

# RESEARCH AND NATURAL RESOURCES HIGHLIGHTS

## December 2002

### Director's Office (Washington, DC and Denver, Colorado)

Presentation to NWRA on S&T program goals and accomplishments. (Chuck Hennig, 303 445-2134)

Met with Solicitor, USGS, and Policy, Management and Budget to discuss issues and options associated with project inherited from Bureau of Mines (ASARCO/Santa Cruz Joint Venture). (Shannon Cunniff, 202 -513-0682)

Participated at Salinity Summit. Presented desalination technology progress plan findings and next steps. (Shannon Cunniff, 202 513-0682)

### Upcoming Events

#### January

- 3 Chuck's birthday.
- 8-9 Developing S&T portion of 05 BRC notebooks (Shannon Cunniff, 202-513-0681; Chuck Hennig, Mary Ann Tarr)
- 13 Yuma Desalting Plant Governance Committee hosted by Jim Cherry (Shannon Ccunniff, 202-513-0682)
- 15 -17 Japan-US workshop on global climate change (Shannon Cunniff, 202-513-0682)
- 20 Comments due on CESU strategic plan (Shannon Cunniff, 202-513-0682)
- 22 – 23 NASA Workshop – research applications for water management (Shannon Cunniff, 202-513-0682)

#### February

- 3-4 OMB PART training (in D.C.) (Shannon Cunniff, 202-513-0682)
- 11- 13 American Meterological Society Meeting – Presentation on water management science needs (Dave Matthews to substitute for Shannon)
- 11- 13 Area Manager Conference – Boise
- 13 – 18 AAAS Annual Meeting (in Colorado)
- 19 Outreach Workshop: Stretching Agricultural Water Supplies (a pilot). (Contact Siegie Potthoff at 303 445-2136 for information)
- 20 Feedback on Workshop & next steps (Shannon Cunniff, (202=513-06282)

### Improving Infrastructure Reliability

Posted the results of the Rope Access Equipment Testing done in August by Reclamation and Ropeworks on the Ropeworks web page at [http://www.ropesafety.com/site/technique/backup\\_device\\_testing.htm](http://www.ropesafety.com/site/technique/backup_device_testing.htm) Results were also presented at the International Technical Rescue Symposium in Denver in November. (Steve Beason, 702-295-4088)

Subsequent to publication of the report “High-Voltage Generation” in January 2002, specifications were issued by the **Mid Pacific Region**. A sole-source contract was authorized, and a technical proposal has been received from Alstom Power. A contract to acquire and install a high-voltage generator for **Folsom Powerplant** is expected to be awarded in early calendar 2003, and the generator is expected to be operational in mid 2004. High-voltage generation research is expected to continue throughout the pilot project phase. High-voltage generation promises to reduce maintenance costs and environmental risks while improving efficiency and reliability. (Gary Osburn, 303-445-2297)

James DeHaan, Malin Jacobs, and Bert Milano were granted a patent for inventing the “Flexible Printed Circuit Magnetic Flux Probe.” The probe detects magnetic fields produced in an electric generator between the rotor poles and an iron stator. These magnetic fields may be used to assess the health or status of the generator. The unique design using flexible printed circuit technology allows for more effective use within the generator and reduces the likelihood of damage to the generator should the probe become separated from the stator. This invention enables Reclamation personnel to more easily, safely, and cost effectively make measurements that were previously difficult or impractical. Presently, we are seeking a suitable vendor to produce and market additional probes for commercial sales. (Jim DeHaan, 303-445-2305)

The Multi-Product Hydro Optimization (MPOpt) package was obtained from the Electric Power Research Institute and set up on a computer in the Denver laboratory. The package was also provided to staff from the **Central Valley Operations Office** in Sacramento. The potential for setup of a prototype both at **Grand Coulee** and in the **Mid-Pacific Region** is being investigated. Modifications to the ancillary services monitoring package at **Hoover** were initiated. Work will continue to make improvements to the ancillary service monitoring functions in both the **Lower Colorado and Mid-Pacific Regions**. (Steve Stitt, 303-445-2316)

An amendment to the Cooperative Research and Development Agreement between Reclamation and Hydro Resource Solutions was completed in December. This agreement will support the development of improved optimization and condition-based maintenance monitoring in the **Pacific Northwest Region**. Work also continued to test an optimization package being developed by Bonneville Power Administration for use at **Grand Coulee Powerplant**. (Steve Stitt, 303-445-2316)

During January, design and construction of an on-line performance monitoring scheme scheduled for installation at **Hoover Powerplant** will continue. (Steve Stitt, 303-445-2316)

The prototype ramped voltage test set was demonstrated at the Reclamation Power Operations & Maintenance Workshop in **Laughlin, Nevada**. Representatives from Adwel were present to discuss the test equipment with Reclamation’s field engineers and technicians. (Lori Rux, 303-445-2307; Phil Atwater, 303-445-2304)

