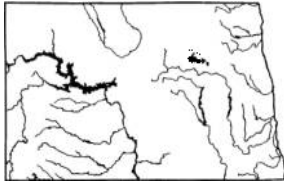


# NORTH DAKOTA WATER RESOURCES RESEARCH INSTITUTE

North Dakota State University

<http://www.ndsu.edu/wrri>



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## THE INSTITUTE

The Institute was founded in 1965 by authority of Congress as one of the 54 Institutes throughout the nation and is administered through the United States Geological Survey. The NDWRRI receives funding through section 104 of the *Water Resources Research Act of 1984* and it applies its Federal allotment funds to research that fosters: (A) the entry of new research scientists into the water resources field, (B) training and education of future water resources scientists, engineers, and technicians; (C) the preliminary exploration of new ideas that address water problems or that expand understanding of water and water-related phenomena; and (D) the dissemination of research results to water managers and the public. The Institute has a State Advisory Committee consisting of three members representing the three principal agencies dealing with water issues – State Water Commission, State Health Department, and the USGS - and a Technical Advisory Committee consisting of faculty from NDSU and UND. The North Dakota State University and the University of North Dakota administrations consider the Institute's activities important and are supportive of its efforts. The Institute's core funding comes from annual appropriation granted under the authority of Section 104 of the Federal Water Resources Research Act by the US Geological Survey. The annual base grant is used to support a Fellowship research program. Though modest, the Section 104 program has provided crucial seed funding for research, education, and information dissemination activities of the Institute drawing on the water expertise of the two universities of the State – North Dakota State University, Fargo and University of North Dakota, Grand Forks. North Dakota State Water Commission supports the Fellowship program by providing an additional fifteen percent of the annual base grant subject to year-by-year approval.

## ACTIVITIES

The NDWRRI continues to meet its mission by dedicating most of the Federal allotment funds toward competitive graduate student research fellowships. Each of the Fellowship is also a research project that will result in a master's thesis or doctoral dissertation. Faculty advisors find matching or co-funding for the research through the university, or grants from local, county, state or federal agencies, foundations, or industry. Also, the Institute co-sponsors seminars and conferences on water themes. A newsletter is published annually.

## NDWRRI researcher wins grant from the USGS/NIWR National Competitive Program

For the second consecutive year, NDWRRI received a grant award from the National Competitive Program of the USGS and National Institute of Water Resources. ND WRRI proposal submitted by Scott Korom, Geology and Geological Engineering, University of North Dakota, is one out of eight that were successful out of 64 proposals nationally. In this study titled "Collaborative Research on *In Situ* Denitrification and Glyphosate Transformation in Ground Water: NAWQA Eastern Iowa Basins Study Unit", Scott Korom and Paul Capel of the Minnesota USGS will install two 180-L stainless steel chambers forming *in situ* mesocosms (ISMs) of aquifer sediments below the water table at the NAWQA agricultural chemicals study sites in the glaciated part of Iowa and examine denitrification in an area characterized by high dissolved iron concentrations and measure the transformation rate of the extensively-used herbicide, glyphosate. This information is vital for the development of tools and quantitative methods to characterize the transport and fate of agricultural chemicals in the Eastern Iowa Basins Study Unit, the Upper Midwest, and beyond.

Last year, Robert Hearne, Agricultural Economics, North Dakota State University, was awarded a grant "Assessing the Effectiveness of Local Water Institutions in Water Management" from the same highly competitive national program of the USGS and NIWR. Under this study, a review of water management organizations and institutions in the Red River Basin has been completed. A population of watershed and water districts and conservation districts has been identified. Current activities are focused on developing a set of criteria and indicators for effective public water management organizations. These criteria and indicators will be used to develop a survey instrument. Surveys of organization managers, local informed stakeholders, and board members will be conducted in August 2006.

## RESEARCH

### NDWRRI awarded twelve 2006-07 Fellowships

- Ali Gene Tackett, Biological Sciences, North Dakota State University, “Molecular Phylogeography of *Etheostoma nigrum* (Rafinesque) in the Upper Midwest”
- Ara Anderson, Biological Sciences, North Dakota State University, “The life history of *Hexagenia limbata* (Serville) (Ephemeroptera:Ephemeridae) in North Dakota and Minnesota streams”
- Christopher Hills, Environmental Engineering, North Dakota State University, “Analysis and Model Simulation of Storm Water Runoff - A Study of Land Use and System Design on Discharge and Water Quality”
- Dan McEwen, Biological Sciences, North Dakota State University, “Benthic macroinvertebrate stoichiometric implications for North Dakota and Minnesota fisheries”
- Kendall Goltz, Natural Resources Management, North Dakota State University, “The Impact of Wetlands and Wetland Easements on North Dakota Land Values”
- Mary Schuh, Soil Science, North Dakota State University, “Farm-scale reconnaissance of estrogens in subsurface waters”
- Michael Newbrey, Biological Sciences, North Dakota State University, “Evolution of Fish Growth and its Response to Climate”
- Ryan Klapperich, Geology and Geological Engineering, University of North Dakota, “Analysis of Associated Bedrock-Aquifer System Sediments: Origins of Electron Donor-Rich Aquifers in Eastern North Dakota”
- Tedros Tesfay, Geology and Geological Engineering, University of North Dakota, “Modeling Groundwater Denitrification by Ferrous Iron with PHREEQC”
- Wei Zheng, Biological Sciences, North Dakota State University, “Classification of Macroinvertebrate Communities across Red River Drainage Basin”
- William Lenarz, Geology and Geological Engineering, University of North Dakota, “Effect of flow path processes on the geochemistry and quality of water discharged along the seepage face at Pigeon Point, Sheyenne Delta aquifer, Ransom County, North Dakota”
- Yuhui Jin, Chemistry, University of North Dakota, “Rapid and Sensitive Determination of Bacteria in Water Using Nanoparticles”

