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STORMWATER
ASSOCIATION



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TNSA Times

Tennessee Stormwater Association News & Information

May - July 2017

Viva la Stormwater! A Message From the TNSA President

You know the old adage: Out of sight, out of mind. As far as I'm concerned, that is a good rule to live by when it comes to sanitary sewers. No one wants to see, or be reminded of, that type of water.

That being said, I have a great amount of respect for our peers in that industry that are doing the dirty work of handling the very dirtiest water around. They are the original unsung heroes of water quality.

We like to think of our urban stormwater runoff as "dirty", and it is, but it's all relative depending on your perspective. I bet the wastewater professionals roll their eyes at us when we talk about our dirty stormwater problems! Even so, our stormwater and water quality initiatives are born out of the desire to constantly do better. A noble endeavor!

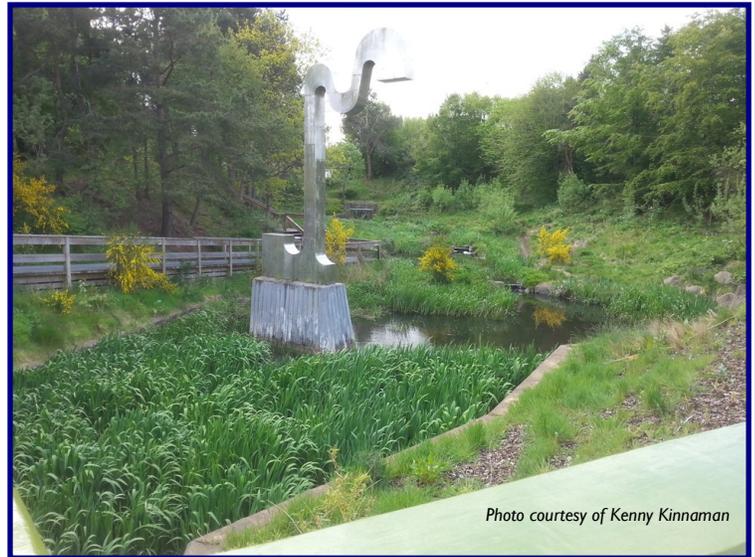


Photo courtesy of Kenny Kinnaman

I don't think "out of sight, out of mind" applies to the stormwater profession. In fact, I think we need to highlight (and in some cases celebrate) the stormwater management practices in our communities.

I am not talking about the highly publicized "pilot projects", but rather the modest culvert or yard inlet. A recent trip by one of our members to Scotland opened his eyes about this concept as they felt keen to adorn some of their outfalls with ornamental grasses,

I am not talking about the highly pub-

Continued on page 10

August 26, 2017!

5th Annual Nashville Urban Runoff

Register today! Join us August 26, 2017, at Shelby Park for the **5th Anniversary of the Nashville's Urban Runoff 5K!** [Nashville's Metro Water Services](#), the [TDEC](#) and the [Tennessee Stormwater Association](#) have teamed up together once again to host the Urban Runoff 5k.

The run weaves its way past several cool and innovative green stormwater management practices. Dogs on leashes and strollers welcome! We'll have a fun and educational Water Quality

Festival with a bouncy house and a photo booth for the whole family to enjoy from 6:30-10:30.

For more information about the race, please visit our [Facebook Page](#). **Thank you to our Sponsors!**





Executive Director

Charlene DeSha

Charlene@tinstormwater.org

TNSA Committees

Regulations & Policy

Chair: [David Mason](#)

Communication

[Chris. Granju](#)

**Education Training
& Professional Development**

Co-Chairs: [David Carver](#) & [Stephanie Carlson](#)

**Manufacturer BMP
Evaluation**

Chair: [Sandy Carmago](#)

Conference Planning

Chair: [Crystal Bishop](#)

We welcome TNSA Members to participate on any of these committees! Please contact the committee chair for additional information.

In this issue:

Hamilton County, City of Cleveland and Bradley County Partner to Educate Teachers	4
TDOT's New Litter Prevention Campaign	4
Cleveland and Franklin Qualifying Local Programs	5
Inaugural Tennessee Runoff 5K & Cheers to Clean Water Celebration	5
Level I & II TNEPSC, Permanent Stormwater Design & TN-HDT Courses	6
Nashville's Adopt-a-Drain Program	7
Grant Opportunities	11
Tools & Reports	12
Advancing Energy Efficiency in Wastewater Treatment Plants in Tennessee	15

TNSA Executive Director Message

Litter, litter, everywhere...

My favorite poet growing up was Shel Silverstein. I must have read "Where the Sidewalk Ends" a million times. One poem that has stuck with me all of these years is "Sarah Cynthia Sylvia Stout Would Not Take the Garbage Out".

It has a different meaning to me since I have grown up. Instead of a lazy child who didn't want to do her chores, it now reminds me of all of the lazy people who cannot seem to throw their trash away properly. As stormwater professionals you have to deal with lazy, noncompliant, hard-headed residents and businesses every day. Does Sarah Cynthia Sylvia Stout ever come to your mind? Just take the garbage out, just do your job, just do the right thing for our local community. Well here

comes some help...

I'm very excited about TDOT's new litter campaign "Nobody Trashes Tennessee". This campaign will remind motorists to throw their garbage out and place it in the proper place. I have already noticed one of the first billboards in Knoxville. It was a sight for sore eyes.

While traveling this great state of ours, I see a lot of beautiful places, but I also see litter. The litter seems better along our highways than it did 10 years ago, but it's still there. Everyone knows litter is an unsightly health hazard. However, many people do not realize that litter on the ground also pollutes our water. Stormwater systems are designed to take rainfall into the waterways. With the runoff are carried trash, litter, and chemical waste.

What about that garbage?

SARAH CYNTHIA SYLVIA STOUT
WOULD NOT TAKE THE GARBAGE OUT



Shel Silverstein. (1974). *Where the Sidewalk Ends*. New York: Harper and Row.

Your local Keep America Beautiful affiliate or litter program are great partners in order to help you with your permit education outreach requirements as well as combat the litter problem in your area. Visit keepnbeautifull.org to see if there is a program in your county or city.

TNSA also has education and outreach programs and projects located on our member file sharing system.

Best wishes,

Charlene DeSha
Executive Director

**Water Quality Grant Opportunity!
5th Annual Nashville Urban Runoff 5K**



Due August 15! In order to promote the implementation of local watershed quality stewardship projects, a portion of the proceeds generated from the UR5K will be awarded back to the community through one watershed quality award of \$1000.00.

Local NGOs will have the opportunity to submit specific stewardship proposals that will be judged by the UR5K Planning Committee.

The committee is seeking projects focused on Pollutant Runoff Reduction Implementation. Contest entries include any proposed project that involves the implementation/installation Best Management Practices (BMPs) that will improve runoff within a specific watershed.

Examples BMPs could include, but not be limited to, rain gardens or other bio-retention basins, tree plantings, downspout disconnect-

etc.

Eligibility: The UR5K Prize can be awarded to any NGO that submits an application with a signed Implementation Certification Statement that attest the award money will be utilized to implement the project as submitted in the contest entry form. NGOs can submit proposals for both Watershed Quality Award categories. NGOs are not required to be tax-exempt organizations for eligibil-

TNSA Education Committee Update

TNSA has received two proposals for the new Professional Development Education Program and is continuing to accept additional proposals.

The goal of the TNSA Education Committee is to build on a foundation of professionalism for TNSA members through courses

designed to complement and expand standardized training.

Courses will be offered state wide through in-person workshops or webinars. Our goal is to make sure all members receive the training they need at an affordable price.

There is a two-step process in order to submit a proposal. The first step is an easy online form in order to receive initial permission to submit a proposal. If initial approval is received, download the proposal application and submit to Charlene DeSha. Initial approval can take up to 5 days, proposal applications can take up to 2

Continued on page 16

One Giant Mud Puddle!

Harrell Rd Stormwater Best Management Practices Demonstration Park

By Roy Arthur, Knox County Stormwater Management

Knox County's newest park, [Harrell Road Stormwater Best Management Practices \(BMPs\) Demonstration Park](#), was officially opened by Mayor Tim Burchett on May 26, 2017.

