the LBAO is the lack of adequate dissemination of information on water conservation and water management, and its benefits to water users and the general public. As a result, education is emphasized in the LBAO WCFSP.

### ***Conservation Planning***

All districts were informed of their water conservation planning status and requirements through letters, telephone conversations, and visits by Reclamation personnel. Assistance has been offered through a variety of means including explanations of requirements (RRA and others) and guidance and review and comments on plans. Every district was visited, and the requirements of the RRA were explained. Opportunities available through the WCFSP were also presented.

Progress is slow in encouraging districts to develop Plans. There has been general resistance to the requirements and guidance offered. Some progress has been made through contractual requirements with TCID and through small steps and communication with the PCWCD.

The TCID has developed a Plan pursuant to the requirements of the O&M Contract between the district and Reclamation.

This office has worked extensively with TCID to implement several measures. These include:

- On-site ditch rider training
- Installation of a Doppler radar measurement device at the S-line Headworks and telemetry of results



- Installation of a long-throated flume at Harmon Reservoir and telemetering the results

Work with the PCWCD has included the following:

- Water conservation education
- Construction of two water measurement devices
- Purchase of computer and associated software
- Construction of gated structure at the "Big 5" diversion point
- LBAO has met several times with PCWCD to plan work

Other cost-shared programs that are not district-specific but address water conservation in the area include:

- Water Education Foundation production of a video on water conservation
- Water Education Foundation production of a video on reclaimed water
- Lahontan Conservation District and the NRCS development of an irrigation system mobile laboratory
- The State of Nevada development of a Water Education Calendar, Nevada Water Resources Map, and Project WET



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## NORTHERN CALIFORNIA AREA OFFICE

### Local Program Description

The Northern California Area Office's (NCAO) WCFSP is focused around the Sacramento River system and tributaries from Shasta Dam in the northern part of the Sacramento Valley, to the West Sacramento area in the southern part of the Sacramento Valley. Northern California has historically had an abundant water supply. Both the CVP and the State Water Project (SWP) have constructed flood control storage facilities in the NCAO region which allow for diversion of water to water-deficient areas of the State. Prior to the early 1980's there appeared to be surplus water supplies available. However, with the increased mandates of the CVPIA and the San Francisco Bay-Delta Outflow requirements, coupled with decreased diversions from the Trinity River and the consequences of listings pursuant to the Endangered Species Act, the Sacramento River is at times unable to meet all of the competing demands for water.

Northern California is a large geographic bowl with an outlet at the San Francisco Bay-Delta with good quality sub-surface water in most locations. Consumptive use is predominantly various forms of evapotranspiration. Opportunities exist to improve water use efficiency through monitoring, conjunctive use, district canal and river management, and on-farm efficiencies.

The NCAO Contractors are divided into two categories. The first is comprised of Contractors with CVP water service contracts, and second Sacramento River Settlement Contractors (Settlement Contractors). The water service Contractors have project water contracts based on project facilities water storage. The Settlement Contractors have contracts with combined project water supply and base supply. Base supply is an agreed upon quantity that may be diverted from the river during the months of April through October without payment to the United States.

### Goals

- Encourage Reclamation Contractors in the development and implementation of Plans
- Promote water conservation education by encouraging and expanding the water conservation education efforts
- Implement water efficient management practices
- Introduce Reclamation Contractors to new techniques of efficient water management through demonstrations, education, and financial assistance
- Initiate demonstration project activities with willing water Contractors
- Continue activities that establish 'leadership by example' in the water conservation and management programs
- Encourage and participate in partnerships with public and private entities that have similar conservation objectives and goals

### Activities

#### *Planning Assistance*

Reclamation's NCAO offers plan preparation and technical assistance to water Contractors and holds meetings to discuss programs and progress.



