

Water Resources Research Act Program Subactivity

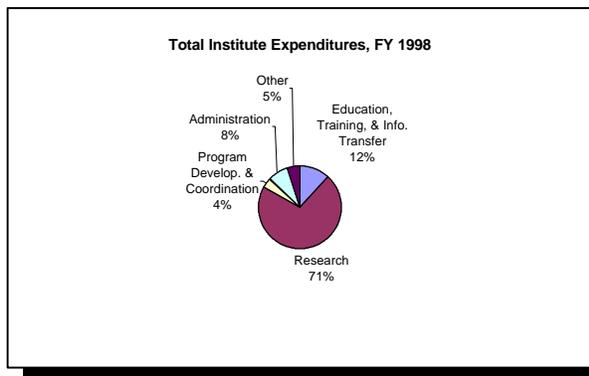
Program	FY 2000 Estimate	Uncontrol. & Related Changes	Program Changes	FY 2001 Budget Request	Change from FY 2000
Water Resources Research Act Program	5,062	+5	0	5,067	+5
Total Requirements \$000	5,062	+5	0	5,067	+5

Current Program Highlights

Section 104 of the Water Resources Research Act of 1984 (P.L. 98-242), as amended by P.L. 104-147, establishes a Federal-State partnership in water resources research, education, and information transfer through a matching grant program that authorizes State Water Resources Research Institutes at land grant universities across the Nation. This program provides an institutional mechanism for promoting State, regional, and national coordination of water resources research and training, and a network of Institutes to facilitate research coordination and information and technology transfer. With its matching requirements, it is also a key mechanism for promoting State investments in such research and training.

Section 104 authorizes a maximum of 57 Water Resources Research Institutes. There are currently 54 Institutes: one in each State, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam, which also serves the Federated States of Micronesia and the Commonwealth of the Northern Mariana Islands. The law requires a non-Federal to Federal cost sharing ratio of 2:1 and specifies that the Federal funds are not to be used to pay the indirect costs of the Institutes. In fact, the Institutes have developed a constituency and a program that far exceeds that supported by their direct Federal appropriation. According to a 1999 report of the National Institutes for Water Resources, in 1998 the Institutes collectively generated over \$14 in support for each dollar appropriated to them through this program, with \$6 coming from other Federal funds and \$8 from non-Federal sources.

Each Institute operates a program of multi-year research, education, and information transfer



projects focused on State and regional water resource priorities. In FY 1998, the Institutes supported more than 800 research projects nationwide, at an average cost of about \$41,000 per project. Though the emphasis varies across the Nation, depending upon State and regional priorities, the most common topics were concerned with surface-water and ground-water quality, toxic substances, and non-point source pollution. The Institutes collaborated with 101 other universities, 192 State agencies, and over 400 private sector or

local government entities. In addition, the Institutes cooperated with over 150 Federal agency contacts. Each Institute, on average, worked with about 14 State and Federal agencies, or other organizations, on research projects.

The Institute program is a primary source of training for water scientists and engineers. In FY 1997, nearly 1,000 students received training by participation in Institute-supported research and information transfer projects. Students trained under this program provide the talent needed to meet the mandates of the many new programs for water resources protection that have come into existence in recent years, and to support the water management initiatives of Federal, State, and local agencies.

Institute Evaluations -- The Water Resources Research Act, as amended, requires that each Institute be evaluated at least every 5 years. Detailed evaluations of all 54 Institutes were conducted in 1999 to determine their eligibility to receive grants. The independent panel which conducted the evaluations concluded that: "the institute program, with its federal-state matching requirements, is an important and significant component of the nation's water resources research infrastructure" and that "the program as a whole is vigorous and surprisingly productive, especially in light of the very limited federal support that it receives." The panel noted, "There are few federal programs that leverage federal dollars with non-federal dollars to the extent that the Water Resources Research Institute program does."

Grant Process for FY 2000 and Beyond -- In conformance with Congressional direction, \$3.8 million of the funds appropriated in FY 2000 will be used to support in each State a program in research, education, and information and technology transfer that has been developed in collaboration with each Institute's State advisory panel. These funds will be allocated equally among the Institutes, with the Institute in Guam receiving grant shares for itself, Micronesia, and the Northern Mariana Islands. The remainder of the funds will be competitively allocated among the Institutes under the provisions of section 104(g) of the Water Resources Research Act, which require that research priorities be developed jointly by the Institutes and the USGS and that the funds be matched on a 1:1 basis. The FY 2001 program will be operated in the same manner.