### **Improving Decision Support**

The Water and River Systems Management Program (WaRSMP) **Columbia Basin Project** team reviewed progress on the RiverWare and AWARDS-ETToolbox demonstration. Development of data management Interfaces to facilitate the transmittal of data between these models was identified as a high priority. Development by Technical Service Center team members will begin in early 2003. (Don Frevert, 303-445-2473)

Participated in the US Climate Change Research Program Strategic Planning Workshop in Washington. Critiqued the Water Cycle Chapter of the strategic plan and presented Reclamation's needs for short- to long-range forecasting and decision support. The meeting hosted over 1500 scientists, policy makers, and planners from over 40 countries, and most US Federal and State agencies involved with energy, water, air, and our environment. The final plan will be presented to Congress late this spring and will focus on practical results that decision-makers can use. (Dave Matthews 303 445-2470)

NASA has awarded Curt Hartzell, Steffen Meyer, and Dave Matthews and their NASA co-principal investigators, Kristi Arsenault and Paul Houser, at NASA Goddard, \$437,897 over 3 years. Their project is entitled "The use of NASA land data assimilated products to improve flood and drought risk analysis and forecasting for water resource management in the **Upper Columbia Basin**.. It seeks to apply the latest emerging NASA data assimilation systems in Science and Technology Program-developed decision support tools: RiverWare and the ET Toolbox, to improve water supply and demand forecasts in extreme events, and enhance efficiency, effectiveness, and safety of water operations. This effort builds on current Watershed and River System Management Program research in the **Columbia Basin**. (Curt Hartzell: 303 445-2482)

NOAA's Office of Global Programs is funding the Technical Service Center and NASA Goddard for 3 years to improve water demand forecasting for water resource managers. The work will focus on improved water demand forecasting in the Upper Rio Grande basin using the North American Land Data Assimilation System developed by NASA, NOAA, DOE, and several university teams. The study will examine better techniques to estimate consumptive use by crops and riparian vegetation using the ET Toolbox and the **Upper Rio Grande Water Operations Model**. (Contact: Dave Matthews 303 445)

## Upcoming Events

### April

16-17 The Interagency WaRSMP Technical Team will meet in **Ephrata, Washington**  
(Don Frevert, 303-445-2473)

## Improving Water Supply Technologies

Met with Colorado State University researchers on **Arkansas Valley Salinity Research** to coordinate and share data on research efforts with the goal of trying to identify different leaching requirements. Coordinated field monitoring of water level soil salt and future drainage needs. This research coordination effort could impact the design of future subsurface drains (Roger Burnett, 303-445-2508).

## Improving Water Delivery Technologies

A new rock channel fishway was constructed at **Derby Dam**, near **Reno, Nevada**. The fishway design is based Science and Technology Program-funded fishway research promoting passage of native species. The fishway is a boulder weir and rock channel design. (Brent Mefford, 303-445-2149)

A visit to the Automated Farm Turnout/Continuous Flow Measurement (AFT/CFM) field demonstration sites in **Arizona** (near **Yuma** and near **Parker**) was completed with the **Yuma Area Office** (YAO) to evaluate the Met-One system developed under the S&T program. We learned that the **Colorado River Indian Tribes** irrigation system using a Met-One system has performed well. District personnel indicated that if a two-way communications add-on becomes available, the system would be attractive for other sites in their modernization plans. The two AFT demonstration sites in the **Bard Water District** near **Yuma** are not yet fully functional. A follow-up trip to these sites will be coordinated with the YAO and Met-One to get problems ironed out. (Tom Gill, 303-445-2201)

### **Regional Reports**

The Westside Improvement Project Demonstration Project consists of a potential wetland development on private property within the Westside Improvement District, **Klamath Project**, which is located a few miles south of the **California-Oregon** border. The objective of the project is to improve water quality of irrigation return flows entering the **Tulelake National Wildlife Area** while improving wildlife habitat. The ultimate plan for the project is that it will serve as a prototype for similar wetland improvements elsewhere within Reclamation. The project began this month with area office representatives and the cooperating landowner traveling to Denver to meet with the Technical Service Center team to begin development of design work. In January, the TSC team will visit the site to aide in further design work. (Gary Baker, 541-880-2559)

Kit fox signs have been observed at five of the artificial den complexes in **Bakersfield, California**. At one of the complexes installed on an exclusive golf club, it appears as if foxes may be preparing to raise pups. The golf course manager is quite excited about this! The manager at a second golf course has indicated that she would be in favor of artificial dens being installed at a couple of sites on the course (golf courses appear to be a compatible use for kit foxes). The Smithsonian provided funding for a joint purchase of an infrared video system from Sandpiper. This system will then be used at artificial dens at secure sites. Reclamation and other entities are working with planning departments, using the data we are collecting on this study, to plan for enhancements for kit foxes in the urban development projects that will receive CVP water. (Rosalie Faubion, 541-887-2559)