Of the CVP Contractors under NCAO's jurisdiction, 14 water Contractors are required to provide Plans, and 14 have plans in place and are implementing them. Reclamation staff has met with district managers, provided presentations to district boards and made available technical assistance for the annual planning process. Most existing Plans are in rewrite or final review stage for the 5-year update during FY2001. Plans are reviewed yearly through annual updates submitted by the contractors. NCAO has contracted with a water conservation planning specialist to provide assistance, upon request, to water Contractors in revising their Plans.

Planning assistance has been provided to 4-M Water District, Bella Vista Water District, Clear Creek Community Services District, Corning Water District, Dunnigan Water District, Orland-Artois Water District, Orland Unit Water Users Association, Proberta Water District, City of Redding, City of Shasta Lake, Thomes Creek Water District, and Westside Water District. Automation presentations have been made to Meridian Farms Water Company, Orland-Unit Water Users Association, and Sutter Mutual Water Company.

The Settlement Contractors make up a large portion of the NCAO Contractors. As a result of negotiations and the signing of an MOU, the requirement to develop and implement plans has been postponed until the year 2002. Nine of the Settlement Contractors are working together in cooperation with Reclamation on a draft regional Plan.

Orland Unit Water Users Association (OUWUA) board of directors are working on a Plan per CVPIA guidelines. Discussions with the OUWUA manager indicate the success of this WCFSP effort will be a result of available technical and financial assistance in the planning and implementation phases. Plan completion is anticipated during FY 2001. OUWUA operates and maintains the facilities of the Orland Project, one of the oldest reclamation water projects dating back to the early 1900's.

### ***Public Outreach/Partnerships***

NCAO staff will work with districts and educational groups to provide teacher training on Project Water Education for Teachers (Project Wet), and offer water conservation teaching programs. NCAO also provides educational materials and reminders on the need for water conservation.

The WCFSP supports water efficiency education through many partnerships such as: the Sacramento River Discovery Center, the Turtle Bay (Redding) water conservation education program, the RCDs, NRCS, DWR, the California State University at Chico, ITRC, UCCE, and local school organizations. Staff is also working internally to encourage and educate Reclamation staff on the importance of water conservation and water use efficiency. Reclamation has worked extensively with the Discovery Center staff in Red Bluff, where approximately 6,000 students and 11,000 people have been presented with water education lessons, materials, and presentations. Thirty teachers were given a 2-day curriculum of watershed training, including the Project WET program which they can include in their school programs.

The NCAO staff has worked with several districts to provide educational materials and training to their water users. Bella Vista Water District and the City of Redding received funding this year to provide water conservation materials, presentations, and training to their water users. Bella Vista

Water District has developed a Water Conserving Garden and Landscape demonstration for the education of the public on low water use plants in the Redding area.

Reclamation has contracted with the ITRC, to provide (on-farm) mobile lab irrigation distribution uniformity reviews, professional training and assistance on canal management, handheld data recorders, and SCADA equipment. This information transfer program is being expanded to develop water industry training facilities at California State University, Chico. These facilities will provide state-of-the-art training to students and industry (agriculture) on measurement, conservation, efficient water management techniques, and automation (SCADA).

The ITRC staff, under contract with Reclamation, provided water management training and assistance services to Anderson-Cottonwood Irrigation District, Glenn-Colusa Irrigation District, Corning Water District, Glide Water District, Kanawha Water District, M&T Chico Ranch, Orland-Artois Water District, Orland Unit Water Users Association, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, Reclamation District 108, Reclamation District 1004, Reclamation staff at the Red Bluff Diversion Dam, Tehama-Colusa Canal Authority, and Westside Water District. Training sessions provided district staff with information on water management techniques, water measurement devices, canal management, SCADA technology and applications, information collection equipment (handheld recording devices for measuring equipment), and software development options for effective data management.

### ***Conservation Demonstrations***

The NCAO offers cost-share grants to contractors to introduce, demonstrate, or implement measurement and monitoring equipment, or technologies that are new or improved water management techniques to the water contractor.

