

AUGUST 2024  
3RD QUARTER



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**Charlene DeSha**

Charlene@tnstormwater.org  
865-386-6917

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www.tnstormwater.org

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# TNSA Times

Tennessee Stormwater Association  
Quarterly Newsletter

## A Message From the TNSA President

PAGE 1

It's back-to-school season and I was recently reminded of an old Richard Scarry book that I read as a child: Storybook Dictionary. For the letter H, the word Hole is presented, and the passage reads:

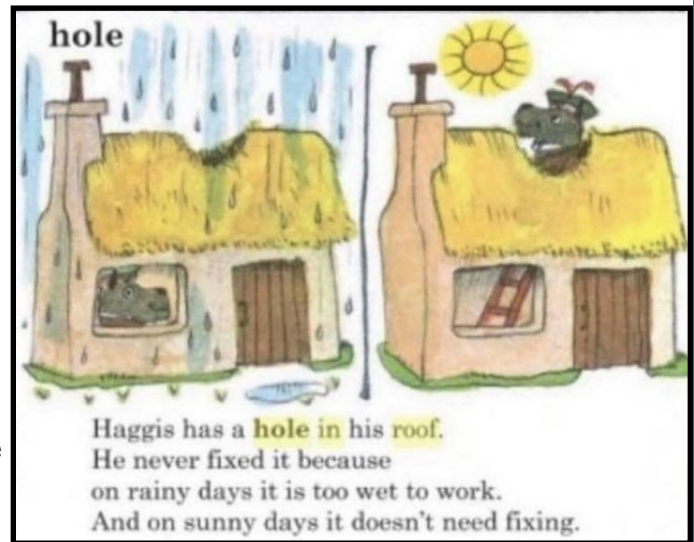
*Haggis has a hole in his roof.  
He never fixed it because  
On rainy days it is too wet to work  
And on sunny days it doesn't need  
fixing.*

I know quite a few folks like Haggis; honestly, I'm a lot like Haggis now and then. Preventative maintenance is a lot of work and there always seems to be something more pressing to do

on a sunny day. Yet we kick ourselves when a problem recurs and we could have acted.

As the sunny and beautiful days of early fall settle in, think about the "holes in your roof" and which of those make the most sense to tackle on a light day. The journey from 'reactive' to 'proactive' is long but manageable when you have subtle and positive reminders like Haggis to help stay on track.

TNSA President,  
Aaron Rogge  
CDM Smith



## TNSA MEMBERSHIP & SOCIAL MEDIA RENEWALS DUE



The Tennessee Stormwater Association is Tennessee's premier membership organization for stormwater professionals. TNSA's mission is to assist members with their local efforts to comply with State and Federal clean water laws; including stormwater regulations through EPA and TDEC (Tennessee Department of Environment and Conservation). TNSA's goal is to protect and improve the quality of the waters of Tennessee through the exchange of information and knowledge regarding design, construction, maintenance, administration and operation of stormwater facilities.

## Upcoming Regional Meetings

### **MS4 BOARD POSITIONS WILL BE VOTED ON AT THE SEPTEMBER MEETINGS JANUARY 1 2025- DECEMBER 31 2027**

Regional meetings are held each quarter. You do not have to be a TNSA member to attend a meeting. Region meetings are a great way to keep updated within your area and the state. Meet like-minded professionals, network, learn about statewide events and new ideas within the stormwater community. Region chairs are always looking speakers at the meetings. If you are interested in speaking please contact the region chairs. The chairs arrange the meetings and set the agendas.

Meeting Dates/Locations are subject to change. Email the region chair if you would like to be added to a specific region email list. If agendas were provided before the meeting they will be uploaded to the Club Express document library under Region Meetings.

