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 mkeser@ncsafewater.org
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**Membership and
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 nbanks@ncsafewater.org
 Focus Areas: NC Currents Submissions,
 Web Site Information (submissions, updates, etc.),
 eNews Submissions, Sponsorships, Membership

Engagement and Outreach Coordinator: REBECCA AGUIE
 ragui@ncsafewater.org
 Focus Areas: Awards, Public Education Committee,
 Water For People Committee, Students & Young Professionals
 Committee, Membership Support, GROW Event Coordination

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 Chair: Marianna Boucher - McKim & Creed
 Vice Chair: Steve Hilderhoff - Dewberry
Editorial Subcommittee:
 Tom Bach - City of Concord;
 Kelly Boone - CDM Smith;
 Marco Menendez - McAdams;
 Kara Meyers - CDM Smith;
 Amanda Murphy - Dewberry;
 Lauren Marion - WithersRavenel

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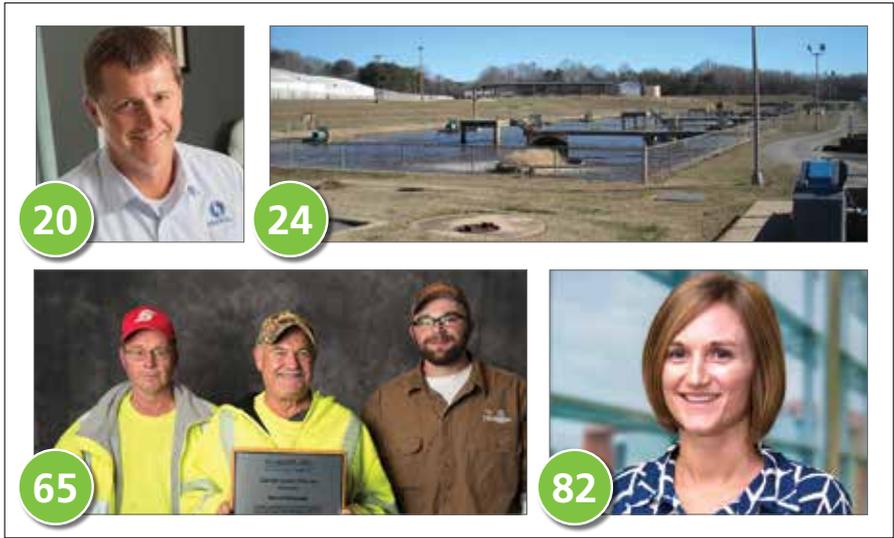
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Funding and the Value of Water

Angela Lee, Chief of Operations, Charlotte Water

The value of water is an interesting concept. How can one place a value on something that is so essential to our human existence? Can you imagine a life without water? While the limits of my imagination can't fathom a life without water, I submit that life would not exist without water.

We live in a country where 349 billion gallons of freshwater are withdrawn daily by over 68,000 drinking water systems. The most recent election has caused many in our industry to wonder whether funding for water/wastewater projects will remain at current levels. Regardless of the political climate we live in, the American Society of Civil Engineers has estimated that in the next 20 years, \$4.8 trillion will be needed to invest in water systems across the country. The possible lack of funding, coupled with the public's lack of understanding of water's value, poses a difficult environment for utility owners across the nation.

The Drinking Water State Revolving Fund (DWSRF), and the Water Infrastructure Finance and Innovation Act (WIFIA) are two programs developed to help communities with funding.

According to the EPA, the DWSRF program is a federal-state partnership to help ensure safe drinking water. Created by the 1996 Amendments to the Safe Drinking Water Act, this program provides

financial support to water systems and to state safe water programs. Since fiscal year 2014, North Carolina has received \$500,305,900 from this fund.