The NCAO has seen increased interest in canal automation and operation efficiency due to the SCADA demonstrations and the ITRC canal management courses (Regional Office WCFSP). The SCADA demonstrations accomplish several necessary tasks while initiating real time canal monitoring for the Districts. Some of the necessary tasks are the real-time measurement of river diversions and river stage levels by Reclamation, real time monitoring of diversions, flows, river and canal stage by district, and real time monitoring of pump activities by the district. The demonstration SCADA sites are the first step of a district's SCADA program and offer encouragement to the district to expand into automated canal monitoring, control operations, and improved data management.

Nine Districts have applied for and been awarded funding for demonstration projects on handheld equipment to assist the water measurement meter readers in recording and more accurately transferring the flow data to the Districts' base computer systems. These projects include software for the office computer that works with the handheld recorders to present the information in a manner that make the information transfer less difficult for those in the field.

### ***Conservation Measure Implementation***

The NCAO tracks districts' Plan implementation through the annual update process. This method allows both Reclamation and the Districts to monitor their progress in achieving goals.



Westside Water District completed the automation of their system through the SCADA program. Their district now has full monitoring and automation capability. District staff has expressed real satisfaction with the new system and are significantly more aware of the status of their flow equipment and systems. Reclamation District 108 (RD 108) and Glenn-Colusa Irrigation District (GCID) continue to lead the settlement Contractors with SCADA activities. This year, RD 108 has expanded its SCADA program to complete the river diversion monitoring and control systems. RD 108 is now looking into gathering information on return flows to give them a surface water balance of water flowing in/out of the district. GCID is continuing to expand it's SCADA network on it's canal system.

Bella Vista Water District, Colusa County Water District, Corning Water District, Glide Water District, Kanawha Water District, Orland-Artois Water District, and Westside Water District are implementing handheld data management technologies. They are using new software and equipment that allows the ditch riders to enter fields and meter information electronically for direct download upon return to the office. This improves the efficiency of the information transfer by both time and quality. Also, additional information is captured (e.g. crop type, stage, applications, system troubles, etc) for immediate recorded transfer upon return to the office.

### ***Leadership by Example***

A portion of the education program is called "lead the field". This program is a combination of approaches. First, NCAO upgraded its own facilities to low flow appliances (faucets, toilets, and sprinklers). Second, the Shasta Visitors Center was upgraded to reflect the important issues including water conservation. Third, Shasta Dam tour guides are utilized during the fall/winter season to make offsite presentations to school classes regarding conservation (outreach program). Fourth, NCAO is looking at management tools on the river system and looking for areas that can have multiple benefits by upgrading information technology through use of SCADA. This program has acted as a leadership and demonstration activity that is receiving a significant positive response from water districts.



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## SOUTH-CENTRAL CALIFORNIA AREA OFFICE

### Local Program Description

The South-Central California Area Office (SCCAO) encompasses more than 2.5 million acres of irrigated farmland. Served by Reclamation's Central Valley, Monterey, Ventura River, and Cachuma Projects, these Projects cover 80 service contractors, with allocations of nearly 6 million acre-feet of water.

With its proximity to large urban areas such as the San Francisco Bay and with the City of Fresno, located in the heart of the region, the importance of urban water conservation is becoming more apparent. The Central Valley has the fastest growing population in California, therefore, demand for M&I water will continue to increase dramatically. Urban coastal projects, which include: Cachuma, Ventura River, and Monterey, are facing salt water intrusion, water quality concerns, low supplies, and urbanization. Because of these trends, the WCFSP will address these areas in the near future. The vast agriculture area of the westside of the Central Valley must cope with reduced water supplies, environmental obligations, high water tables, salinity problems, and drainage disposal.

The SCCAO WCFSP addresses the above concerns by insuring the completion of Plans, initiating BMPs whenever possible, sharing success stories with all water users (agricultural & urban), and assisting all agencies in achieving their water management objectives.