**East** Region Chair: Maddy Johnson, mjohn337@vols.utk.edu

**Sept 6: UT Extension Office 1801 Downtown W Blvd Knoxville, TN 37919**

Time: 8:30am Networking, 9:30am-11:30am Meeting Time

Speaker: Dr. Victoria Rexhausen with UT Civil & Environmental Engineering

Topic: Gravel Tree Stormwater Systems in East Knoxville

**Future Date: Dec 6**

**West** Region Chair: Chris Masin, Chris.Masin@shelbycountyttn.gov

**Sept 3: International Harvester Park 4523 Canada Rd Lakeland, TN 38002**

Time: 1pm-3pm

**Future Date: Dec 3**

**North West** Region Chair: Tom Lawrence, tomlawrence@bellsouth.net

Time: 11am

**Sept 4: Jackson City Hall—Ben Langford Room, 101 E Main Street Jackson, TN 38301**

**Future Date: Dec 4 City of Paris 100 N. Caldwell St. Paris, TN 38242**

**Middle** Region Chair: Don Green, biogreen1@comcast.net

**Sept 5: Murfreesboro Airport Business Center 1943 Memorial Blvd, Murfreesboro, 37130**

Time: 10am-12pm

Speaker: Austin Brock, Advanced Drainage Systems

Title: ADS Sustainability & Resiliency

A look into ADS sustainability practices such as recycling, transportation efficiencies, etc. to offer resilient stormwater solutions.

**Future Date: Dec 5 Williamson County AG Expo Park 4215 Long Ln, Franklin, TN 37064**

**South East** Region Chair: Erik Hancock, ehancock@chattanooga.gov

**Sept 17: Greenway Farm Conference Center 4960 Gann Store Road, Hixson TN 37343**

Time: 11am-12:30pm

Speaker: Michael Kusch, Foley Products Company

RSVP for lunch to ehancock@chattanooga.gov

**Future Dates: Dec 10**

**North East** Region Chair: Amanda McMullen, AmandaMcMullen@KingsportTN.gov

**Sept 12: Kingsport Water Services Center 1113 Konnarock Rd Kingsport 37664**

Time: 1pm

**Future Date: Dec 11**

**Meeting  
dates/locations  
are subject to  
change**

**UPCOMING STORMWATER AND ENVIRONMENTAL CONFERENCES**

KY/TN Water Professionals Conference Sept. 8-11 Louisville, KY

TN Engineers Conference September 29 - Oct. 1 Franklin

SESWA October 9-11 Chattanooga

TNSA Annual Conference October 22-24 Burns

TCAPWA/SWANA Annual Conference Oct. 28-30 Chattanooga

TNSA/TN AFPM Confluence Summit February 26, 2025 Franklin

Any other conferences or symposiums?  
Notify Charlene to be added to the list.  
charlene@tnstormwater.org

# Drought & Aquatic Ecosystems in the Southeast Workshop

Jan 7-9, 2025 | Raleigh, NC



Learn More:



<https://go.ncsu.edu/2025-drought-workshop>

**TNSA**  
**TN AFPM**  **CONFLUENCE:**  
A Stormwater and Floodplain Summit

**February 26, 2025 9am-5pm**  
**Williamson County Expo Center**  
**4215 Long Lane Franklin, TN 37064**  
<https://www.tnstormwater.org/confluencesummit>

## TNSA Committee Updates

**Conference:** Coordinates the Annual Conference

**Chair:** Amy Hathaway, WK Dickson

Registration is officially open! Be sure to book your room at the lodge ASAP as these do fill up quickly. This year's theme is "Making Stormwater Beautiful" and our keynote speaker is Mike McClahanan with the TDOT Beautification Office. Many thanks to our TNSA members who will be serving as presenters and panelists for the conference. I'm happy to announce we will have panelists representing small, medium, and large MS4 communities across all our TNSA Regions. We will soon be asking for volunteers to serve as moderators for sessions throughout the conference.

Our pre-conference workshop is "Navigating Enforcement: From Citation through Appeal." The pre-conference workshop will include presentations from MTAS's John Chlarson and Abner Oglesby, and a group of panelists from MS4s across Tennessee to share their enforcement experiences. At the time of registration, we will be asking each registrant to submit a question on the enforcement realm to aid in planning for the workshop.

Please contact Amy at [ahathaway@wkdickson.com](mailto:ahathaway@wkdickson.com) if you have questions.

[Click here for more conference information.](#)

**PARK LODGE** (book before Sept 30, 2024, rooms open to the public 10/1/24)

1000 Hotel Ave. Burns, TN 37029 615-797-3101, dial 0.

Call with Group Name: Stormwater Block

You cannot book online

Standard Inn Rooms: \$107 + tax/fees

Parlor Inn Rooms: \$108 + tax/fees

# 2024 TNSA ANNUAL CONFERENCE

## "Making Stormwater Beautiful"

OCTOBER 22-24, 2024

MONTGOMERY BELL STATE PARK

Pre-Conference Workshop: October 21

Navigating Enforcement: From Citation Through Appeal

### Conference Fees:

TNSA Member Early Bird: \$300 (Regular \$350)