According to the EPA website, the WIFIA program accelerates investment in our nation's water infrastructure by providing long-term, low cost, supplemental loans for regionally – and nationally significant – projects. The WIFIA program can fund development and implementation activities for eligible projects, including:

- Wastewater conveyance and treatment projects that are eligible for the Clean Water State Revolving Fund (CWSRF)
- Drinking water treatment and distribution projects that are eligible for the DWSRF
- Enhanced energy efficiency projects at drinking water and wastewater facilities
- Brackish or seawater desalination, aquifer recharge, alternative water supply, and water recycling projects
- Drought prevention, reduction, or mitigation projects
- Acquisition of property if integral to the project, or if it will mitigate the environmental impact of a project
- A combination of projects secured by a common security pledge, or submitted under one application by a CWSRF or DWSRF program

While limited federal funding is available, many utilities rely on ratepayers to fund water systems locally. This further illustrates the importance of communicating the value of water, and making the connection between what customers pay and the services and product they receive. In a perfect world, the more we communicate the value of water, the more financial support we will receive to provide safe water. Since this is not our perfect world, systems must frequently find ways to manage and operate with a lack funding, and continue to provide water to citizens who may not recognize or understand that its value requires dedicated and well-trained professionals. Regardless of the political climate, funding available, or recognition from the public, we know that clean, safe drinking water and protecting the environment is our core mission.

NC AWWA-WEA is poised to be the best educational resource during these times. It takes all sectors of our industry to protect the valuable water we have. So, as we Water Industry Professionals (WIPs) communicate the importance of water, we must not forget that, fundamentally, there is nothing on the globe that is more valuable and impossible to appraise. [↗](#)

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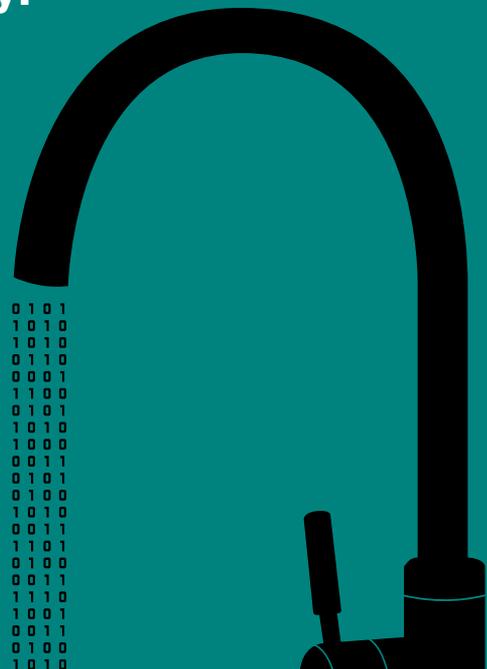


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“Perceived” Value

Catrice R. Jones, CAE, Executive Director

It is often said that beauty is in the eye of the beholder. The same can be said about value. The quantitative measurements of “value” are determined by information that can be written down or defined numerically. The qualitative measurements of “value” are more subjective because they are based upon an individual’s or group’s opinion on either quality or benefit of a product. I would describe this qualitative measurement as “perceived” value.

This issue of *NC Currents* is focused on the value of water and the funding struggles that ensue as a result. People often say, “water should be free,” which tends to raise the hair on the necks of industry professionals like us. The statement “water should be free” may feel like a slap in the face for all of the hard work that we put into providing clean and safe water for the public. Whether you are an engineer that designs treatment plants, an operator that repairs water main breaks, a customer service representative that interfaces with the public, a lab technician that tests water quality, a state inspector that monitors adherence to regulations, or a training provider, you are a part of a community of water industry professionals who know that water is NOT free. Although the statement “water should be free” may seem unfair, it does show that for many, the “perceived” value of water is not very high.

Everyone can agree that water is essential to life, but not everyone under-

stands what a life without water would be like. As residents of the United States, for the most part we are accustomed to having access to all the things we need and most of the things we want. As a result, we begin to take something as basic as access to clean water for granted. Generally, people only think about their water when rates

are increased, there is a drought, or there is a water quality issue. This means that people only think about water when something negative happens. Once that happens, the “perceived” value of water is negatively impacted.

