

Technology Transfer

Following are summaries of the laboratory's major technology transfer accomplishments for 2000.

Irrigation and Water Quality

Scientist: John Replogle - Sediment-Resistant Flume for Measuring Stream Flows

Information on precipitation runoff, particularly from agricultural and mining sites, is important for applying and evaluating best management practices and remedial activities. Most of these sites are on intermittent gravel-bedded streams, which are difficult to measure because of their constant bottom and side-slope changes. Flow measuring flumes are an attempt to stabilize the shape changes, but sand and gravel dune movements quickly spoil attempts to measure storm runoff when they move into the usual flume or weir system. A special flume system devised by John Replogle from the USDA-ARS U. S. Water Conservation Laboratory in Phoenix, Arizona, overcomes these problems by combining his previously-developed computable flumes with a chute outlet that forces the dune sediments into suspended flow, which the chute can handle. Simultaneous measurements in both the computable flume and the chute allow the chute to be field-calibrated for use even after the original flume has been spoiled by dune movement. A recently completed laboratory study verified this concept, which had already been used on a field site in California based on preliminary design concepts proposed and constructed by Replogle.

Scientist: Eduardo Bautista - Release of Beta Version of Canal Scheduling Software

Eduardo Bautista of the U.S. Water Conservation Laboratory, Phoenix, Arizona, released a Beta version of a canal scheduling program to the Salt River Project, a major supplier of energy and irrigation water to the Phoenix area who is a cooperator in the development of this software. The program's purpose is to generate a sequence of canal gate operations (timing of the change and gate position increment) based on the known or anticipated water demands of a water delivery system. Currently, scheduling is done manually based on the field experience of operators. The proposed scheduling program uses a hydraulically-based approach. In addition to automating the schedule calculations, the resulting schedules are expected to provide a more accurate water level control. Furthermore, the program will provide operators an easy means of comparing alternative operational scenarios, especially in situations with multiple sources of water supply and when constraints need to be imposed on those supplies. The software has been programmed in the familiar Windows operating system. Objectives in the Beta testing are to identify program limitations, determine features needed to make the program more robust and user-friendly, and identify and correct programming bugs.

Scientist: Herman Bouwer - National Drought Policy Commission

As a member of the USDA Municipal and Industrial Working Group of the National Drought Policy Commission, Herman Bouwer of the USDA-ARS U. S. Water Conservation Laboratory, Phoenix, Arizona, advised on tools that local entities should have in place to mitigate potential drought impacts and, if necessary, to qualify for drought relief funds. Tools identified by the working group, and for which Dr. Bouwer provided expertise and guidance, included demand management, water conservation, water reuse, and artificial recharge of groundwater or other long-term storage in times of water surplus for use in times of shortage. The working group included municipal and industrial representatives.