Non-Member Early Bird: \$350 (Regular \$400)

Early Bird Ends September 30, 2024

<https://www.tnstormwater.org/tnsa-conference>

Save the Date: October 21-23, 2025





## TNSA Committee Updates (Continued)

**INTERESTED IN BEING MORE INVOLVED? CONSIDER PARTICIPATING IN A COMMITTEE. POLICY, CONFERENCE, EDUCATION, COMMUNICATION, SCM AND PUBLIC OUTREACH CONTACT CHARLENE FOR MORE INFORMATION**

**SCM:** Standardizes Device Evaluation and Develops SCM Toolkit.

**Chair: Jacob Dorman, Contech**

The SCM Committee recently completed guidance detailing how to properly utilize Proprietary Practices under the new NPDES rules. It can be found at:

[https://www.tnstormwater.org/\\_files/ugd/b9f40d\\_1eb28d61fc29457dae2e880c1a09feb8.pdf](https://www.tnstormwater.org/_files/ugd/b9f40d_1eb28d61fc29457dae2e880c1a09feb8.pdf)

Additional guidance will be developed as necessary.

**Communication:** Goal is to work on communication within and outside of the organization

**Chair: Aaron Rogge, CDM Smith**

The committee is preparing “community profiles” as part of a video series highlighting success stories and neat approaches to running their MS4s. We will be looking for MS4s to participate throughout the year. Do you have an interesting new project? A community event that went really well? These are the sorts of things we’re looking to highlight.

**Policy:** Works with TDEC to share and update members on state and EPA regulations and policies.

**Chair: David Mason, CDM Smith**

Stakeholders have been meeting throughout the summer to discuss the TN Wetlands Bill. Look for an update for this in the future.

**Communication:** Working to create education resources for MS4's and TNSA members

**Chair: Tom Lawrence, Thomas Lawrence, PLLC**

The committee is working on the next HOA brochure which will discuss how to maintain stormwater features within the HOA.

You can purchase pre-printed brochures here: <https://www.tnstormwater.org/ed>

We currently have 3 brochures, a children’s activity booklet and stickers. For additional brochures please visit the Club Express document library. These can be printed by you in any quantity.

**Education:** Manages and Creates Educational Training and Resources

**Chair: Tim Gangaware, UT Water Resources Research Center**

**Upcoming Event:**

The education committee is working on lining up three TNSA Talks this year. Topics range from Community Outreach/Education, MTD Sizing under the new permit and Streambank repair. Dates to be released soon.

TNSA Talks are held on Zoom, one hour in length and include PDH’s.

Contact Tim or Charlene if you are interested in speaking at a TNSA Talk.

### **SCHEDULED TNSA TALK**

Thursday, October 10, 2024, 2pm central time

Title: Environmental Land Management and Compliance using AI: Navigating Digital Data

Speaker: Brendan Brown, PWS with CDM Smith

**Register by Wednesday, October 9, 12pm central time**

Click here to register and for more information.

## TDEC Updates

### Municipal Stormwater

#### **Currently Permitted Small MS4 Jurisdictions**

**Reminder:** all updates to the legal authority required by the Small MS4 Permit shall be fully implemented and adopted by September 1, 2024.

#### **Small MS4 Annual Reports**

**Due September 30, 2024.** Small MS4 Annual Reports will be received and processed electronically through the [MyTDEC Forms portal](#)

The MyTDEC form has been updated to reflect the second-year annual report requirements.

- ◆ If a program's legal authority (e.g., ordinances, resolutions, etc.) is to be adopted between now and September 30, 2024, that program should submit the annual report after the legal authority adoption.
- ◆ If a program's legal authority will not be adopted before the annual report deadline, then the current legal authority should be uploaded to the annual report and explain the reason for the delay and when the legal authority is expected to be adopted in the comment field associated with the MyTDEC annual report form file upload.

**Reminder:** There are five (5) MyTDEC Small MS4 Annual Report form training session videos available on the Division's [NPDES Municipal Separate Storm Sewer System \(MS4\) Program \(tn.gov\)](#) webpage.