### Goals

The goal of the SCCAO WCFSP will be to continue to provide assistance to Reclamation water service contractors in the development and implementation of water conservation. In order to accomplish this, the area office will facilitate the completion of the remaining Plans and assist with the completion of several (15) 5-year plan updates due in 2001. In addition, the SCCAO will identify where BMP implementation can be accelerated through funding and /or technical assistance.

### *Conservation Education*

- The following are activities included in the WCFSP to provide education, training and information transfer to area water users:
- In cooperation with California Department of Water Resources, provide hardware and training for the statewide CIMIS station network.
- Provide assistance with development of in-school water awareness programs.
- Provide water education guidebooks for teachers on water conservation and lesson plan outlines on conserving water.

### **Demonstration of Innovative Conservation Technologies**

The following are activities included in the WCFSP that demonstrate the various methods and determination of benefits derived from the implementation of BMPs.



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### ***Implementation of Conservation Measures***

- Investigation of water and energy savings with urban Green Gardener certification programs, leak detection kits, and landscape audits.
- Conduct pilot studies for implementation of various urban BMPs.
- Construction of water conserving and drought tolerant demonstration garden.
- Determination of canal delivery system efficiencies.
- Construct water level control structures and provide variable speed drive upgrades for irrigation pump stations.



## MID-PACIFIC REGIONAL WATER CONSERVATION TEAM

The Region's Water Conservation Team (Regional Team) continues to integrate its regional responsibilities with the area office based WCFSP. The Regional Team initially was established in 1992 to carry out the water conservation provisions of the CVPIA and now ensures consistence in implementing these water conservation provisions. Along with providing technical assistance and budgeting oversight to the area offices, the Regional Team oversees the Regions' water conservation planning duties to fulfill RRA and CVPIA mandates. As part of its mission, the Regional Team continues to support the introduction of new and innovative water conservation measures by providing technical and funding assistance to entities such as universities, foundations, and other non-profit organizations in an effort to accelerate the development, demonstration, and adoption of water conservation measures and to instill in water users and the general public a sense of stewardship of water resources.

Partnerships continue to be the underlying foundation of the regional WCFSP. The Regional Team's active participation in the CALFED WUE Program is one example of the importance placed on working with others to accomplish important objectives. The Regional Team also continues to work closely with the Urban and Agricultural Water Management Councils, the university systems in California and Nevada, with the State Governments in the Region and with such groups as the Water Education Foundation, and the California Association of Resource Conservation Districts (CARCD) that have similar objectives to the Regional Team's mission, which is:

*Optimize the beneficial use of water resources including groundwater, recycled/reused water, and surface water. Educate customers about the opportunities for and the benefits of water conservation in the context of watershed management. Cooperate with agencies and other stakeholders to be leaders in conservation.*

### ACCOMPLISHMENTS

#### ***Planning***

In 2000, the Regional Team assisted the Area Office water conservation staff in the review of 10 Plans. The *Water Management Planner (Planner)* was developed to assist Reclamation water service contractors in the preparation and implementation of their Plans. The *Planner* is designed to be used by agricultural and urban contractors of all sizes and complexities. The *Planner* includes a guidebook and Plan template to assist contractors in developing the districts' water balances. All of the *Planner* information is provided as hard copy and on a computer CD.

The Regional Team began converting the Plan annual reporting process to a computerized web-based system. Annual reports are required to track the implementation of the Contractors BMPs. The staff is working with the California Urban Water Conservation Council (CUWCC) to establish a web-based reporting process for urban water contractors. The Region is also developing a similar web-based approach for agricultural site for agricultural water contractors.

#### ***Education and Outreach***

The Regional Team continued to publish the Conservation Connection Newsletter quarterly. This newsletter was sent to over 1,000 water districts and various interest groups.



The Region funded the second annual water conservation coordinator training in cooperation with the Agricultural Water Management Council (AWMC) and the California DWR. The two-day course was presented at the ITRC for agricultural water conservation coordinators.