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On larger scales, companies, utilities, and organizations are tackling this very topic. On the worldwide scale, campaigns such as the US Water Alliance's "Value of Water" provide information and toolkits that educate private citizens and politicians on the value of water. On local levels, cities provide water quality reports and informational flyers to their customers. Utilities take it a step further by providing tours to the public

where they give people a peek behind the curtain, and explain the processes behind providing clean water.

With all these resources available, you may wonder why people still don't have a higher perceived value of water. I challenge you to shift your thinking and instead ask, "What can I do to impact one person's perceived value of water?" Here are a few ideas:

- When an acquaintance says water

should be free, take the opportunity to explain your role in the process. When people can personalize an issue by seeing the time, energy, and pride their friend takes in the process, they may be able to understand why there is a cost. After all, would they like for you to discount the value of the job they do?

- Share triumphs and good news even in the face of negative news stories through your social media accounts. NC AWWA-WEA shares industry and organizational information on LinkedIn (www.linkedin.com/company/nc-awwa-wea), Facebook (www.facebook.com/ncawwawe), and Twitter (www.twitter.com/ncawwawe). Sharing information with your networks and contacts will broaden exposure for the water industry.
- Share information with your children's school or friends. The sharing of information could be as simple as giving the teachers resources for science lessons, presenting information to groups, leaving a copy of our *NC Currents* in the magazine stack at your doctor's office, or sharing information on scholarship resources. NC AWWA-WEA provides scholarships not only to college students and operators, but we also have opportunities for educators (www.ncsafewater.org/scholarships).
- Invite someone to attend a GROW event. These events are an informal way to introduce people to NC AWWA-WEA and foster a sense of community among our members. Attending a GROW event will expose attendees to the different types of people that make up the water industry and help them learn more about NC AWWA-WEA. Check our website to find a GROW event near you (www.ncsafewater.org/page/GROW).

While doing these things won't magically change perceptions overnight, if we each try to impact just one person, it may start a chain reaction. It will take time, but slowly you will hear fewer and fewer negative comments.

Let's all take an active part of sharing so that the "perceived" value of water can be improved! 