#### **Small MS4 Option 2 Monitoring Plans**

It's not too late for Small MS4s programs to develop an Option 2 jurisdiction-specific monitoring plan as an alternative to the plan identified in Option 1 of the 2022 Permit. **The deadline to submit an Option 2 plan to the Division is September 1, 2024.** Submit proposed Option 2 Monitoring plans to [water.permits@tn.gov](mailto:water.permits@tn.gov)

#### **City of Knoxville – Permit Public Notice**

On August 20, 2024 - PUBLIC-NOTICE- [MMXXIV-033](#) was provided regarding the proposed reissuance of the City of Knoxville's NPDES Municipal Separate Storm Sewer Permit (Permit No. [TNS068055](#)). A copy of the public notice is available on TDEC's [Water Notices & Hearings \(tn.gov\)](#) web site. A copy of the draft permit is available on TDEC's Division of Water Resources publicly facing [data viewer](#).

### Construction Stormwater

#### **\*\*PUBLIC NOTICE\*\* TN Erosion & Sediment Control Handbook**

The draft chapters 1 and 2 of the Tennessee Erosion Prevention and Sediment Control (EPSC) Handbook are now posted on TDEC's Draft Guidance Documents webpage at <https://www.tn.gov/environment/about-tdec/policy-guidance/draft-guidance.html>, the Water Notices and Hearings webpage at <https://www.tn.gov/environment/ppo-public-participation/ppo-public-participation/ppo-water.html> under "Public Participation Opportunities" and also at the top of the [EPSC Handbook webpage](#). **Comments period ends on September 9, 2024.**

#### **Tennessee Erosion Prevention and Sediment Control (TNEPSC) Training Program for Construction Sites**

[TNEPSC Website](#)

[Level 1 - 2024 Training Class Schedule \(In Person\)](#)

[Level 1 Recertification - 2024 Training Class Schedule \(In Person\)](#)

[Level 1 Recertification - 2024 Training Class Schedule \(Online Sessions\)](#)

[Level 2 - 2024 Training Class Schedule \(In Person\)](#)

[Level 2 Recertification - 2024 Training Class Schedule \(In Person\)](#)





November 16, 2024

International Harvester Managerial Park  
4523 Canada Rd, Lakeland, TN 38002

3 Mile Trail Run, Family Fun Run & Water Quality Festival  
Registration is 7:00AM Trail Run Starts at 8:00AM Fun Run at 9AM  
Water Quality Festival 7am-10am

Join us for the Water Quality Festival after the race in the park which includes music, food trucks and fun!

For more information, to sponsor or register to run visit our website:  
<https://www.tnstormwater.org/westtrailrun>



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**Presenting Sponsor \$2,500**

**Performance Sponsor \$1,500**

**Green Sponsor \$1,000**

**Splash Sponsor \$500**

**Bounce House Sponsor \$300**

**12th Annual Nashville Urban Runoff 5K!**  
**July 27, 2024**

The Harpeth Conservancy was awarded the \$1,000 Watershed Quality Grant for the Riparian Restoration at Richland Creek.

The winner of the first Team Spirit Award is GMC. They were dressed to the nines and looked fantastic!

Thank you to the wonderful planning committee for helping make this event the best ever! Aaron Rogge with CDM Smith, Gretchen Judkins with Metro Nashville, Michael Hunt with Metro Nashville, Joe Phillips with Sumner County, Kourtney Hopkins with the City of Gallatin, Kristen Hebebrand with Brown and Caldwell, Lance Wagner with the City of Gallatin, Lauren Barber with GMC, Michael Hussion/Shawn Hunter/Brooke Chavalas with the City of White House, Shelia Huffmire with Rutherford County, Shannon Emrich with KCI Technologies and Trey Vincent with Strand Associates. These are the folks that dedicated time over and above to make sure this event went off without a hitch. We would also like to thank all of the volunteers and Station Camp Girl Scout Troop 1965.



## Gulf of Mexico ‘dead zone’ larger than average, scientists find

NOAA-supported scientists announced today that this year’s Gulf of Mexico “dead zone” — an area of low to no oxygen that can kill fish and marine life — is approximately 6,705 square miles, the 12th largest zone on record in 38 years of measurement. This figure equates to more than 4 million acres of habitat potentially unavailable to fish and bottom species, an area roughly the size of New Jersey.

Scientists at Louisiana State University and the Louisiana Universities Marine Consortium (LUMCON) offsite link led the annual dead zone survey July 21–26 aboard LUMCON research vessel Pelican. This annual measurement is a key metric that informs the collective efforts of the Mississippi River/Gulf of Mexico Hypoxia Task Force, a state/federal partnership which has set a long-term goal of reducing the five-year average extent of the dead zone to fewer than 1,900 square miles by 2035.

