2018 Arkansas Water Resources Center Annual Summary

Who We Are

At the **Arkansas Water Resources Center**, we have helped local, state, and federal agencies address our water challenges for 54 years.

We succeed in this effort through robust research and water quality monitoring, education and training outreach, and information transfer to stakeholders throughout the State and region.

We provide sound science to help inform a diverse range of water stakeholders. This includes agricultural producers, watershed organizations, state and federal agencies, and others.

In 1964, Congress passed the Water Resources Research Act which established the Water Resources Research Institutes (WRRI), like the Arkansas Water Resources Center, at land-grant universities throughout the United States and it's territories. The WRRI program is administered by the Department of the Interior - U.S. Geological Survey.

We are also a unit of the University of Arkansas System Division of Agriculture and the University of Arkansas College of Engineering.

2018 Highlights

165 attendees at our water conference

32 publications

27 students supported

5 research projects funded by us

more than **$614,000** in external funding

465 eNewsletter subscribers

686 Facebook followers

25,000 analytes measured

AWRC

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

UNIVERSITY OF ARKANSAS

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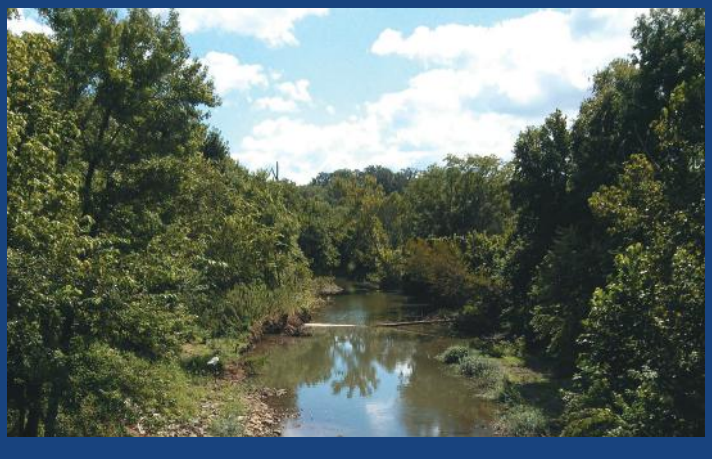
What are Some of Our Research Accomplishments?

Deslisting a Portion of the West Fork White River
We collected data and shared results that led to a change in how the West Fork White River is listed as impaired for turbidity, sulfate, and TDS. The river is now split into two segments, where only the downstream portion is listed for turbidity and TDS.

Previously, all 54 km of the trans-ecoregion river was listed, but our data showed a change in water quality from upstream to downstream, which might be related to the shift in underlying geology and riparian soils.



Success Stories in Priority Watersheds
We collected data at 15 sites in the Upper Illinois and Upper White River watersheds, resulting in 10 years of water-quality data at most of those sites.

Trend analysis highlighted some successes where water quality is improving from source- and non-point source management activities. For example, our data were used to evaluate water-quality standards at Spring and Osage Creeks, where both streams are no longer listed for total phosphorus. These water-quality improvements were also seen in the main stem of the Illinois River, a transboundary river that has long been implicated in legal proceedings related to nutrient pollution, particularly phosphorus from poultry production.

Prioritizing Subwatersheds in the Poteau River Watershed
We analyzed over 4,600 analytes from 15 sites in the Poteau River Watershed in Arkansas during the second year of a water-quality monitoring study. These data will be used to prioritize subwatersheds, estimate nutrient and sediment loads, and look at how water quality is changing over time at these study sites.

We are also collecting water samples on the Oklahoma side for a grant from the Poteau Valley Improvement Authority. Water-quality data are collected from 26 sites to identify "hot spots" where nutrients, sediments, and salts might occur in high concentrations.

Water Quality Lab
We analyzed over 25,000 constituents this year in service to researchers, agricultural producers, and others across the State.

2018 104B Funded Projects

We funded five research projects, including two faculty proposals, two projects that supplemented graduate student research, and one in-house research study.

An In-Situ Approach to Harmful Algal Blooms: Simultaneous Treatment of Cyanobacteria and Cyanotoxins in Natural Water Sources Using Catalytic Nanoparticle-Fiber Nets, Dr. Lauren Greenlee, Department of Chemical Engineering, University of Arkansas

Do Stream Phosphorus Dynamics Correspond with Biological Condition in the Lake Conway Point Remove Watershed, Arkansas?, Dr. Sally Entrekin, Department of Biological Sciences, University of Central Arkansas

Overcoming Adoption Barriers to Promote Surface Water Irrigation in the Arkansas Delta Region, Dr. Kent Kovacs and Kerr Adams, Department of Agricultural Economics and Agribusiness, University of Arkansas

Quantifying Flow Sources and Their Impacts on Water Quality in Forested Ozark Streams, Dr. Michelle Evans-White and Allyn Dodd, Department of Biological Sciences, University of Arkansas

A Survey of Cyanotoxins in Northwest Arkansas Waters, Drs. Brian Haggard and Brad Austin, Arkansas Water Resources Center, University of Arkansas

How do We Train Future Water Scientists?

