

RESEARCH AND NATURAL RESOURCES HIGHLIGHTS

November 2002

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

Met with **Yuma Area Office** Management (Jim Cherry and Mike Collins) regarding the business assessment for Yuma Desalting Plant (YDP) and its findings regarding level of actual investment in support of research activities. Discussed development of an executive board to oversee various aspects of YDP, including its research mission. (Shannon Cunniff, 202-513-0682)

Briefed Science Advisor to the Secretary on our proposal to win USFWS support for expansion of salt cedar biocontrol test sites along the Middle Rio Grande and other areas in the west. A Biological Opinion limits the location of test sites due to concerns about effects of the introduced beetle and decline of salt cedar habitat on the Southwest Willow Flycatcher. Since that Opinion was issued, considerable data has been gathered both on the ecology of the flycatcher and the effectiveness of beetle-caused salt cedar decline. The Science Advisor supported our contention that the time is ripe to revisit the Biological Opinion and explore expanded application of the beetle. A new Biological Opinion will enhance our efforts to demonstrate more effective and less costly control of salt cedar in FY04. (Shannon Cunniff, 202 513-0682)

Working to further improve and streamline the new S&T Program submittal and review process for research proposals. Evaluating the process used for FY2003 to determine what worked well and where improvements are needed. We have received many good suggestions and are rapidly working on developing improvements. Call for FY2004 proposals is tentatively planned for February or March to enable these improvements to be integrated. We are also working to automate the proposal and other S&T Program work-flow processes through web-enabled data base applications. (Shannon Cunniff, Siegie Potthoff, Chuck Hennig)

Continued to work with Deputy Assistant Secretary on resolving Santa Cruz Joint Venture/ASARCO cooperative agreement issues. This project is the remaining Bureau of Mines research project being closed out by the Bureau of Reclamation. Meetings will be held in December with PMB, USGS, and the solicitor to determine interest in monitoring results and determine options for closing out this project. (Shannon Cunniff, 202 513-0682)

Reviewed third draft of desalination research roadmap. Final product of the Executive Committee is expected in December. Developed scope of work for National Research Council review of the roadmap which will take one year but will deliver an interim letter of report in spring of 2003 regarding the merits of roadmaps findings. (Shannon Cunniff 202 513-0682)

Upcoming Events

December

- 4** Panel member on NWRA Science at the annual NWRA conference in **Tucson, Arizona**. Will provide overview of Science and Technology Program our focus on technology and tools for the water manager and water user (Shannon Cunniff, 202-513-0682, Chuck Hennig)

Attend/Participate in NWRA workshop on Agricultural Water Delivery System modernization (Cliff Pugh; 303-445-2151; Chuck Hennig)

Meeting with Agriculture Research Service's Southwest Research Center (NAME) to exchange information on each agency's research interests and activities of mutual interest. (Shannon Cunniff; 202-513-0682; Chuck Hennig; Cliff Pugh)

Presentation to NWRA on S&T program activities (Chuck Hennig, 303-445-2134)

- 3&4** US Climate Change Science Workshop to review and revise plans. (Dave Matthews, 303-445-2474)

February

- 19** Northern Colorado Outreach Workshop – Stretching Agricultural Water Supplies (Siegie Potthoff, 303-445-2136)

Improving Decision Support

The RiverWare Steering Team met in **Boulder, Colorado**, to review technical accomplishments. Some examples of significant accomplishments include enhancements to the Muskingum Routing technology to improve the accuracy of streamflow estimates, improved simulation of return flows, better water accounting capabilities and new mathematical rule functions for reservoir storage and releases. (Don Frevert, 303-445-2473).

Refinement of CALSIM model application to the **Klamath Project** - This refinement is a robust and flexible allocation procedure and dynamic representation of several key facilities (**Lost River Diversion Channel and D Pumping Plant**). The **Klamath Area Office** will match funds to allow additional TSC staff to shadow the effort. Preliminary CALSIM training for new TSC staff was conducted. (Nancy Parker, 303-445-2532)

Upcoming Events

December

- 10** Yakima study team will hold a conference call to discuss possible methods for interfacing RiverWare water operations decision support with fishery habitat models. (Don Frevert, 303-445-2473)

- 18-19** Discussions at the **Klamath Area Office** on new allocation procedures for CALSIM model application. (Nancy Parker, 303-445-2532)

Improving Water Delivery Technologies

Coordination conference call was held to begin coordination and integration of several aquatic habitat modeling and investigative research projects that are being funded under the S&T Program starting in FY03. The research involves MP and PN region researchers as well as researchers in the TSC. Capabilities developed will have broad applications across Reclamation. Face-to-face meetings to further explore research directions and effective integration of these efforts is being planned for January or February. The projects include:

- Biologically based modeling and management along the Snake River (Chris Jansen-Lute, (208-378-5319)
- Rapid assessment of aquatic health indicators that would enable the early identification of issues and potential preventive actions that would boost water delivery reliability (Rod Wittler, 303-445-2156; Dan Levish).
- Integration of surface flow, vadose zone, and hyporheic zone modeling to better model surface and subsurface flow interactions influence by Reclamation operations on riparian and aquatic habitat (Michael Tansey, 916-978-5197)
- Hyporheic zone physical and laboratory modeling to identify operational influences on the vitality of Salmon redds. (Kathy Karp, 303-445-2226; Mark Bowen)
- Developing natural indicators of aquatic ecosystem health (Cathy Karp, 303-445-2226; Mark Nelson)