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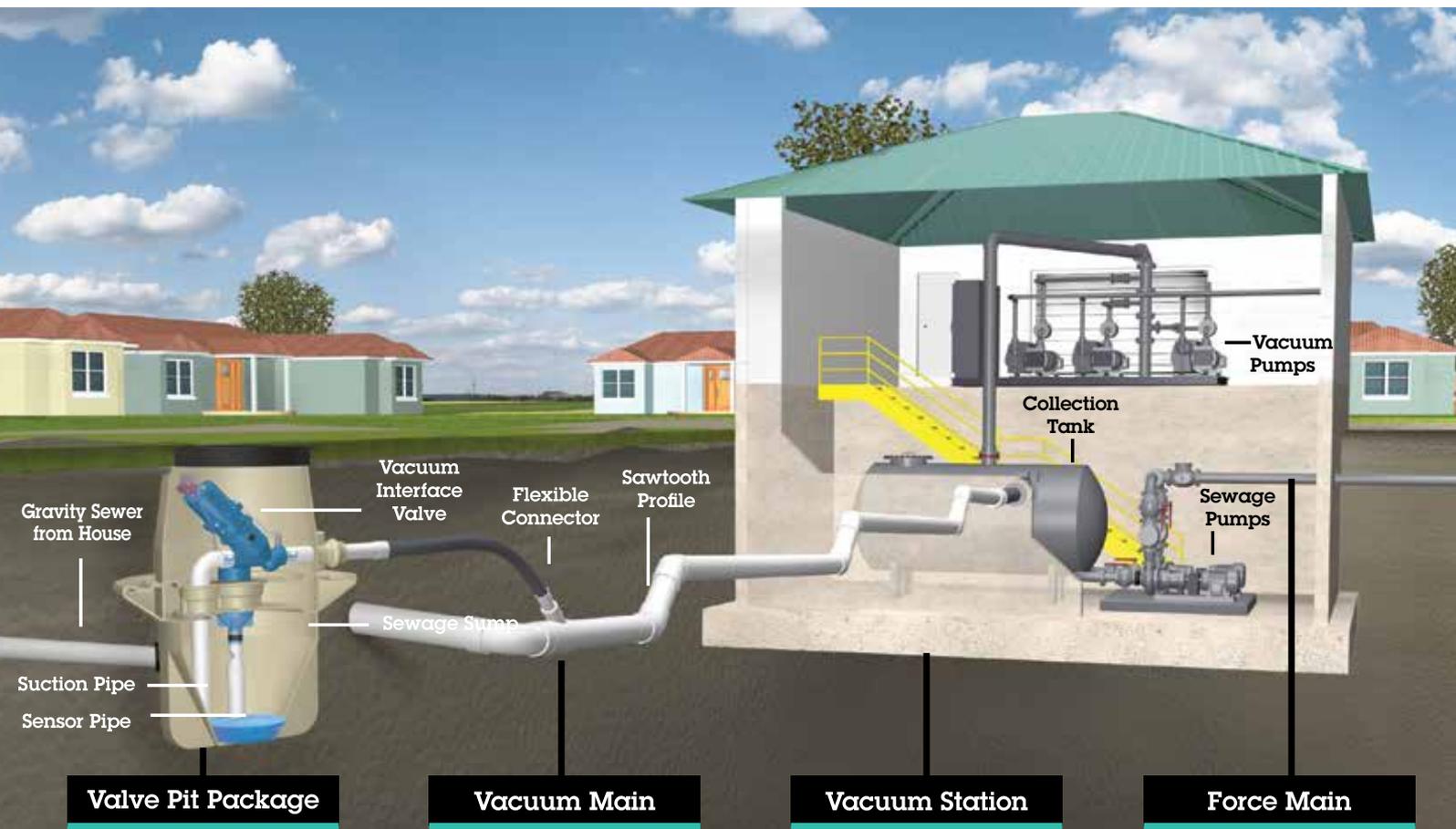


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betsy.drake@townofcary.org

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Phone: (704) 334-5348
btripp@wkdickson.com

TRUSTEE, Chuck Shue, PE
McKim & Creed
Phone: (704) 841-2588
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TRUSTEE, Carolyn Ross
Charlotte Water
Phone: (704) 432-3958
cross@charlottenc.gov

TRUSTEE, Tony Martin, PE
Charlotte Water
Phone: (704) 391-5130
anthony.martin@charlottenc.gov

TRUSTEE, Nick Dierkes, PE
Brown and Caldwell
Phone: (704) 373-7123
ndierkes@brwnncald.com

PROF WASTEWATER OPS REP,
Kenneth Stevens
City of Kinston
Phone: (252) 939-3375
kenneth.stevens@ci.kinston.nc.us

PROF WATER OPS REP, Chris Hill
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Phone: (252) 551-2066
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Water For People	Keller Schnier	(704) 342-4546	schnierkw@cdmsmith.com
Students & Young Professionals			
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Automation	Rick Riley	(336) 883-8588	rick.riley@highpointnc.gov
WW Collection & Water Distribution Systems	Mike Borchers	(336) 373-2494	mike.borchers@greensboro-nc.gov
Regulatory Affairs	Jaime Robinson	(704) 543-3279	jaime.robinson@ch2m.com
Residuals & Reuse	Jean Creech	(704) 301-4042	jgcreech@ci.charlotte.nc.us
Water Resources	Ruth Rouse	(919) 537-4214	rrouse@owasa.org
Risk Management	Elijah Williams	(336) 373-4632	elijah.williams@greensboro-nc.gov
Utility Management	Brian Houston	(704) 941-2110	bhouston@labellapc.com