Also on hand for the ribbon cutting were a number of people who represented partners that played a big role in the Park's creation: Carol Evans, Executive Director of Legacy Parks Foundation (LPF), Dr. Sam Marshall, 319(h) Grant Coordinator with the Tennessee Department of Agriculture (TDA), Tim Gangaware, Associate Director of the UT-Tennessee Water Resources Research Center (TN WRRC), and Shari Mcgreblian, Deputy Director of the Tennessee Department of Environment and Conservation.

Also present were Doug Bataille, Senior Director of Knox County Parks and Recreation, Dwight Van de Vate, Senior Director of Knox County Engineering and Public Works (EPW), numerous County Commissioners and State Representatives among other important contributing partners.



In late 2007 Scott Davis, a local developer, made the first land donation accepted by LPF. It was 19.2 acres in the floodplain of Beaver Creek unfit for development. The land was not pretty. The site had been used for a soil mining operation. Soil mining is where soil is excavated from one site and hauled to another site for fill. (Soil mining is allowed in the floodplain. Soil can be removed; it just cannot be added.) What was left was a giant mud puddle.



What can you do with a giant mud puddle?

Why turn it into a park, of course!

The first step in the process after the land acquisition was to decide the best use of the property. LPF formed a working group to decide the land's fate. Since Knox County has been promoting green infrastructure practices, the working group decided to form a public/private partnership to explore turning the land into a Stormwater BMP Park.



Harrell Road Concept Plan

LPF worked with Mast General Stores and secured a \$5,000 planning grant from the Chaka Foundation. These funds were used to develop a master concept plan for the Park through a partnership with the East Tennessee Community Design Center.

The following three companies provided services for the first phase of the design stage for the project: Carol R. Jones and Associates provided pro bono input into the landscape design; Cannon-Cannon, Inc. then provided a survey crew for three days to provide a topographic map of the site; and Water Resources, LLC provided a wetland determination and native plant inventory.

These three companies with oversight from the UT-TN WRRC and project management from the Knox County Stormwater Management Department invested over \$30,000 in the initial stages of the project. Great, what's next? We have a plan for a \$500,000 park and no money. Knox County EPW and Parks and Recreation had no money in their budgets for this park.

We turned to TDA and were able to commit \$250,000 from an existing 319 grant to get started. By the time the Stormwater Park was completed around \$300,000 came from TDA. Thank you Dr. Sam Marshall, Coordinator of the state's 319 program. Now it's time to get to work.

Capture and Infiltrate

The premise behind green infrastructure is to reduce runoff to water bodies by capturing stormwater in specially designed and natural practices that hold and infiltrate the runoff or promote evapotranspiration. There were a total of six green infrastructure practices installed and/or enhanced in the Stormwater Park. The four installed were: a rain garden; two vegetated stormwater ponds; a retrofit that diverted an acre foot of water from an adjacent subdivision (that formerly went straight to Beaver Creek) to the vegetated stormwater ponds; and a pervious paver parking lot. The two enhancement projects were for a jurisdictional pocket wetland and a vegetated riparian buffer along Beaver Creek. An informational kiosk is located in the parking lot that provides an overview of the Stormwater Park's purpose and identifies its partners and individual signs are installed at each BMP to describe their functions and benefits.

Grading

The plan was to contour the Park so that the majority of stormwater falling on the 11 disturbed acres would end up in the vegetated ponds. Several unforeseen obstacles altered this plan as sometimes you never know what lies below the surface even after extensive core drilling and other reconnaissance. What we encountered was a ridge of

Continued on Pg. 8

TDOT's New Litter Prevention Campaign

By Michael McClanahan

In June, the Tennessee Department of Transportation launched a new litter prevention campaign to help keep trash off Tennessee roadways. The "Nobody Trashes Tennessee" campaign will soon be seen on billboards and commercials, as well as educational programs and anti-litter promotional items.

"From the Great Smoky Mountain region, to the Mississippi River, and every stretch of roadway in between, litter on our highways takes away from Tennessee's natural beauty," TDOT Commissioner John Schroer said. "It's not only an eyesore, but it costs TDOT more than \$15 million a year to clean up."

A 2016 field study of litter along TDOT rights-of-way found that, though roadside trash is down 53 percent since 2006, there are still an estimated 100 million pieces of trash on Tennessee roadways



("Visible Litter Study," nFront Consulting, October 2016).

Littering, whether deliberate or unintentional, is punishable under Tennessee law, and it can cost offenders \$50 to \$3,000 in fines.

The "Nobody Trashes Tennessee" campaign is based on rigorous research conducted in 2016, including the Visible Litter Study, which found that though littering is down, it's still a big problem. Research indicates 30 percent of the state's litter is "deliberate" –

meaning trash is tossed right out of vehicle windows.

Another statewide study, "Litter Attitudes and Behaviors" (Baselice & Associates, April 2016), found out who is littering in Tennessee. Somewhat surprisingly, the market research indicated a slight skew toward females ages 16 to 34. Subsequent focus groups confirmed females indeed litter, but that males also contribute to the problem.

"The good news is the research showed that nine out of 10 Tennesseans are more likely to properly dispose of their trash after learning about the statewide litter problem," Commissioner Schroer added. "We believe this new campaign can make a difference and potentially save highway maintenance funds for other needed road projects."

For more information about the "Nobody Trashes Tennessee" campaign and to view the first Public Service Announcement, visit: www.nobodytrashestennessee.com.

Hamilton County, City of Cleveland and Bradley County Partner to Educate Teachers for the 11th Year

By Crystal Bishop, Hamilton County Water Quality Manager

In 2006, 3 MS4 (Stormwater) Programs started a partnership that has spread water education to teachers in multiple school systems throughout southeast Tennessee. Hamilton County Water Quality Program, a co-permitted MS4 program between Hamilton County and the cities/towns of Collegedale, East Ridge, Lakesite, Lookout Mountain, Red Bank, Ridgeside, Soddy Daisy and Walden, has teamed up with City of Cleveland Stormwater Program and Bradley County Stormwater Program to offer a Project WET (Water Education for Teachers) Workshop for 11 consecutive years.

This year on June 1st, as in many years prior, the Project WET Workshop was held at the Ocoee Whitewater Center with George Bartnik facilitating the workshop. Each participant received a Project WET Curriculum and Activity Guide packed full of nearly 100 planned lessons



and activities. While the Project WET curriculum is focused on many aspects of water education, the Project WET workshop provided by Hamilton County, City of Cleveland and Bradley County emphasis is Water Quality Education.



The Incredible Journey: with a roll of a cube, participants simulate the movement of water within the water cycle.

Activities featured for instruction during the workshop are selected because of their particular emphasis on watershed education. From Sparkling Water to Ma-

croinvertebrate Mayhem, participants were trained on various aspects of watershed focused activities that highlight the impact of how we, as watershed stakeholders, have impacted and will continue to impact our watershed.

The goal was to not only train the teachers in lessons that can be used in the classroom, but to give educators a real watershed experience and get their feet wet. After lunch, the participants were bussed to the Conasauga River for an afternoon of stream discovery which included snorkeling and stream wading.

Over the course of the past 11 years, the Project WET partnership between Hamilton County, City of Cleveland and Bradley County has provided training to over 485 educators. With the training of one teacher, Project WET

Continued on page 14



2017 TNSA Annual Conference "Streaming Together" October 17-19, 2017 Fall Creek Falls, Pikeville, TN

Keynote Speaker: Dr. Anna George
Director and Chief Research Scientist Tennessee Aquarium

Conference Registration Open!