A lead institute will work with the USGS to solicit, review, and convene a panel to select research projects to be funded nationwide. Proposals seeking up to \$250,000 in Federal funds will be solicited for research addressing problems in

non-point source pollution, aquatic habitat, and water management and use. Specific research priorities will be set jointly by the Institutes and the USGS. Proposal selection criteria will favor projects involving collaboration between the USGS and university scientists. Any university or college can apply for a grant through an Institute. The USGS will award the grants, which can be for work over a period of up to 3 years.

Program Administration -- USGS administration of the program is funded at \$244,000 in FY 2000, and requires two FTEs. The USGS provides \$25,000 to a lead Institute assisting in the administration of the Competitive Grant Program conducted under the provisions of section 104(g) of the Water Resources Research Act.

Descriptions of the research projects funded under the State Water Resources Research Institute program in FY 1999 are provided on the Internet at:

<http://water.usgs.gov/wrri/projects.html>

Abstracts of the projects funded in FY 2000 and FY 2001 will also be included at that site.

Recent Accomplishments

State Water Resources Research Institutes -- The Institutes support several hundred projects each year, involving over 1,000 students. The results of this work appears initially in Institute reports and scientific journals. Much of this work results eventually in changes in water management practices. The following are examples of some recent accomplishments which have had, or may soon have, management applications.

- The West Virginia Water Resources Research Institute worked closely with the West Virginia Department of Environmental Protection to develop the State's policy pertaining to disposal in coal mines of fly ash from coal-burning plants. The policy addresses criteria for classification as a beneficial use and identifies application rates for neutralization of acid mine drainage in coal mines. The policy, adopted in 1998, was guided by research conducted by the West Virginia Water Resources Research Institute.
- The current and former Directors of the Water Research Institute at the University of Maine were lead-author and co-author of the 1999 Water Resource Management Plan for Acadia National Park, the first such plan for the Park. The plan will guide management and research at Acadia National Park for the next decade.
- The Louisiana Water Resources Research Institute has implemented a real-time hurricane flood forecasting system. Data are acquired from the National Weather Service and the USGS and incorporated into a version of the Federal Emergency Management Agency's overland hurricane flood prediction model. The resulting forecasts give State and parish emergency managers information as to the area of flooding and the elevation and depth of flooding as much as 72 hours before landfall.
- The Virginia Water Resources Research Center convened and chaired the Virginia Water Quality Academic Advisory Committee. The Committee's report led to an agreement between the State and the USEPA on the proper analysis of limited data for listing impaired waters under section 303(d) of the Clean Water Act. The analytical approach, to be reviewed for national application, seeks to assure that limited funds for total-maximum-daily-load (TMDL) plans are directed to the most threatened waters.
- The Utah Water Resources Research Institute, working with the USEPA and the Lawrence Berkeley National Laboratory, developed a new method for the analysis and assessment of bioremediation at waste sites in Utah and across the Nation. The method uses synchrotron microscopy to measure biological reactions at 10 micron distances in real time. Using this method, researchers have been able to observe real-time degradation of the hazardous chemical pyrene on soil particles.

Under their information and technology programs, the Institutes sponsor seminars, conferences, and workshops, publish newsletters, reports, books, and articles in scientific refereed journals, and produce videos on water related topics. Since 1983, the Institutes have published nearly 1,000 reports of various types each year. Information on 10,000 of these publications is available on computer disk and on the Internet through the National Institutes for Water Resources (NIWR). In 1998, over 20,000 people participated in water conferences sponsored or cosponsored by the Institutes, and the Institutes collectively distributed over 40 newsletters and other non-technical publications to more than 250,000 subscribers.

- Research supported by the Water Resources Research Institute at New Mexico State University has demonstrated the utility of a new assay (test) for toxic chemicals using the bacterium *Rhizobium meliloti* as an indicator organism. The assay can be used to determine the toxicity of herbicides and to follow the fate of herbicides in soil. The procedure, which has been patented, is inexpensive (approximately one-tenth the cost of traditional lab tests) and does not require the use of laboratory animals.
- Research sponsored by the Montana Water Resources Research Center indicates that grazing rough fescue grasslands to a 3 inch stubble height significantly reduces sediment production during the summer months. This level of stubble was better at controlling sedimentation than, for example, very short or very high stubble, and even ungrazed vegetation.
- A three-dimensional numerical simulation model for both ground-water flow and land subsidence developed by University of California scientists with support from the Center for Water and Wildland Resources at the University of California projects the effect of various water management practices on land subsidence in the San Joaquin Valley. The model indicates that maintaining the present combination of surface-water and ground-water withdrawals virtually eliminates unrecoverable land subsidence, but that a transition to combination of less surface water withdrawals and increased ground-water pumping would result in increased land subsidence.