Schools Coordinating Council

COUNCIL CHAIR:	Jonathan Lapsley	(704) 342-4546	lapsleyjs@cdmsmith.com
Wastewater Schools	Chris White	(919) 833-7152	cwhite@hazenandsawyer.com
WW Collection & Water Distribution Schools	Patrick Smith	(336) 333-6051	patrick.smith@greensboro-nc.gov
Lab Analyst	Debra Collins Batten	(252) 399-2494	dhcollins@wilsonnc.org
Plant Ops and Maintenance	Casey Ellis	(704) 875-6443	cjellis@charlottenc.gov
Professional WW Operators	Stephanie Scheringer	(706) 866-6726	stephanie@cityofgastonia.com
Wastewater Board of Education & Examiners	Melinda Ward	(336) 627-1009	mward@edennc.us
Water Board of Education & Examiners	Steve Hamilton	(919) 731-2310	steveh@waynewaterdistricts.com
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Portrait of



Melinda Ward: Raising the Bar

It should be no surprise to anyone who knows Melinda Ward that she was honored with the 2016 William D. Hatfield Award for her work as Wastewater Superintendent for the City of Eden. The award, which recognizes wastewater treatment plant (WWTP) operators for outstanding performance and professionalism, is a fitting tribute to someone who has dedicated her life to raising the bar in both plant efficiency and public relations.

When the price of electricity and gas started to rise sharply a few years ago, Ward made it her mission to find a way to reduce costs at Eden's WWTP. The amount of electricity saved by turning off the lagoon aerators during peak hours paid for the plant's first SolarBee® in less than a year. "It's been a great asset to the plant," she confirms.

A few years earlier, the plant had replaced its floating aerators with brush aerators, resulting in a surplus of dissolved oxygen while reducing the effectiveness of mixing in the lower half of the aeration basin. "It became obvious that we needed to use less aerator capacity," says Ward, adding that, with the way the system was designed, turning the aerators off would stop the mixing process.

Ward started looking into solar-power mixers, eventually obtaining a SolarBee® on a trial basis. "It had never been used in a wastewater plant in this capacity," she notes. "It doesn't actually mix the mixed liquor, but it keeps the solids in suspension." As a result, operators have been able to shut off the aerators during sunlight hours. As an added bonus, the SolarBee® helps moves the air further down the basin, to depths the aerators could not reach.

"The award, which recognizes wastewater treatment plant operators for outstanding performance and professionalism, is a fitting tribute to someone who has dedicated her life to raising the bar in both plant efficiency and public relations."

"We've started seeing better mixing and better treatment in the basin," says Ward, adding that the plant has since purchased two more SolarBee® units. A dissolved oxygen (DO) monitor installed at the end of the basin sends data to the SCADA system, ensuring operators turn on an aerator if levels fall below 1.5 ppm.

Ward co-wrote a paper on the project, which was presented at the NC AWWA-WEA Spring Conference and later at a WEFTEC conference in Los Angeles. "I've had several people from other plants call me about our experience to see if it could work for them," adds Ward. "It's not going to work for everybody, but it can be a useful tool for plants with basins like this that have problems with over-aerating."

If improving plant efficiency was not reason enough to recognize Ward's work, she is also heavily involved in encouraging better relations between plant operators and the public. A few years ago, she started writing a column for a local monthly paper to educate readers on subjects such as fats, oils, and greases, and how to prevent overflows. She has also visited schools to give presentations on careers in water and wastewater, and once set up a booth at the annual RiverFest to highlight what

the plant does to protect the river and how citizens can help out.

"I love giving tours of the plant as well," she adds, "and taking people around and helping them understand what we do." She enjoys, seeing the amazement on their face when they see the contrast between the influent and the crystal clear effluent coming out at the end.