Monday, October 16, 2017: Pre-Conference Workshop:
Project WET Workshop \$25

Early Bird Registration ends September 1, 2017
TNSA Member Registration: \$165
Non-Member: \$200
One-Day: \$100
Speaker: \$100

[Click here for Registration Form](#)



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6 issues per year

Prices

¼ page: \$50

½ page: 75

Non-profit Prices

¼ page: \$35

½ page: \$50

Contact:

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615-418-7284

Inaugural Tennessee Runoff 5K & Cheers to Clean Water Celebration—*Success!!!*

On June 2nd, Knox County Stormwater, University of Tennessee (UT) Stormwater, UT Biosystems Engineering, and the Tennessee Stormwater Association (TNSA) teamed up to host an inaugural event called the Tennessee River Runoff 5K & Cheers to Clean Water Celebration.

The goal of this event, which was inspired by the Urban Runoff 5K hosted by Nashville's Metro Water Services, TDEC, and TNSA, was to help raise awareness about the importance of protecting water quality and recognizing how central clean water is in our everyday lives.

124 chip-timed racers gathered at the start line at the UT Gardens at 6pm on that Friday evening, eager to navigate the course despite the very hot temperatures. The route guided runners and walkers through UT campus, passing a variety of examples of green infrastructure like bios-wales, underground water quality units, and rain gardens, and along the Tennessee River.

When racers returned to the Gardens, they were able to join about 70 "celebrators" at the Cheers to Clean Water Celebration, which focused on recognizing the importance of clean water through craft beer. There were several local brews on tap for the thirsty runners to choose from, like Citra Blonde from Alliance Brewing, Hexagon Brewing's Dunkelweizen, and Bel-Melon Pale Ale from the Pink Boots Society – Knoxville Chapter. Hungry participants could visit the on-site food truck, Captain Muchacho's, to get their taco fix.

After the runners and walkers had some time to cool down and explore the vendor tables and gardens, awards went out to the top three runners in each gender/age category. These weren't your run-of-the-mill awards. Tennessee Naturescapes, out of Clinton TN, graciously donated 12 native plants for the winning runners. 3rd place runners scored a Tennessee Coneflower, 2nd place runners received a Blazing Star, and the 1st place runners went home with beautiful flowering Vasevine. After the awards ceremony, partici-



pants pulled out their raffle tickets in hopes of winning one of the exciting door prizes that were donated by local businesses and organizations. Participants went home with packages from Visit Knoxville, Volunteer Princess Cruises, Ijams Nature Center, and Legacy Parks, gift certificates from restaurants like Tandur Indian Kitchen, The Tomato Head, Balter Beerworks, Bistro at the Bijou, Stir Fry Cafe, and The Juice Box, and prizes from supportive local businesses like Mast General Store, Advanced Foot Care, and New Balance!

Continued on page 16

Level I & II TNEPSC, Permanent Stormwater Design & TN-HDT Courses Schedules

TNEPSC Level I Certification Course	
September 6, 2017	Nashville
September 12, 2017	Memphis
September 19, 2017	Knoxville
October 6, 2017	Chattanooga
TBD	Johnson City
TBD	Nashville
TBD	Knoxville

TNEPSC Level II Certification Course	
November 15 & 16, 2017	Nashville
TBD	Memphis

TN Hydrologic Determination Course	
August 14-16, 2017	Montgomery Bell State Park (FULL)
November 28-30, 2017	Memphis

TNEPSC Level I Recertification Course	
September 21, 2017	Nashville
September 22 2017	Knoxville
TBD	Chattanooga
October 20, 2017	Cookeville
TBD	Memphis
TBD	Johnson City
TBD	Chattanooga
TBD	Nashville
TBD	Knoxville

SCM Inspection & Maintenance Course	
November 14 & 15, 2017	Nashville

TN-HDT Refresher Course	
May 23, 2017	Nashville
June 7, 2017	Knoxville

Please contact [Tim Gangaware](mailto:Tim.Gangaware@tnstormwatertraining.org) with questions or visit the website: <http://tnstormwatertraining.org/> or <http://tnhdt.org/> or <http://tnepsc.org/>



EPA, U.S. Army Move to Rescind 2015 "Waters of the U.S."

EPA, U.S. Army Move to Rescind 2015 "Waters of the U.S."

The Environmental Protection Agency, Department of Army, and Army Corps of Engineers (the agencies) are proposing a rule to rescind the Clean Water Rule and re-codify the regulatory text that existed prior to 2015 defining "waters of the United States" or WOTUS. This action would, when finalized, provide certainty in the interim, pending a second rulemaking in which the agencies will engage in a substantive re-evaluation of the definition of "waters of the United States." The proposed rule would be implemented in accordance with Supreme Court decisions, agency guidance, and longstanding practice.

"We are taking significant action to return power to the states and provide regulatory certainty to our nation's farmers and businesses," said Administrator Scott Pruitt. "This is the first step in the two-step process to redefine 'waters of the U.S.' and we are committed to moving through this re-

evaluation to quickly provide regulatory certainty, in a way that is thoughtful, transparent and collaborative with other agencies and the public."

This proposed rule follows the February 28, 2017, Presidential Executive Order on "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule." The February Order states that it is in the national interest to ensure that the Nation's navigable waters are kept free from pollution, while at the same time promoting economic growth, minimizing regulatory uncertainty, and showing due regard for the roles of Congress and the States under the Constitution. To meet these objectives, the agencies intend to follow an expeditious, two-step process that will provide certainty across the country.

The proposed rule would recodify the identical regulatory text that was in place prior to the 2015 Clean Water Rule and that is currently in place as a result of the U.S.

Court of Appeals for the Sixth Circuit's stay of the 2015 rule. Therefore, this action, when final, will not change current practice with respect to how the definition applies.

The agencies have also begun deliberations and outreach on the second step rulemaking involving a re-evaluation and revision of the definition of "waters of the United States" in accordance with the Executive Order.

"The Army, together with the Corps of Engineers, is committed to working closely with and supporting the EPA on these rulemakings. As we go through the rulemaking process, we will continue to make the implementation of the Clean Water Act Section 404 regulatory program as transparent as possible for the regulated public," said Mr. Douglas Lamont, senior official performing the duties of the Assistant Secretary of the Army for Civil Works. 666

For the pre-publication Federal Register Notice and additional information: <http://www.epa.gov/wotus-rule>

Nashville Launches Technology-Rich Adoption Program for 44,000 Storm Drains

Citizens called to Assist Nashville's Rivers and Streams with GIS-enabled reporting system, the first in the Southeast.

With almost 44,000 unique city locations mapped inter-actively, Nashville's Storm Drain Adoption Program launches Tuesday to connect citizens with powerful infrastructure and environmental stewardship opportunities yards from their door.

With a smart phone, laptop or desktop computer, volunteers can "adopt" location-specific storm water inlets and catch basins based on where they live, work or play, and thereby commit to protect them from debris and other clean water concerns. Nashville Clean Water Project created the program, while local technologist Greg Rhinehart engineered the accompanying GIS-enabled technology platform with help from Metro Water Services.

"The clean water cause is now as close as the end of your driveway or street, and it's never been easier to positively impact Nash-

ville than now," said Mark Thien, executive director of the nonprofit Nashville Clean Water Project.

Adoption are available at www.NashvilleH2O.org/adopt or via Hands on Nashville (HON.org).

Information reported by volunteers about the drains can be used by Metro and Nashville Clean Water Project to address location-specific issues such as localized flooding, illegal dumping, chronic pollution, damaged grates, erosion issues from nearby construction sites and more.

"Many storm drains in Nashville have debris and litter that shouldn't be there," said Michael Hunt, Metro Water Service's storm water manager. "Storm drains lead directly to rivers and streams so programs that serve to remove or prevent materials from routing to our storm drains are instrumental in reducing waterway pollution and localized flooding of our streets."



With each rainfall, plastic bottles and cups, polystyrene, and various other floatables and pollutants wash into local waterways via storm drains. Volunteers are asked to remove — to the degree it is safe to do so — what shouldn't be there and discard the light debris in their residential or commercial trash can, then report their findings via electronic link.

About Nashville Clean Water Project:

Nashville Clean Water Project works in support of clean local waterways and adjacent lands. In 2007, the nonprofit originated the largest water cleanups in Nashville's history. They can be found online at

www.NashvilleH2O.org

Knox County Stormwater Strong Streams- Murals

Knox County Stormwater, in partnership with Knox County Parks & Recreation, recently unveiled a brand new mural that is helping to beautify the greenway along Ten Mile Creek. This project is the first of its kind for the county, and serves as both eye-catching and educational.