While the NOAA-supported research surveys provide a one-time snapshot of the dead zone, the five-year average captures the dynamic and changing nature of the zone over time. The five-year average size of the dead zone is now 4,298 square miles, more than two times larger than the 2035 target.

“It’s critical that we measure this region’s hypoxia as an indicator of ocean health, particularly under a changing climate and potential intensification of storms and increases in precipitation and runoff,” said Nicole LeBoeuf, assistant administrator of NOAA’s National Ocean Service. “The benefit of this long-term data set is that it helps decision makers as they adjust their strategies to reduce the dead zone and manage impacts to coastal resources and communities.”

In June, NOAA predicted an above-average sized dead zone of 5,827 square miles, based primarily on Mississippi River discharge and nutrient runoff data from the U.S. Geological Survey. The measured size fell within the uncertainty range for NOAA’s ensemble forecast, demonstrating the overall accuracy of the underlying models and their ability to be applied as tools for nutrient reduction strategies.

“The area of bottom-water hypoxia was larger than predicted by the Mississippi River discharge and nitrogen load for 2024, but within the range experienced over the nearly four decades that this research cruise has been conducted,” said Nancy Rabalais, Ph.D. professor at Louisiana State University and LUMCON, and co-chief scientist for the cruise. “We continue to be surprised each summer at the variability in size and distribution.”

### How dead zones are formed

Excess nutrients that reach the Gulf of Mexico via the Mississippi-Atchafalaya River Basin stimulate an overgrowth of algae. When these algae die and decompose, they deplete oxygen in the water as they sink to the bottom. The resulting low oxygen levels (hypoxia) cause animals, like fish and shrimp, to leave the area. Exposure to hypoxic waters has been found to alter fish diets, growth rates, reproduction, habitat use and availability of commercially harvested species such as shrimp.

### Hypoxia Task Force efforts

In June 2022, the Environmental Protection Agency (EPA) established the Gulf Hypoxia Program to further accelerate nutrient reduction actions by the Task Force to make significant progress toward the Task Force’s Gulf Hypoxia Action Plan.

“Nutrient pollution impacts water bodies across the country and in the Gulf of Mexico it has resulted in a dead zone, where low to no oxygen does not support fish and marine life,” said Bruno Pigott, acting assistant administrator of EPA’s Office of Water. “EPA is committed to its partnership with state and local governments and Tribes in the Mississippi-Atchafalaya River Basin, working together to reduce nutrient pollution and protect the health of the Gulf. In fact, thanks to President Biden’s Bipartisan Infrastructure Law, EPA is investing \$60 million into this effort.”

As a result, the Hypoxia Task Force states are scaling up their nutrient reduction strategies while increasing climate resiliency and ensuring benefits are realized by disadvantaged communities.

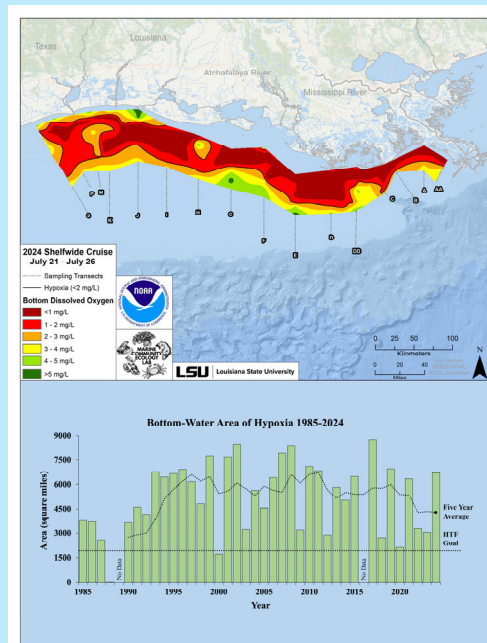


Image showing (Top) Map of measured Gulf hypoxia zone, July 21–26, 2024. Red area denotes 2 mg/L of oxygen or lower, the level which is considered hypoxic, at the bottom of the seafloor. (Bottom) Long-term measured size of the hypoxic zone (green bars) measured during the ship surveys since 1985, including the target goal established by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and the 5-year average measured size (black dashed lines). (Image credit: NOAA/LUMCON/LSU)



"The importance of the Mississippi River to the strength and growth of our states' economies and communities cannot be understated," said Mike Naig, Iowa Secretary of Agriculture. "By implementing our nutrient reduction strategies, the Hypoxia Task Force states are individually and collectively demonstrating our commitment to protecting and enhancing this working river. Weather and other factors will always introduce variability in the hypoxic zone measurement from year to year, but the focused conservation implementation work within each state is making a positive impact on our water quality. States, along with numerous public and private partners, are best positioned to address their specific geographies and we remain motivated to expand this proven water quality work in rural, suburban and urban landscapes in the years and decades to come."