If Ward is particularly passionate about the work she does, it is in large part thanks to the sheer depth of her experience in the industry. "I grew up playing at a wastewater plant when I was little," recalls Ward, noting that her father, Lynwood Sessoms, was superintendent of the Tarboro WWTP. "I would go with him to collect samples." Later, she witnessed the conversion of the plant to secondary treatment, as well as the second upgrade to nutrient removal.

With this degree of early exposure, Ward should have been a shoo-in for a career in water and wastewater, but that is not where she initially headed. "I decided to be a banker," she explains, "but of all the different classes I took, I didn't like any of them."

Fortunately, while in college, she also worked part-time at the construction site during the Tarboro plant upgrade.

Ward started in the office with the engineer and construction manager, then during the winter and summer months, she worked directly with the construction. "I got to see the plant from all different aspects," she recalls. "Me and a couple of other college students got the odd jobs that nobody else wanted. It was fascinating. I had seen a lot of stuff, but never actually seen it empty."

It was a visit to an NC AWWA-WEA conference in Asheville that finally sealed the deal. "I got to walk around and talk to all the vendors," she recalls. "I was fascinated by everything. Then, after working at the construction site and seeing all the different aspects of the industry, I decided to declare a major in Environmental Health."

Her coursework eventually led to an internship at both the water and wastewater plants in Tarboro. "My father told me never to work for a municipality, but that's where I ended up for my first job," laughs Ward, noting that she started her career with the City of Rocky Mount. "I've been working with municipalities ever since."

She explains that working for a municipality gives her a greater sense of protecting the environment. Ward started her career at the water plant and distribution system as part of Rocky Mount's cross training. Within a year, she was relocated to the wastewater plant as lab supervisor. "I got a lot of variety," she recalls.

Shortly after becoming lab supervisor, she met her husband, Michael Ward, who had also done an internship in water and wastewater at Rocky Mount around the time when she started. He relocated to Clinton, and after they were married, she joined the nearby Newton Grove WWTP as Superintendent. Because it was a small plant with unique challenges, she also acted as the operator. "There really were no industries in town," explains Ward, "but sometimes you would have upsets at the plant that were hard to track down. If it ever rained in the middle of the night, there would be all kinds

of problems when I came in the next morning. I learned a whole lot." For many years afterward, she would wake in a panic whenever it rained.

She left Newton Grove after her first son was born, and a year later accepted a part-time position supervising a well system once a week for the town of Turkey. Then in 2001, the family moved to Henry County in Virginia, where Ward stayed at home raising her sons before eventually going back to work in the lab and as an operator at the Martinsville WWTP in Virginia.

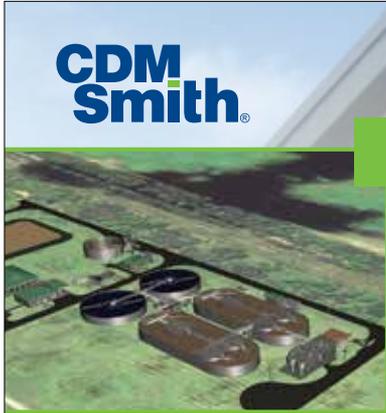
In 2008, she became Superintendent for the City of Eden, NC, just across the Virginia border. "My wide variety of experience prepared me well for this job," she reflects.

After being in Virginia for so many years, Ward had lost touch with the industry in North Carolina. In an effort to reconnect, she decided to volunteer for the NC Wastewater Board of Educators and Examiners (WWBOEE). "I thought it

was a great way to start off," she says.

She then joined the Central Region's Professional Wastewater Operators Committee (PWOC) and served as chair for three years, before becoming the vice-chair for the committee at the state level. She notes that the PWOC offers operators excellent opportunities to see a wide variety of processes by visiting other plants. "It's a great learning experience for everybody," says Ward.