Knox Co Stormwater teamed up with local artist Curtis Glover to create a piece of public art that illustrates the natural beauty of our local streams. With much research and help from a retired ORNL biologist, Mike Ryon, the mural accurately depicts plant and animal species that exist in the East Tennessee region, like the Valley Flame Crawfish and the Belted Kingfisher, among many others.

This mural project, called Strong Streams: Ten Mile Creek, is a threefold success. First, this project allows Knox County Stormwater to raise awareness about protecting our local waterways from pollution by showing the plant and animal species that could thrive in our communities if we took care of their stream ecosystems. Many people don't realize that whatever goes down

the storm drain leads to the creek, not to a water plant to be treated. This means that when it rains, stormwater runoff picks up pollutants like litter, oil and grease from cars, and pet waste, and heads to a storm drain where it dumps into a nearby stream or river, along with the pollutants it is carrying. This mural will help bring to light what we need to protect.

Second, the mural presents a way to acknowledge the importance of the arts. Local, public art is significant to a community because it can help give people a sense of place and pride in their communities. Lastly, graffiti has been and continues to be a problem for the Parks department along retaining walls and wing walls like the one along this greenway. Re-

search has shown that walls are less likely to be vandalized if there is a mural in place of a common white wall, which would be viewed as a "blank slate." There is a general understanding among artists that the time and effort put into something creatively artistic should be respected.

[Click here for more info!](#)



One Giant Mud Puddle Harrell Rd Stormwater Best Management Practices Demonstration Park

Continued from Pg. 3

stone under the surface that ran diagonally across the site.

Our grading contractor was able to work around this obstacle with only minor alterations to the plan and the two ponds were created. One bonus was the discovery of a four foot seam of topsoil. The soil was harvested and spread on the site. There was enough topsoil to cover 11 acres with six to twelve inches of topsoil. That amounted



to a considerable savings, with the original plan calling for the purchase of up to 200 tons of topsoil.

After grading was complete approximately 200 high school students from two schools in the community participating in a local Adopt-A-Watershed program spent hours of service assisting with the stabilization of the site. They first learned about erosion control, how to manage stormwater and



Students installing erosion control blankets

the proper way to install erosion control matting. They then helped with hand grading and installing the erosion control matting.

After grading and stabilization money was running short. An answer came in the form of a \$95,400 Tennessee Healthy Watershed Grant. This allowed us to complete the green infrastructure features designed for the Stormwater Park and plant native vegetation.

Installed Features

The second step of the process was to construct the green infrastructure features, notably, a rain garden, a retrofit redirecting stormwater, and a pervious paver parking lot.

Rain Garden

Rain Gardens are attractive single lot solutions to drainage problems and are more often now being installed by owners who



Rain Garden with sign

understand their environmental benefits. Rain gardens can be installed as a retrofit or as a feature for new builds, both commercial and residential.

The rain garden was originally proposed in the concept plan as an over flow feature for the pervious parking lot. However, after grading we realized that we were causing ponding in the back yard of one of the homeowners. An analysis showed that stormwater was being directed from impervious cover, front and back, from three houses to the low spot in the one yard.

Our solution was to move the rain garden site to address the runoff issue. We installed a grass swale directing this runoff using a TN Smart Yards designed rain garden. Students

from two local high schools planted and mulched the garden as an Adopt-A-Watershed service learning project.

Even with amended soils rain gardens sometimes don't infiltrate. Such was the case at Harrell Road Park. When the rain garden was first installed, it took up to seven days to fully infiltrate. We prefer rain gardens to infiltrate fully within 72 hours for mosquito control and plant health.

In response to this poor infiltration rate, a resource-intensive approach was taken that involved boring holes and filling them with 18 tons of sand which were to serve as straws to help draw down the water. With this only modestly improving the rain garden's infiltration, we decided to leave it alone to see what happened. A year later the rain garden was fully infiltrating within 24 hours. We have noticed that other rain gardens with similar infiltration problems tend to also improve over time.

Our hypothesis to this problem is that that once the plants become established their root systems serve as conduits for stormwater infiltration. Knox County Stormwater is now working with UT to quantify infiltration rates over time in rain gardens.

Re-directing Stormwater

Painter Farm, the subdivision adjacent to the Stormwater Park, had a serious runoff problem. Most of the stormwater from the subdivision was directed to the main entrance through an 18 inch pipe. Another 48 inch pipe under the main entrance collected stormwater runoff from a large drainage area above the subdivision. Localized flooding occurred during large rain events resulting in flooding at the entrance and resulting in Harrell Road closures.

The cause of the flooding was a total 66 inches of pipe coming from Painter Farm and the upslope drainage area with only 48 inches of pipe directing the runoff to Beaver Creek.

Continued on next page

Harrell Rd Stormwater Best Management Practices Demonstration Park

Continued from previous page

Our solution was to redirect the runoff from the 18 inch pipe from Painter Farm to the vegetated stormwater ponds. Knox County EPW crews installed 700 feet of pipe to an outfall situated on the edge of the closest vegetated pond. As a result of installation, an acre foot of stormwater from a one inch rain fall (approximately



Pipe installation, bricking up existing outfall

355,000 gallons) was re-routed to the pond and infiltrated. We have seen up to four inches of rain re-directed and infiltrated without flooding.

Pervious Parking

Once again as we looked to continue with our BMP installation, we ran out of money. Knox County Parks and Recreation installed split rail exterior fencing and 2,500 feet of trails. The existing vegetation had been killed and native seed sown.

All that was left was to install the pervious parking lot and signs. With no funding in sight, Knox County EPW and Knox County Parks and Recreation collaborated and invested about \$60,000 to put in one of the finest examples of a pervious paver parking lot in the County.

In addition, Parks and Recreation received a \$6,000 Tennessee Agriculture Enhancement Program (TAEP) tree grant matched with a



Kiosk, fencing and Pervious paver parking lot.



Trails and trees



New Outfall

\$6,000 donation from our grading contractor and planted 100 two-inch caliper native trees in the Park.

Existing and Enhanced Features Natural Wetland

A preliminary wetland determination found a small natural wetland on site. The wetland was protected during grading and invasive species, primarily cattails, were removed.

With the wetland now delineated, there are plans to enhance it by installing additional signature wetland plants. The educational sign serves to point out the stormwater BMP and ecological functions of wetlands, with these functions anticipated to improve over time as more as wetland plants migrate in and/or are installed.

Riparian Buffer

Beaver Creek borders two sides of the Park. Fortunately, this reach has a relatively healthy riparian buffer. Vegetated riparian establishment and enhancement are a current focus of Knox County Stormwater Management's Strong Streams program. The sign explains the importance of vegetated riparian buffers to the health of stream's aquatic life and to the broader stream corridor ecosystem, with a pictogram illustrating these benefits.

Native Vegetation

A major component of the plan for the Stormwater Park was to replace invasive and undesirable vegetation with native species. The existing vegetation was eradicated and a variety of native grasses, wildflowers and shrub seeds were planted. The following June we had a massive and gorgeous bloom



Riparian buffer along Beaver Creek with sign

of Black Eye Susan and Coreopsis.

Unfortunately we did not do a good enough job of killing invasive vegetation and by the fall the entire 11 acres was overrun by Lespedeza and other invasive species that choked out the emerging natives. This was the one big failure in the execution of the Park's plan. Knox County Stormwater Management is in the process of devising a way to re-eradicate invasives and re-plant natives. A maintenance plan has been written

Continued on page 10

Harrell Rd Stormwater Best Management Practices Demonstration Park

Continued from Pg. 9

by the Native Plant Rescue Squad associated with the Knoxville Botanical Garden and the site will be bush hogged every fall until native plants are re-established.

Water Trail

In an effort to help promote stream health and provide another recreational amenity, Knox County EPW and Parks and Recreation decided to open a 5.5 mile water trail on Beaver Creek with the first canoe/kayak launch constructed by the Stormwater Park's newly installed pervious parking lot.