**Further work to better understand and predict dead zones**

In addition to its annual hypoxia forecast and survey, NOAA supports efforts to develop monitoring technologies to understand the dead zone, as well as to study the impacts of hypoxia on fish and fisheries in the Gulf of Mexico and elsewhere through its Coastal Hypoxia Research, Ocean Technology Transition, Uncrewed Systems and Hypoxia Watch programs. The agency continues to partner with states to develop new tools to predict nutrient runoff to waterways and to support the Northern Gulf Institute offsite link to deliver technical assistance, observation and monitoring capabilities.

NOAA scientists are also investigating the feasibility of using autonomous surface vehicles (ASVs) as an emerging technology to map hypoxia in the Gulf of Mexico. This year, several ASVs were deployed in coordination with the measurement survey, which will be compared with the ship-based measurements.

Climate, weather, and water affect all life on our ocean planet. NOAA's mission is to understand and predict our changing environment, from the deep sea to outer space, and to manage and conserve America's coastal and marine resources.

Media contact:: Douglas E. Jessmer, [douglas.jessmer@noaa.gov](mailto:douglas.jessmer@noaa.gov), (727) 282-5493

Article from: <https://www.noaa.gov/news-release/gulf-of-mexico-dead-zone-larger-than-average-scientists-find>

## [National Municipal Stormwater Alliance Update](#)

**NMSA Adds a 26th State to Membership** - The Central Oklahoma Stormwater Alliance (COSWA) joined NMSA this year representing 53 MS4s in Oklahoma. COSWA's mission is to provide resources and platforms for the COSWA membership to reduce the impact of contaminated storm water through stewardship activities, projects, and programs.

**NMSA Celebrates 2nd Annual National Stormwater Day:** NMSA will once again celebrate National Stormwater Day by hosting a free webinar to celebrate milestones, accomplishments and leaders in the stormwater sector. National Stormwater Day is November 16.

To register for the National Stormwater Day webinar to be held from 1-2:30pm (Eastern) on Friday, November 15, please go to: <https://attendee.gotowebinar.com/register/2551433666049222751>.

**NMSA Launches the Stormwater Testing and Evaluation for Products and Products (STEPP) Program** - NMSA has officially launched the STEPP program initially providing verification services to evaluate the efficacy of trash capture technologies. Multiple applications for verification has been Verification services for hydrodynamic separators and filter products will be available by the end of 2024.

To learn more, please go to: <http://stormwatertesting.org/>.

For more information about NMSA Visit: <https://ms4nmsa.org/>



Tennessee Stormwater Association  
 P.O. Box 6550, Maryville, TN 37802  
 865-386-6917  
[Charlene@tnstormwater.org](mailto:Charlene@tnstormwater.org)



## FALL 2024 TRAINING SCHEDULE

### **TNEPSC Level I Fundamentals**

Sept. 20, 2024	Nashville	JW
Oct. 1, 2024	Knoxville	JB
Oct. 30, 2024	Memphis	TL
Nov. 18, 2024	Chattanooga	TL
Dec. 17, 2024	Nashville	JW

### **Level I Recertification Course**

Oct. 15, 2024	Knoxville	JB
Oct. 31, 2024	Memphis	TL
Nov. 8, 2024	Nashville	JW
Nov. 19, 2024	Chattanooga	TL

### **TNEPSC Level 2 Design**

Dec. 18-19, 2024	Nashville	JB & SC
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### **Level 2 Recertification Course**

Nov. 7, 2024,	Nashville	SC & JW
Nov. 12, 2024	Knoxville	SC & JW
Dec. 3, 2024	Memphis	SC & TL

### **SCM Inspection and Maintenance Course**

Oct. 15 – 16, 2024	Nashville	BL & JH
TBD	Chattanooga	BL & JH

### **SCM I&M Refresher Course**

TBD	ZOOM	BL & JH
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### **TN Hydrologic Determination Course**

Dec. 9 – 12, 2024	Oak Ridge
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### **TN-HDT Refresher Course**

