

Tennessee Water Resources Research Center

Within the University of Tennessee – Knoxville
Institute of a Secure and Sustainability Environment

John S. Schwartz, PhD, PE
Professor and Water Center Director
Dept. Civil and Environmental Engineering



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE



Tennessee Water Resources Research Center

Staff

<http://tnwrrc.tennessee.edu/>



John Schwartz, PhD, PE. **Director**



Tim Gangaware, MS. **Assistant Director**



Kellie Caughorn **Office Manager**



Ian Simpson, PhD. **Research Associate**



Steven Hoagland, PhD Candidate **Research Associate**



Jason Brown, MS. **Research Associate**



Bonnie Morris **Communications Coordinator**



Tennessee Water Resources Research Center

The **TNWRRC** is the state representative for water resources research institutes (WRRI), organized as the **National Institutes for Water Resources (NIWR)**, and authorized by *Section 104 of the State Water Resources Research Act of 1984*, with federal funding through from the **US Geological Survey**.



<http://tnwrcc.tennessee.edu/>

The TNWRRC is one of 54 WRRI institutes/centers in the US and partnered among 8 NIWR regions.



The State Water Resources Research Act Program, the Section 104 program is a Federal-State partnership in which the TNWRRC:

- Serves as a primary link among water resource experts in academia, government, and the private sector within Tennessee to solve regional water resources issues.
- Engaged in the promotion of research, education, community outreach, and student training for scientists and engineers through research participation.
- Provides annual competitive research grants state-wide under the **104b Program**.
- Promotes research collaboration among the USGS and state universities in support of the national water resources issues funded through the **104g Program**.

Tennessee Water Resources Research Center

RESEARCH:

TNWRRC supports research for all state academic institutions through the USGS 104b Funds.



TNWRRC annually solicits research priorities from governmental agencies in Tennessee including input from: TDEC, West TN River Basin Authority, TVA, TN Dept. of Agriculture, TDOT Environmental Division, and the USGS TN Science Center.

Annual funding historically has been \$97K, increased to \$134K last funding cycle, and with the reauthorization of the Water Resources Act and the federal Infrastructure Bill, next year's anticipated funding will increase to approximately \$165K.

FY22 and FY21 104b Funded Projects

- **Tennessee Tech** on microplastics in wastewater treatment plants.
- **Univ. Tenn. – Chattanooga** on microplastics in urban runoff and bioretention treatment.
- **UT Institute of Agriculture** on advancing small wastewater treatment performance.
- **University of Memphis** on advancing remote sensing riparian corridor quality.
- **University of Memphis** on hydraulic transport function for stream hyporheic zones.
- **University of Tennessee - Knoxville** on water availability and climate change.

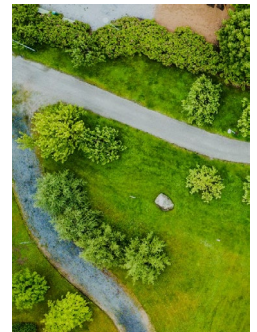
Tennessee Water Resources Research Center

RESEARCH:

Selected Successes:



- ◆ TNWRRC was awarded one of the three FY21 national USGS 104g grants - first time TN has been awarded a 104g grant.
Research team from the TNWRRC, University of Alabama, TVA, and USGS Arizona on use of paleohydrology analysis for flood prediction on the Tennessee River.
- ◆ Research in the Great Smoky Mountains National Park on effects of acid deposition on water quality, continued renewal of a 5-year cooperative agreements.
- ◆ NSF REU on Stormwater Management and Green Infrastructure Design under Jon Hathaway in CEE Dept.
- ◆ Development of an [Urban Waters Report Card](#) supported by the cities of Nashville, Chattanooga, and Memphis, counties of Shelby, Hamilton and Knox; TDEC; and the Tennessee Stormwater Association.



Tennessee Water Resources Research Center

RESEARCH DIRECTIONS:

The TNWRRC to work together with ISSE to promote research priorities at UTK and UTIA; and research collaboration with other state universities.



Research Areas of Interest

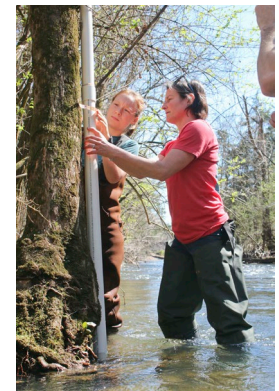
- ◆ Water availability and hydrologic modeling related to climate change.
- ◆ New methods for flood modeling/mapping and infrastructure resilience.
- ◆ Improved strategies for watershed management and treatment processes to reduce river nutrient pollution.
- ◆ Enhancing treatment for stormwater runoff through green infrastructure, and development of new methods to assess water quality.
- ◆ Create models to support food production migration from West to SE US through integration of hydrology, vegetation, and economic models.
 - ◆ Research group with UTIA, UT CEE, and Univ. Memphis submitted a proposal to the USDA Foundational Research Program on Food Security and Production in the Mississippi Delta Region. \$750,000.

Tennessee Water Resources Research Center

EDUCATION:



- ◆ TNWRRC 104b grants to Tennessee universities *require* funding for graduate students to conduct the project's research. Prior FY's provided \$5,000 research support grants to graduate students.
- ◆ Support the UG/G Watershed Minors at the University of Tennessee – Knoxville campus.
- ◆ This FY, *new*, the TNWRRC created a **Graduate Student Scholarship**.
 - ◆ Students are required to submit an application with a written statement of their interests in a career in the water resources.
 - ◆ **First Awardee: Matthew Tolson**, CEE Student.

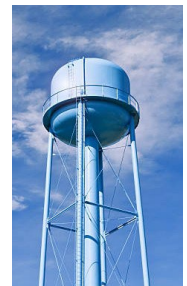


Tennessee Water Resources Research Center

COMMUNITY OUTREACH:



- ◆ TNWRRC supports local community activates for healthy streams and education of high school students.
- ◆ **Appalachian Community Technical Assistance and Training (ACTAT) Program.**
 - ◆ Funded by the Rural Utilities Service of the **USDA Rural Development Program**, the ACTAT program is a partnership of the US EPA's National Environmental Services Center, West Virginia University, the University of Kentucky's ([UKY](#)) Water Resources Research Institute ([KWRRRI](#)), and the University of Tennessee-Knoxville TNWRRC.
 - ◆ Support water/wastewater utilities with technical and fiscal management assistance.
 - ◆ <https://tnwrcc-dev.utk.edu/training-assistance-programs/actat-program/>
 - ◆ Submitted \$1M proposal to the USEPA to provide wastewater treatment system technical and fiscal assistance across Tennessee with collaboration with TNWRRC, Tennessee Tech, and the University of Memphis.



Tennessee Water Resources Research Center

TRAININGS

- **TNWRC Support Trainings for TDEC:**

- Tennessee Erosion Prevention and Sediment Control Training Program for Construction Sites (Level I – Fundamentals and Level II – Design Principles)
- Tennessee Stormwater Management Program: SCM Inspection and Maintenance // Design for Regenerative Stormwater Conveyances // Up-coming MS4 municipal trainings.
- Tennessee Hydrological Determination Training: Per TN State Code, Section 69-3-105 certify hydrological professionals for.
- Tennessee Stream Quantification Tool (SQT) – in development.



- **TNWWRC Professional Practice Trainings:**

Advance trainings for professions in the water resources practice:

Submit your ideas.



Tennessee Water Resources Research Center

OUR MISSION

Coordinate research, education, community outreach activities and trainings across the state of Tennessee among government agencies, universities and the private sector professionals.



<http://tnwrrc.tennessee.edu/>