Knox County EPW installed a ramp and spent almost a year removing 23 debris jams that had formed in the 5.5 mile reach. The water trail became an instant hit with the public. A group of citizens started a Beaver Creek Kayak Club which joined the Knox County Adopt-A-Stream (AAS) program. The Kayak Club, currently boasting



500 plus members, now maintains the trail, keeping it free of debris and trash through its AAS clean-ups. A long range plan is in place to open approximately 35 miles of Beaver Creek water trail with the second reach currently under development.

Conclusions

The Good: The Karns community in the Beaver Creek Watershed has a new passive park and a water trail. Citizens began using the Stormwater Park long before it officially opened and through contact with those installing the Park, have been learning about stormwater BMPs. Effective public/private partnerships have been established that will carry forward to future projects. Partnerships within EPW and between EPW and Parks and Recreation were also strengthened. The water trail provides an additional recreational opportunity and the formation of the Beaver Creek Kayak Club gives Knox County Stormwater and other partners a new citizen group with which to work. A localized flooding problem was resolved.

The Bad: It was struggle to find funding for the Stormwater Park as no County funds were allocated. As a caveat, we didn't ask for any. As a result the Park took about seven years to complete from concept plan to ribbon cutting. A water main, a major gas line easement, and a rock ridge required alterations to the plan slowing down construction.

The Ugly: The attempt to eradicate the invasive species on site and seed with natives was an abject failure. Grant deadlines caused us to panic and move too quickly. In hindsight, once the surface vegetation was initially eradicated we should have waited until the following growing season to re-apply weed killer to emergent vegetation before seeding. However, the attempt to establish vegetation was the only real glitch in an extremely complicated process to develop Knox County's Harrell Road Stormwater BMP Demonstration Park.

Come see us and we will be back with more stories as the Park continues to ecologically evolve and as more groups like the Kayak club take advantage of it as both a recreational and educational amenity!

Harrell Road Park, 7221 Harrell Rd. Knoxville, TN 37937

For additional information:

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University of Tennessee
Senior Research Associate, TN Water Resources Research Center

Viva la Stormwater! A Message From the TNSA President

Continued from Pg. 1

shrubbery, and even sculptures.

The City of Chattanooga recently con-



structed headwalls for a large culvert in a busy neighborhood using natural stone. It looks far better than bland concrete and didn't really cost any more since our awesome city crews performed the labor.

A little effort towards aesthetics as part of each design can help grab the attention of passers-by and be a little reminder that water quality matters.

I'm all in favor of keeping it simple though. Use one or two design palettes and copy them. It may be a nice way to create a sense of identity for neighborhoods or small towns. Imagine if every culvert in your neighborhood was surrounded by purple cone

flowers during the summer?

I'm sure someone who knows a little something about landscaping can come up with 10 good reasons why that is the wrong plant, but you get the point I hope.

If you have any photos or stories of similar efforts in your communities we would love to hear about it. I would love to feature some of those stories and photos in our next newsletter. So viva la stormwater! Or something like that...

MARK D. HEINZER

P.E., LEED AP, CPESC, CPMSM
TNSA President

Grant Opportunities

National Science Foundation- Environmental Sustainability Grants

National Science Foundation- Environmental Sustainability Grants- proposals **due October 20, 2017**

The National Science Foundation's Environmental Sustainability program promotes sustainable engineered systems that support human well-being while also being compatible

with sustaining environmental systems.

[Read more about this funding opportunity here](#)

EPA Wetland Program Development Grants

Application close date varies by region- Wetland Program Development Grants (WPDGs) provide eligible applicants an opportunity to conduct projects that promote the coordination and acceleration of research, investigations, experiments, train-

ing, demonstrations, surveys, and studies relating to the reduction and elimination of water pollution.

WPDGs assist building programs to protect, manage, and restore wetlands. States, tribes,

local governments, interstate associations, and intertribal consortia are eligible to apply for the Regional WPDG Request for Proposals. [Full details here](#)

Economic Development Administration—Public Works and Economic Adjustment Assistance Programs Grants

The Economic Development Administration (EDA) solicits applications from applicants in rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and

Economic Adjustment Assistance programs.

Grants and cooperative agreements made under these programs are designed to leverage existing regional assets and support the implementation of economic development

strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

[To learn more about this funding opportunity, read here.](#)

EPA Announces 2017 Campus RainWorks Challenge

EPA is pleased to announce the rules for the [6th annual Campus RainWorks Challenge](#), a design competition open to U.S. colleges and universities.

EPA seeks to engage undergraduate and graduate students in designing innovative green infrastructure for stormwater management to showcase the environmental, economic, and social benefits of green infrastruc-

ture practices.

Stormwater pollution is a problem that is growing in scope and magnitude. Communities need planners, designers, engineers, and other professionals to create resilient and affordable infrastructure solutions for stormwater management. [EPA's Campus RainWorks Challenge](#) invites the current generation of scholars to lend their creativi-

ty, knowledge, and energy to become part of the solution. **Registration opens on September 1!!**



**CAMPUS RAINWORKS
CHALLENGE**

USDA Announces \$15 Million Public-Private Investment to Improve Critical Wetlands

The USDA Natural Resources Conservation Service today announced that the agency will award \$13 million to projects in seven states to protect, restore and enhance wetlands on private and tribal agricultural lands. The pro-

jects are being funded under the Wetland Reserve Enhancement Partnership (WREP).

Tennessee: The purpose of this project is to achieve more sustainable land and water management in the active floodplain of the

Lower Mississippi, thus providing significant ecological, economic and societal benefits. This is predominantly restoration and enhancement work of existing easements.

[Click Here for more information.](#)



**PARTNERS
FOR PLACES**

DUE JULY 31st! In partnership with the Urban Sustainability Directors Network, the Funders' Network for Smart Growth and Livable Communities (TFN) announces the opening of Round Eleven of the Partners for Places grant program.

Partners for Places Grant Program

Partners for Places is a matching grant program for cities and counties in the United States and Canada to improve communities by building partnerships between local government sustainability offices and place-based foundations.

The grant program provides partnership investments between \$25,000 and \$75,000 for one year projects, or \$50,000 and \$150,000 for two year projects, with 1:1 match required by one or more local foundations. [For more information visit here.](#)

Tools and Reports

U.S. EPA report Promotes Cooperation between Parks and Stormwater Managers

In an effort to encourage effective stormwater management practices on public parks, the U.S. Environmental Protection Agency (EPA) Office of Wetlands, Oceans, and Watersheds released a report, [Green Infrastructure in Parks: A Guide to Collaboration, Funding, and Community Engagement](#).

The 23-page guide presents a framework to help municipal parks agencies develop partnerships with stormwater managers. The report

covers common questions about what green infrastructure is and some of the benefits it can provide,

establishes a green infrastructure partnership planning timeline from identifying potential collaborators to undertaking

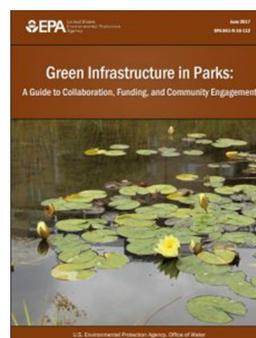
pilot projects, and

provides case studies detailing successful green infrastructure partnerships between park and stormwater managers from across the country.

Additionally, the report offers park managers guidance to match the unique conditions of their land to suitable green infrastructure solutions.

“Green infrastructure can help to maximize the environmental, economic, and social benefits of parks,” the guide reads. “By building strong partnerships, agencies can improve park lands and access to parks, better manage stormwater, increase community resiliency to shifting weather patterns, and provide funding to implement and maintain park enhancements that benefit the community.”

Public parks are a natural fit for green infrastructure installation. Typically, parks already contain open spaces that absorb stormwater. Many common park features – parking lots, roads, playing fields, and visitor centers – can be built or retrofitted with minimally invasive stormwater management measures to improve permeability, beautify the land, and minimize runoff pollution.