Sept. 17 & 18, 2024	Nashville – Montgomery Bell State Park
Oct. 1, 2024	Oak Ridge – Doubletree Hotel
TBD	Jackson – TBD

#### **Instructors:**

JB – John Buchanan  
 JW- Janette Wolf  
 TL – Tom Lawrence  
 SC – Steve Casey  
 JH – Jon Hathaway  
 BL – Bill Lord

Registration Website: <https://tnepsc.org/index.asp?vp=1>



## **Stormwater Research Facility Develops Portable Stormwater Treatment Device**

Published: Aug 19, 2024 8:00 AM

By Dustin Duncan

Rainfall produces stormwater runoff that travels directly into creeks, streams, lakes and oceans, carrying pollutants picked up along the way as water traverses rooftops, roadways, parking lots and construction sites.

The Auburn University Stormwater Research Facility (AU-SRF) is partnering with Fagan Consulting LLC to design a portable, self-contained stormwater treatment device to treat stormwater runoff and protect the waters of Alabama and the U.S.

Fagan Consulting of Prattville is owned by Tracey and Barry Fagan, both '94 Auburn civil engineering graduates. Barry Fagan, the project's principal investigator, has worked closely with the Samuel Ginn College of Engineering for more than 20 years. He was involved in developing the stormwater research facility in 2008.

Michael Perez, director of the Stormwater Research Facility and Brasfield & Gorrie associate professor in the Department of Civil and Environmental Engineering, said the project is funded through a Small Business Innovation Research (SBIR) contract with the U.S. Department of Transportation and Innovate Alabama, which is a public-private partnership that fosters new technologies and creates jobs through innovation.

Auburn and Fagan have partnered through Phase I of the SBIR contract to develop a working prototype, nicknamed the "Tiger Shark", that successfully removes pollutants from stormwater runoff. Fagan and Auburn have recently been awarded a Phase II contract with the U.S. DOT along with another supplemental grant from Innovate Alabama. This phase involves developing a market-ready product within the next two years. As of August, the team has received awards totaling \$975,000 to support the project.

Perez said that the prototype developed removed approximately 90% of the stormwater's pollutants, including sediment, nutrients and heavy metals. "We're creating something portable that can be taken directly to a job site or installed in urban stormwater infrastructure," Perez said. "We can route stormwater through our device and treat it as it comes out."

Perez said the technology within the portable device is called electroflocculation, a process traditionally used in large wastewater treatment plants. Electroflocculation uses electricity and metal plates to release charged ions into the water. These ions electromagnetically bind with soil particles and other contaminants, causing them to coagulate and settle out of suspension.

"The process is widely used in wastewater treatment plants, utilizing large batch systems because of the amount of water to treat and power it takes to run it," said Shiqiang (Nick) Zou, co-PI and assistant professor in civil and environmental engineering. "However, we're doing this on a portable device about 18 inches in size."

Fagan said it's incredible how Auburn's work has influenced the state of stormwater management in Alabama and across the U.S.

"It has been exciting to watch Auburn's work grow from simple testing and improvement of existing best management practices to training hundreds of professionals each year to now developing cutting-edge commercial products. I am proud to be connected to the College of Engineering and the stormwater work happening there," Fagan said.

Megan Armstrong, a civil and environmental engineering graduate student on Perez's team, said the device has several real-world applications. "Construction sites have a lot of soil washing off and running to bodies of water. The device will remove that sediment before it reaches receiving water bodies," she said. "However, the uses go beyond construction. Departments of transportation, homeowner associations and municipalities could use this device along roadways, parking lots and storm drain gutters to treat stormwater runoff before it flows into creeks and rivers."

Perez said the regulations on handling stormwater have always fallen to the federal and state governments, but practical solutions and mechanisms haven't always been available. "Now, there will be a portable solution powered by a 12-volt battery that can be charged with a solar panel," he said. The team is working with Auburn University's IP Exchange and the [New Venture Accelerator](#) in the [Raymod J. Harbert College of Business](#) to develop intellectual property and their market strategy.

<https://eng.auburn.edu/news/2024/08/perez-portable-device>

Pictured is the portable, self-contained stormwater treatment device to treat stormwater runoff that was designed by the The Auburn University Stormwater Research Facility and Fagan Consulting LLC through Small Business Innovation Research (SBIR) contract with the U.S. Department of Transportation and Innovate Alabama.