REU
RESEARCH EXPERIENCES FOR UNDERGRADUATES

UNIVERSITY OF ARKANSAS
COLLEGE OF ENGINEERING

ARKANSAS WATER RESOURCES CENTER
AWRC

Research Experience for Undergraduates -
We mentored two undergraduate students in water research. The students developed skills in research design and data analysis of nutrient dynamics in Arkansas waterways. Students presented findings at our annual conference, and presented at the Council on Undergraduate Research Conference.

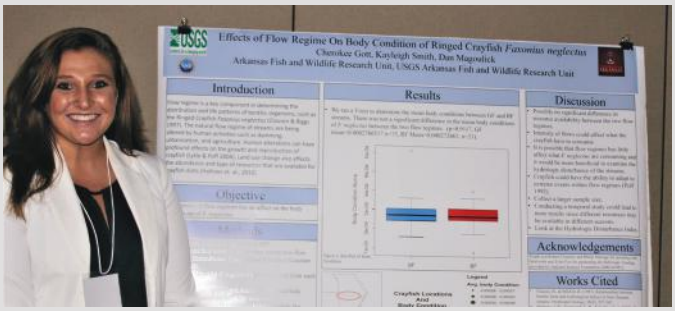
Freshman Engineering Research -
We mentored freshman students who developed their research and scientific skills, including project design, water sample collection, data analysis, reporting and presenting their findings.

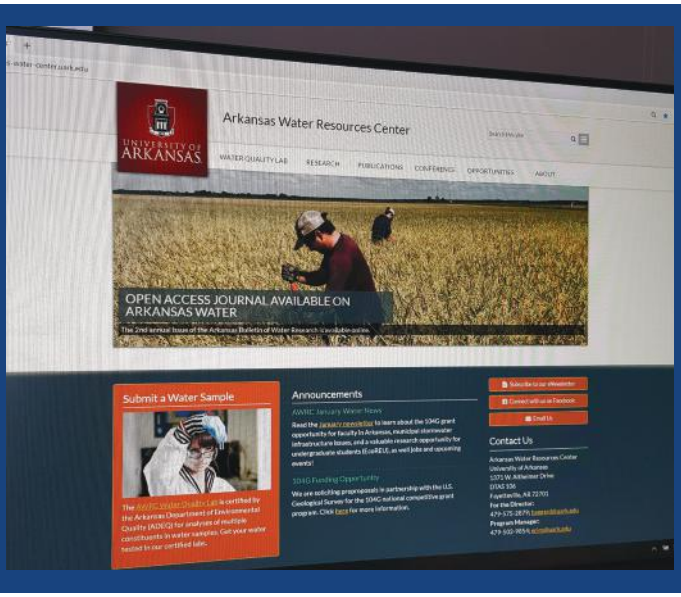
Student Summer Internship and Semester Hourlies -
We worked with undergraduate student intern from the Department of Agricultural Communications to enhance our information transfer activities. Other students gained valuable experience working in our water quality lab during the school year.

How do We Communicate with Stakeholders?

Annual Conference

Over 150 people attended from throughout Arkansas and the region, including researchers, students, consulting firms, utilities, watershed groups, state agencies, and the public. "The Value of Water" was the theme where we facilitated a conversation about how valuable water is to the economy of communities, of states, and of regions, and the need to be proactive in management decisions to sustain our water supplies.





Website

We continue to improve the usability of the website and stakeholder access to AWRC information. We also strive to improve the aesthetic experience to help engage users, keep them on our site longer, and help them find the information they need. The following are some examples of the valuable information that stakeholders can find on our website:

- Technical reports
- Data reports as raw data excel files
- Conference information
- Laboratory information like how to submit a sample and fact sheets to help clients understand their results
- Grant and job opportunities

Electronic Newsletters and "Arkansas Water Currents"

We published monthly email newsletters to the growing AWRC listserv, consisting of several hundred professionals, students, and citizens. We often include articles about USGS 104B research, water resources topics in Arkansas, upcoming conferences and events, and more. We also share relevant news stories from other sources and organizations.

We continued publishing newsletter articles on "Arkansas Water Currents". This enhanced the Center's information transfer agenda through improved search engine optimization and the ability to more easily share individual articles through various media outlets.

watercurrents.uark.edu

Social Media

We utilize Facebook, Twitter, and Instagram to disseminate information about the activities of the Center as well as sharing news and opportunities from other water organizations. Facebook followers continue to grow, and "boosting" posts to advertise our monthly electronic newsletters enhances our reach.