EPA's Publishes MS4 Compendium Part 3: Water Quality-Based Requirements

EPA has published online the [third](#) in its [MS4 Permit Compendium series](#).

While written for MS4 permit writers and aficionados, each compendium has examples of permits with some provisions that include green infrastructure.

For Part 3: Water Quality-Based Requirements, EPA reviewed existing state and EPA permits and identified different ways

of implementing TMDLs through quantitative requirements or pollutant-specific management measures such as green infrastructure, or a combination of both.

EPA gleaned examples of how permitting authorities measured progress of implementation of water quality-based requirements through review and approval of implementation plans, monitoring/modeling, and reporting requirements. EPA also include examples

of water quality-based requirements related to discharges to impaired waters without approved TMDLs.

The first two compendia, found via the links below, also feature examples from existing MS4 permits of clear, specific and measurable requirements:

- ◆ [Part 1: Six Minimum Control Measure Provisions](#)
- ◆ [Part 2: Post Construction Standards](#)

Estimating Monetized Benefits of Groundwater Recharge from Stormwater Retention Practices

[New EPA Study Supports The Long-term Benefits of Green Infrastructure](#)

EPA encourages green infrastructure for urban areas because of their benefits to water quality and stream channel protection. Groundwater recharge is a co-benefit of reducing excess stormwater runoff volume associated with impervious areas. This study was commissioned to estimate the groundwater recharge benefits from application of small storm retention practices on new development and redevelopment nationwide.

Broad assumptions, national datasets, and simplified recharge calculation and monetization approaches were used to provide general insight into the monetary benefits of small storm retention practices. The assumptions and limitations are listed in the study to facilitate future researchers' efforts.

The study focuses on areas in the United States where groundwater is a significant contributor to urban and agricultural uses and where water shortages may occur in the future under different climate change scenarios.

The approach was vetted by a panel of experts from government, academia and industry, with recommendations for improved methodologies for future studies.

The results suggest that over time the use of green infrastructure can save hundreds of millions of dollars in groundwater resources when only applying the practices to new development and redevelopment. If retrofitting or increased retention were to occur, the groundwater benefits would be even more significant.

Water Quality Monitoring: A Guide for Informed Decision Making

Do you need help in explaining water-quality monitoring to a non-technical audience? Are you working with decision makers who are confused by the array of monitoring programs, water databases, data portals and tools to collect and interpret water quality information?

[The National Water Quality Monitoring Council](#) (NWQMC) Water Information Strategies workgroup has developed a series fact sheets intended to help explain and clarify differences in water-quality monitoring designs. Each fact sheet is organized to answer the “how”, “what” and “when” questions of monitoring design. “How” is the program implemented? “What” types of questions does this design answer?” or “When” is this particular design appropriate?

Examples from existing programs are provided to help guide the reader and quick links pro-

vide more in-depth information for each topic. Additionally, topics include the Water Quality Portal and tools such as Water Quality Indices and Report Cards are available to help guide you in the management and use of water quality data.

- ◆ Available Fact Sheets include:
- ◆ Statistical (Probabilistic) Surveys
- ◆ Targeted Monitoring
- ◆ Rotating Basin Monitoring Design
- ◆ Fixed-Site Monitoring
- ◆ Remote Sensing

An overview of the series is available to help you engage partners on design and implementation.

Additionally, other new fact sheets cover topics including how to use the Water Quality Portal and tools such as Water Quality Indices and Report Cards are available to

help guide you in the management and use of water quality data.

[Click Here for More info.](#)

Water Quality Monitoring: A Guide for Informed Decision Making Using the designs together

About
Protecting our nation's water resources is increasingly challenging given diffuse pressures of population growth, development and changing climate. High quality water is essential to protecting human health and sustainable ecosystems. This heightened importance is driving an increased need for data documenting the quality of water resources and how they are changing at national, regional and local levels.

What you need to know
One monitoring design will not fit all water quality management needs. This series of fact sheets details the strengths, limitations and products of common monitoring designs. This overview encourages use of a combination of designs to address multiple water quality questions. Begin with the identifying monitoring objectives, the questions needing answers, and then engage partners on design/implementation.

Integration of monitoring designs provides:

- Information on physical, chemical and biological integrity of waters
- Changes and trends in water quality integrity
- Control of degradation and key stresses
- Sources and characterization of impaired waters
- Head-to-head to restore water quality (TMDLs and nonpoint sources)
- Effectiveness of protection and restoration actions (ecologic and scientific data and trends)

Monitoring Type	Strengths	Limitations	Products
Targeted Monitoring	• In-depth collection of data for an array of interest	• Generates site specific data with limited ability for extrapolation to broader areas	• Decisions about individual assessment units, local action plan like TMDL, effect of particular design
Fixed-Site Monitoring	• Long-term, routine water quality data supports site-specific trends like flow and flux at a lean outlet	• Not designed to represent trends beyond specific monitoring locations	• Historical record of water quality trends, basis of key parameters in water quality
Statistical Surveys	• Cost effective, statistically representative method for assessing condition of a broad population and tracking changes over time	• Not designed for localized site assessments, except for the sites sampled	• Broad, unbiased assessments of status and trends across parameters in time-response relationships
Remote Sensing	• Obtaining estimates of condition over large areas in a low-cost manner	• Requires a data management strategy and monitoring data to ground truth algorithms	• Early indication of emerging problems to inform on-the-ground action and follow up monitoring

Table 1. The above table outlines 4 types of monitoring designs and is intended to provide an overview of each design.

Urban Street Stormwater Guide

Urban Street Stormwater Guide-This guide is a first-of-its-kind collaboration between city transportation, public works, and water departments to advance the discussion

about how to design and construct sustainable streets. The Urban Street Stormwater Guide provides cities with national best practices for sustainable stormwater man-

agement in the public right-of-way. [Find more here.](#)



Removal of Fallen Leaves Can Improve Urban Water Quality

The timely removal of leaf litter can reduce harmful phosphorus concentrations in stormwater by over 80 percent in Madison, Wisconsin, according to a recent U.S. Geological Survey study.

Autumn leaf litter contributes a significant amount of phosphorus to urban stormwater, which then runs off into waterways and lakes. Excessive amounts of nutrients like phosphorus and nitrogen can cause eutrophication, or the depletion of oxygen in water, resulting in death of aquatic animals like fish. The USGS-led study found that without removal, leaf litter and other organic debris in the fall contributed 56 percent of the annual total phosphorus load in urban stormwater compared to only 16 percent when streets were cleared of leaves prior to a rain event.

“Our study found that leaf removal is one of the few treatment options available to environmental managers for reducing the amount

of dissolved nutrients in stormwater,” said Bill Selbig, a USGS scientist and the author of the report. “These findings are applicable to any city that is required to reduce phosphorus loads from urban areas.”

During April through November of 2013 through 2015, scientists compared concentrations of phosphorus and nitrogen in stormwater from two residential catchments in western Madison that had similar tree cover. The city applied a leaf litter removal program from late September through mid-November at one site but not the other. The researchers found significantly lower amounts of phosphorus and nitrogen at the site where leaves were removed.

The study also found that stormwater nutrient levels were highest during the fall months when the amount of organic debris on streets was at its peak. This finding suggests that leaf removal programs are most

effective during fall in Madison, and that sources other than leaves, such as street dirt and grass clippings, were likely the primary contributors of phosphorus and other nutrients during spring and summer.

“The efficiency, frequency and timing of leaf removal and street cleaning are the primary factors to consider when developing a leaf management program,” Selbig said.

The USGS collaborated with the City of Madison, the Fund for Lake Michigan and the Wisconsin Department of Natural Resources on the study.

[Click Here for more info.](#)

For more information about Wisconsin water research, please visit the USGS Wisconsin Water Science Center website.

Hamilton County, City of Cleveland and Bradley County Partner to Educate Teachers for the 11th Year

Continued from page 4

curriculum has the capability of reaching exponential numbers of students in the traditional classroom setting. Teaching environmental responsibility and stewardship to future watershed stakeholders is paramount, and this Project Wet partnership is an innovative and resourceful way to engage the public in watershed education.