Started research study to look at the new use of an approved EPA aquatic herbicide (Sonar) in a small irrigation system to control sago pondweed. Sonar was applied to ponded water in the FIDCO canal located in **Weld County** after water deliveries were stopped. Sonar was applied at concentrations of 150 parts per billion and allowed to seep in sediment to inhibit sago tuber production in the spring. This new type application (in static water) which is done following the irrigation season should reduce sago pondweed tuber densities plus Sonar residues should not impact the water used for crops and other uses in the spring. (David Sisneros, 303-445-2228)

A meeting was held in Denver with the Technical Service Center, Electric Power Research Institute, and The Nature Conservancy. The primary purpose was to discuss common water resource problems and O&M concerns and the potential for developing cooperative, co-funded S&T or other research projects to address these issues. Topics of common interest related to fisheries, river restoration, wetlands and riparian areas, water quality, watershed and water supply management, water treatment and desalination, hydrologic and sediment modeling, and techniques for establishing economic valuation for water and environmental attributes. A draft action plan was developed for further discussion and follow-up by individual scientists and engineers working in specific areas. (Rick Roline, 303-445-2213)

A preliminary administrative draft of the guidance document, "Estimating Municipal, Rural, and Industrial Water Requirements and Benefits" was completed and is undergoing internal review. The document contains concepts, principles, and technical guidelines for conducting water supply availability and reliability, water requirements, water utilization, water use trends, water use efficiency, and best water management and water conservation practices, investigations, and evaluations. This document will help regional planners to estimate water requirements for new or refurbished water supply projects, and use by other federal and non-federal entities is very likely. (Joe Lyons, 303-445-2531)

Improving Water Supply Technologies

A visit to Automated Farm Turnout (ATF) field demonstration sites in **Arizona**, (Near **Yuma** and near **Parker**), is planned with Mark Niblack of the **Yuma Area Office**. The ATF measures the water level in canals, calculates flow in the canal, controls an upstream supply gate to maintain target flow, and records flow for each irrigation turn and the whole season through concepts and technology developed by Reclamation's Water Resources Lab and the S&T Program. The objective is to view demo units in operation and/or identify operational problems that users have experienced. Performance of the Continuous Flow Measurement at area demonstration sites will also be discussed with Mark, but as none of the sites are functional due to vandalism. (Tom Gill, 303-445-2201)

Presented a series of 1-day Canal Lining Workshops for three **Columbia Basin** Irrigation Districts (CBID) in **Washington** state. The three Districts included South CBID, East CBID, and Quincy CBID. Each workshop consisted of half-day presentations and discussions in the District Offices, and a half-day of visiting District canals to customize canal lining alternatives to the District's needs. Workshops were co-sponsored and arranged by Steve Rolph who is the Water Conservation Coordinator out of the **Yakima** office. (Jay Swihart, 303-445-2397; Jack Haynes)

Improving Infrastructure Reliability

The prototype ramped voltage test set will be demonstrated at the December 2002 Reclamation Power O&M Workshop in **Laughlin, Nevada**. Representatives from Adwel will be present to discuss the test equipment features with Reclamation's field engineers and technicians. Adwel is working to refine the test set prior to our planned field validation phase (Lori Rux, 303-445-2307; Phil Atwater, 303-445-2304)

A series of electrical tests were performed on the stator groundwall insulation to assess the effectiveness of different test methods in detecting the various insulation problems. Tests include analysis and comparison of experimental results obtained from stator coils manufactured with artificial defects. Specific defects were chosen to represent the types of insulation problems typically encountered during manufacture or as a result of in-service aging. (Lori Rux, 303-445-2307)

Participated in a workshop to observe a demonstration of the Multi-Product Hydro Optimization (MPOpt) package being developed by the Electric Power Research Institute. This product is designed to provide an hourly unit schedule to a power marketer to allow bidding of energy and ancillary services into day-ahead and hour-ahead markets. The product has potential as a tool to maximize the value of these services and is available for use by Reclamation, Western Area Power Administration, and Bonneville Power Administration. (Steve Stitt, 303-445-2316)

During December, review of the MPOpt package will be performed in the **Mid-Pacific Region** and at Grand Coulee to determine potential use at those sites. Efforts will continue to improve ancillary service monitors at **Sacramento** and **Hoover** to properly account for motoring units in their calculations, and to develop concepts for monitoring voltage services at both sites. (Steve Stitt, 303-445-2316)

Work to develop new generalized flow models for **Grand Coulee** and **Yellowtail Powerplants** was completed in November. The methods used to develop these models were funded by the S&T Program. During December, work will continue on a conceptual design for an on-line performance monitoring scheme that will be installed at **Hoover Powerplant**. (Steve Stitt, 303-445-2316)

The winding fault detector developed under the S&T Program has already demonstrated the capability to pinpoint the location of electrical faults in the stator windings of large rotating machines. Reclamation experiences approximately five insulation failures a year. This device can save upwards of \$50,000 per failure. Commercialization of the prototype is being sought as part of this study. Recent work focused on the probes, which are hand-held instruments which when held near the core of the machine, can detect where faults are located. The initial design and prototype of the probe was completed in October. The manufactured probes were obtained the third week of November and testing is to follow. For December, the third and final sub-program should be completed allowing for full testing of the system (Phil Atwater, 303-445-2304; Nathan Myers; Carmela Salas)

Regional Reports

None