Reclamation continued to provide technical and financial assistance to the CUWCC for the Water Conservation Specialist Level One Training and the development of a Level Two Training. Marsha Prillwitz served as a trainer and was actively involved in the 'Level Two' curriculum development for the classes.

Reclamation assisted in the development of the CALFED WUE Program. The Regional Team participated in both the Urban and Agricultural Steering Committees and the selection of six pilot projects for the first year of implementation. A coordination committee was established with Reclamation and California DWR as the CALFED WUE lead agencies to begin integrating CALFED activities with existing water conservation activities of the two agencies where appropriate. This integration allows for the smooth and effective implementation of this important program.

At Six Flags Marine World, on April 13, 2000, Solano County cities, water districts, and Reclamation unveiled a new water conservation exhibit entitled, "Planet Water." "Planet Water" focuses on fun while teaching the importance of using water wisely through interactive displays. Included in the display is one of California's new low water use demonstration gardens, complete with shade, benches, and a recirculating fountain. This new and innovative exhibit is the perfect place to rest and learn more about better water management.

The CIT continues to develop their Waterright web site to assist urban and agricultural water users in weather based irrigation scheduling. Reclamation assisted CIT in cooperation with the UCCE in the development of a standardized method to determine crop coefficients. This method will be utilized by the California DWR in their upcoming state water plan and by Reclamation in their water management analysis efforts.

The ITRC conducted short courses for water managers and water districts' operations staff at their campus. The Region underwrites the expense of these courses which makes them affordable to the districts.

Project WET is a high quality, Kindergarten -12th grade inter-disciplinary program for formal and non-formal educators. Over the past years, more than 1,500 educators have been trained and more than one million students have benefited from this program. In 2000, WET offered approximately 40 workshops throughout the state. California Project WET was presented at several area conferences, including the Bay Area Environmental Education Resource Fair, California Association of Bilingual Educators Conference, and California Science Teachers Association Conference. The Water Education Foundations' web site continues to promote Project WET information. Reclamation is a proud sponsor of this highly respected, innovative, educational program for children.

The Region provided technical assistance and funding to the ITRC to update the landscape water-auditing program. New software will be developed for the auditors along with a survey to determine ways of expanding the landscape auditing efforts in the state.

Lucille Billingsley and Marsha Prillwitz served as technical advisors on a committee formed by Sunset magazine to produce a new brochure for homeowners. It is called "How to Water Your Garden." The full color 16-page brochure provides easy-to-understand information about irrigation systems and basic water concepts. It has been well received by local water districts and their customers as well.

### ***Research and Demonstrations***

In conjunction with the CALFED WUE Program, Reclamation funded a rapid seepage assessment demonstration with CIT. The program using electromagnetic equipment is designed to determine areas of a district which have potentially high canal and reservoir seepage losses. These sites will then be ground-truthed to determine the amount of seepage and whether it is cost effective to line or pipe these sites.

Reclamation has begun working with the Sacramento River Settlement Contractors to look at various options for measuring water by customer. This two-year demonstration will determine what objectives can be achieved by a district through customer level measurement and select measurement methods based on those objectives.

Contra Costa Water District (CCWD) currently has a "Water Budget Database" which creates water budgets for individual sites. Through a grant from Reclamation, CCWD will provide these water budgets to their customers through the Internet on their web page. This would allow customers to view and print their current water budget and compare it to their current water consumption. The water budget would include a graph of their past consumption and a table with a month-by-month comparison. This project will include linking the water meters to the measured landscape areas and create polygons for sites not currently identified. It will also link the database to current CIMIS data thereby creating a water budget database for web viewing. This will allow CCWD to determine the best way to notify their customers if their actual consumption is exceeding their water budget. The major benefits of this project to the Sacramento-San Joaquin Delta include reduced demand on water supply and reduced landscape water runoff due to improved landscape water management.



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