Sparkling Water: Participants develop strategies to remove pollution from water.



Chad Wheeler, Hamilton County Staff Member (L) and George Bartnik, Project WET facilitator (R), train a group of educators on how to find bugs in a creek.



Snorkeling in the Conasauga River.



L to R: Chris Broom (City of Cleveland Stormwater), Ryan Stephens (City of Cleveland Stormwater), Crystal Bishop (Hamilton County Water Quality), Barrett Fisher (Hamilton County Water Quality) and Adam Reynolds (Hamilton County Water Quality)



Two MS4 Entities Win Governor Stewardship Awards

Category: Energy and Renewable Resources

Winner: City of Lebanon: Waste to Energy, Wilson County

The City of Lebanon has started operating a downdraft gasification plant at its wastewater treatment facility. The gasification initiative is the first in the nation and the largest downdraft gasifier in the world. The facility cost was a little over \$3.5 million, diverting 8,000 tons (equivalent to a line of semi-trucks four miles long) of wood and sludge waste from the local landfill, and converting 36,000 Tennessee scrap rubber tires into energy annually. This will eliminate 2,500 tons of carbon emissions per year. The facility produces a leftover carbon-rich biochar that the city plans to sell to local farmers to fertilize crops as a potential new revenue stream. The plant also has the capacity to generate 1.8 million kilo-

watt-hours of electricity behind the meter, which has the ability to power 312 homes. .

Category: Environmental Education and Outreach

Winner: Keep Knoxville Beautiful, Knox County

Keep Knoxville Beautiful (KKB), founded in 1978 to help clean up the city prior to the 1982 World's Fair, is a locally-funded, non-profit, independent affiliate of Keep America Beautiful. In 2016, KKB accelerated their educational outreach programs by facilitating over 65 neighborhood, waterway and roadside cleanups, collecting over 36 tons of roadside waste and three tons of recyclables, and removing over 100 waste tires from roadsides and waterways. KKB facilitated and supported over 1,600 volunteers to work nearly 4,000 hours and mobilized their recycling trailer at seven public events. KKB reached nearly 400 students at 23

educational engagement presentations and presented as educational exhibitors at over 20 public events. KKB instituted four new programs in 2016 to engage more of the community.

These programs include "Trash Runs", which are geared toward rapid trash removal and the "Beautification Mobs" to create long-lasting visual enhancements to entrance corridors along interstates. KKB also bought a recycling trailer that provides an organized recycling receptacle for public events. The trailer is painted with mission specific messaging to facilitate education and outreach while providing a community service. KKB also added to their event list the Rocky Top Pickin' Party, which is a fall fundraiser with local musicians.

[For More information Click here](#)



Advancing Energy Efficiency in Wastewater Treatment Plants in Tennessee

Wastewater and drinking water treatment systems account for roughly 4% of energy use in the U.S. At the local level, almost 35% of municipal energy use occurs at these facilities, given that the pumps, motors and equipment used to treat water often operate around the clock.

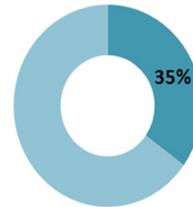
The high energy intensity presents an opportunity for saving money through energy efficiency and conservation. Electricity typically accounts for 25-50% of the operating budget for wastewater treatment plants.

In 2011, TDEC's Office of Sustainable Practices and Division of Water Resources, in cooperation with EPA, TVA, the University of Memphis, and the UT-MTAS created the Tennessee Water and Wastewater Energy Efficiency Partnership. This Partnership provides **free technical assistance** to selected wastewater treatment plants through onsite energy assessments and making no-to-low cost recommendations. Once implemented, these changes save participating utilities, on average, 19% in yearly energy costs. Realized savings motivate staff to find additional energy projects and help postpone rate increase for their customers.

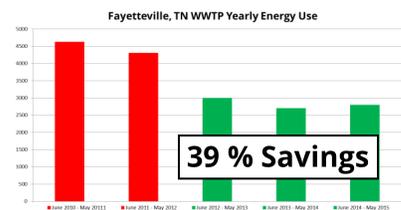
In 2015, the U.S. Department of Energy announced that TDEC would receive \$469, 947 as a 2015 State Energy Program Competitive Award to work alongside Alabama to further energy efficiency in wastewater treatment plants. The project will assist at least 24 total municipalities across both states through onsite energy assessments and provide implementation support. The team combines a wealth of technical experience and compliance knowledge. By harnessing this expertise, the Partnership fosters the exchange of best practices between states and systems in identifying and overcoming barriers to implementing energy efficiency.

For case studies and information, please visit: [TDEC Office of Energy Programs](#)

Water and Wastewater Treatment Plants Share of Typical U.S. Municipal Energy Budgets

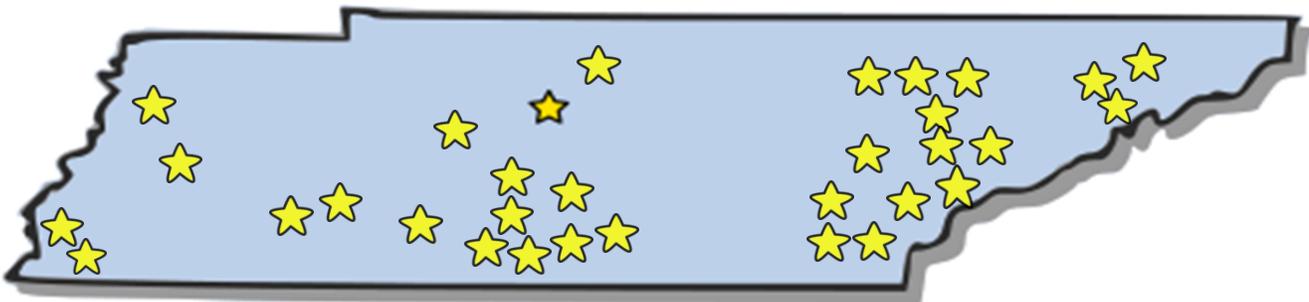


Source: Energy Efficiency in Water & Wastewater Facilities, U.S. EPA, 2013



19% Average Yearly Energy Savings

Participating Water and Wastewater Systems Across Tennessee



For more information, contact Ben Bolton, Office of Energy Programs, ben.bolton@tn.gov (615) 741-2994
 This material is based on work supported by the U.S. Dept. of Energy, Office of Energy Efficiency and Renewable Energy (EERE), under Award Number DE-EE0007226

TDEC Announces Cleveland and Franklin as Qualifying Local Program Stormwater Program Participants

TDEC's Commissioner Bob Martineau announced in May that the Cities of Franklin and Cleveland as the latest participants in the Tennessee Qualifying Local Program (QLP). The program aims to eliminate the duplicative efforts at the state and local level in the stormwater permitting process.

"We have seen much success with this program in improving water quality and simplifying the permitting process," said Martineau. "In other communities across Tennessee, this program has helped streamline the permitting process for municipalities and customers. We are excited to work with the (City of Franklin and the City of Cleveland) in a supportive capacity to bring residents the highest quality service possible."

The QLP is designed to build efficiencies in how construction stormwater permits are issued and improve water quality. The program allows a local Municipal Separate Storm Sewer Systems (MS4) program to

seek approval to become a QLP if they meet specific program criteria.

Some of the most significant benefits of a QLP include:

- ◆ A more streamlined and efficient process for managing construction stormwater by eliminating permit and review duplication at the local and state levels;
- ◆ Eliminating additional effort at the state level for construction site operators by providing only one set of requirements to follow; and
- ◆ A more effective construction stormwater program resulting in greater water quality protection.

After a three-month provisional period, it is expected that Cleveland's and Franklin's programs will reach full QLP status by August 2017. The provisional period will provide an opportunity to educate stakeholders in the construction and environmental fields on the aspects of this new status.

In order to achieve QLP status, an MS4 must demonstrate that its construction stormwater program meets or exceeds the provisions of the state's Construction General Permit (CGP). Once an MS4 is selected to participate in the QLP program, construction activities receiving permit coverage from that program are authorized to discharge under the state's CGP. The submittal of an application and related permit fee to the state is no longer needed, thereby avoiding duplication of the review and approval process at the state level.

For more information about TDEC's Qualifying Local Program or to submit an application for participation, please visit <http://www.tn.gov/environment/article/tennessee-qualifying-local-program>.

Municipalities interested in the QLP program may also contact Robert Karesh at (615) 253-5402 or Robert.Karesh@tn.gov.



Inaugural Tennessee Runoff 5K & Cheers to Clean Water Celebration— *Success!!!*

Continued from pg. 5

Attendees were then encouraged to get a refill from the volunteers at the beer tent who were still serving up quenching drafts like Flannel from Fanatic Brewing, Queen of Swords cider from Gypsy Cider Circus, or Schulz Brau's Hefeweizen, before turning their attention to the main stage.

The Pinklets, a Knoxville born sister-band, were ready to rock out with the crowd! They played some of their original music while folks enjoyed the tunes and atmosphere in the UT Gardens.

Additionally, kids were rewarded with cool tattoos and educational placemats for participating in the wetland scavenger hunt to search for dragonflies, songbirds, swamp sunflowers, and more.

Overall, 190 people celebrated clean water at the UT Gardens that evening. This event raised around \$8,400 for the Tennessee Stormwater Association.

A special thanks to the event's sponsors: [Erosion Supply](#), [Tennessee Concrete Association](#), [GRW](#), [Vaughn & Melton](#), [Foreterra](#), [CEC Inc.](#), [Fulghum MacIndoe](#), and [Sleep Number](#).

TNSA Education Committee Update

Continued from pg. 2

weeks for approval.

TNSA will work with instructors to provide materials, location, lunch (if needed) and any other needs for the course or workshop. Instructors will not be paid for their time, but are not expected to incur any costs related to the workshop or

course.

Classes will open initially to TNSA members at an affordable rate. Non-members will have access to classes if space is available at a non-member rate.

Visit: <http://www.tnstormwater.org/resources> to submit your proposal.

Thank you to the Education Committee for volunteering your time to put this program together. Special mention to David Carver, Stephanie Carlson and Tim Gangaware for heading up the efforts!

[David Carver](#), Committee Co-Chair

[Stephanie Carlson](#), Committee Co-Chair

Animal Agriculture Education Project

As part of EPA's efforts to protect water quality through voluntary collaborations with the animal agriculture sector, EPA is announcing the launch of the Animal Agriculture Education Project, a series of educational modules to increase understanding and knowledge among state and federal government agencies and the agricultural industry about water quality protection and animal feeding operations.

The Animal Agriculture Education Project includes multimedia features such as videos and virtual tours of farms and discusses topics including advances in technologies and production systems, measures to protect water quality, and issues involved in on-farm decision-making about manure management..

The Overview Module of the Animal Agriculture Education Project was developed with funding from EPA and with input from animal agriculture stakeholders. Additional modules

are being funded by the U.S. Department of Agriculture on conservation practices, and the National Cattlemen's Beef Association on beef production and manure management systems.

For more information on the Animal Agriculture Education Project [Click](#)




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Meeting your Public Education Minimum Measure: Join the Tennessee Association of Broadcasters: TAB Program!



TNSA is continuing to work with the Tennessee Association of Broadcasters (TAB) and Stormwater Consultant, Tom Lawrence, P.E., to provide the TAB Stormwater Education Program for the 2016-2017 year.

The program works with TAB to distribute professionally developed radio and television Non-Commercial Sustaining Announcements (NCSAs) to television and radio stations throughout the State. TAB has over 330 television and radio station members in Tennessee.

Due to TNSA's relationship with TAB, all participating MS4s will be provided with NCSA airtime reporting, which can be

included in your annual report as credit toward your stormwater education and outreach program. TAB states that the return-on-investment in the average NCSA program can deliver 4 to 10 times the annual expenditures! **Annual playtime this past year was equal to over \$500,000 in radio airtime!**

The cost of participation is based on the population within the MS4 (see table below). TAB uses the money received from TNSA for distribution, promotion, and tracking of the NCSAs. TNSA pools the money from the individual MS4s to contract with TAB for the program to negotiate additional airtime at lower costs.

Chris Masin, Shelby CountyMS4, enthusiastically promotes TAB: "Of course Shelby County MS4 would like to participate in the TAB program for 2015. The exposure that the radio ads give the stormwater program is invaluable. The effort level to receive TDEC accepted public education credits is as simple as approving the invoice and downloading the efficiently-sent, timely reports. And the amount of value that the airtime is worth compared to the minuscule cost is absolutely mindblowing. Count me in!"

If you would like to get an invoice for the TAB Program and receive monthly airtime reports, please contact Tom Lawrence (901-237-4819) or Charlene DeSha (615-926-7094).

Tier Level	Population	Yearly Rate	Tier Level	Population	Yearly Rate
1	25,000 or less	\$400	4	100,000 or less	\$1,600
2	50,000 or less	\$800	5	Greater than 100,000	\$2,000
3	75,000 or less	\$1,200			



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Purpose

The mission of the Tennessee Stormwater Association (TNSA) is to assist local government entities in their efforts to comply with State and Federal clean water laws and Stormwater Regulations promulgated by the Environmental Protection Agency and the Tennessee Department of Environment and Conservation; and through such assistance, to protect and improve the quality of the waters of Tennessee. This mission will be accomplished through TNSA members' exchange of information and knowledge regarding the design, construction, maintenance, administration and operation of stormwater facilities. The TNSA will promote the dissemination of information in stormwater control measures and the adoption of improved practices in stormwater administration.

Members

TNSA membership is composed of designated Municipal Separate Storm Sewer Systems (MS4s) including local governments (city and county), universities, military installations, and other entities such as TN Department of Transportation (TDOT). Associate members include environmental advocacy groups, non-profits, Tennessee State, sub-state or federal government entities consultants. Private sector membership is available to for-profit engineering, scientific and management firms or other organizations with an interest in stormwater.

EPA Releases Materials for Cyanobacterial Bloom Management in Recreational Waters

EPA has released a suite of materials states and communities can use to protect public health during harmful algal bloom (HAB) outbreaks caused by cyanobacteria.

Some blooms are capable of producing toxins, called cyanotoxins, which can harm humans and animals, affect drinking water sources and impact local economies. Public health officials and outdoor water recreational man-

agers can use EPA's online resources to develop a cyanotoxin monitoring program, communicate potential health risks to the public, and address HAB outbreaks. [For more information Click Here.](#)

'Economic instruments' webcast recording available

On June 8, the WEF Stormwater Institute presented the webcast, Working with the Market for Green Stormwater Infrastructure. The recording of the webcast is available on-demand and at no-charge until Sept. 10.

The webcast presents creative ways to raise the necessary capital

to institute those projects. It explored a suite of policy tools, known as "economic instruments," that deliberately work within the market. Speakers will focus on specific examples including incentives, rebate programs, trading and mitigation programs, along with policy barriers and

opportunities to widespread implementation of these approaches. [Read More Here](#)



Sustainable Materials Management: At Your Fingertips

Reduce. Reuse. Recycle. Those three simple tenets capture a whole world of improving our environment. But what are the best ways to handle each step? Where can individuals, businesses, communities, and states turn to find the answers?

Look no further than EPA's [Materials Management Wizard web application \(or "M-Wiz," for short\)](#). It puts a wealth of knowledge at your fingertips in an easy-to-use format you can tailor

to your specific needs. From an individual homeowner looking for tips on composting to site managers needing to handle tons of construction and demolition materials, users can use M-Wiz to find just the information they need to make plans and take action.

Anyone who has ever spent a few hours with some of the popular tax return software that is now widely available will recognize the guided format of M-Wiz. By

checking off a few boxes and responding to questions about the type of information you seek, you are quickly presented with information and resources to handle materials recovery.

Explore [M-Wiz](#) for yourself to see how EPA can help you and your community take "reduce, reuse, and recycle" to a whole new level, right from your computer.