Recently, she started a term as chair of the WWBOEE. She also joined the Risk Management Committee, for which she has become one of the "safety experts," thanks to her extensive involvement with safety issues for the City of Eden. A few years ago, the City invited the Occupational Safety and Health Administration (OSHA) to the plant for a consultation on areas that needed improvement. Success in addressing safety issues has earned the City of Eden's WWTP certification with the Safety and Health Achievement



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“Ward is constantly reading industry literature to keep abreast of the latest innovations and technology. Of course, she also takes advantage of every professional development opportunity.”

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In fact, Ward is always looking at different ways to improve the plant, whether it be in terms of safety or operational efficiency. A few years ago, she spearheaded a clarifier rehabilitation project that saw all the weirs and baffles replaced with fiberglass. “When they took the clarifiers down, they fixed everything that needed to be tweaked and adjusted,” she says. “We utilize our help as much as possible. If somebody is working in something, they are going to fix everything they can find before it breaks the next time.”

When Ward first arrived at Eden – the very day her father retired from water and wastewater – the plant, rated at 13.5 mgd, was running at 6 mgd. A year later, the City’s largest industry closed shop and volume was reduced to between 3 and 4 mgd. The team figured out a way to run only half the plant by sending everything through one of the two basins, saving the other for backup during extremely high flows. This allowed maintenance to be performed without bringing the plant offline. “I tried to take advantage of every opportunity I could find,” says Ward. “It’s worked out because the plant has been running really well now – maybe not according to textbook, but we have played with it and figured out what works best. Then when everything is going great, I look for other things to improve.” She is currently working with engineers to find other ways to improve the plant in anticipation of starting even more upgrades.

At the same time, Ward is constantly reading industry literature to keep abreast of the latest innovations and technology. Of course, she also takes advantage of every professional development opportunity. Last year, she even brought her teenage son to the NC AWWA-WEA Annual Conference in Raleigh, carrying on a tradition started by her father so many years ago.

It was more than fitting, then, that her father was in attendance when she received the William D. Hatfield Award from the NC AWWA WEA. “I was fortunate to have a great example,” says Ward. “I could not have chosen a better career.” 



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A large, yellow, three-bladed propeller mixer assembly is shown against a blue background. The propeller is mounted on a grey motor and is attached to a metal frame. The blades are curved and have a ribbed texture. The motor is a cylindrical unit with various electrical connections and a cooling fan.

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Portrait of



Tyler Highfill: Focus on Service

In the early years of Highfill Infrastructure Engineering, P.C., Tyler Highfill and his business partner Ray Cox decided to focus on being the best possible water and wastewater design firm in the Southeast. To do this, they knew they had to act as problem solvers, and provide outstanding technical resources to their clients. “In addition to being highly technically capable,” explains Tyler Highfill, “what we were most passionate about was providing service, and understanding the needs of our clients to a depth and breadth that would enable us to provide a high level of responsiveness to their needs.”

Since then, service has continued to be the guiding principle for both Highfill and the company, attracting like-minded people to work for HIGHFILL. “All of our people are very involved in service



Photo credit for both photos – Amber Tindall, Amber Ocean Photographic.

outside our profession,” Highfill points out. “So it’s probably no coincidence that they enjoy providing service, because it’s ingrained in who they are.”

For instance, one member of the team spent some time in Guatemala on a service project, and another spent six months in Ecuador helping with water projects, while yet another volunteers at a soup kitchen. As for Highfill, outside of the office he devotes his time to coaching youth baseball as a platform for providing children with guidance and mentorship.

Highfill offers a glowing review of the team in his office, and the admiration is mutual. A request to describe the founder and President of the company elicited words such as “thorough” “appreciative,” and “sincere”, and phrases such as “driven yet empathetic,” “leads by example,” and “values everyone’s opinion.” Another member of the team described Highfill as, “a forward thinker who is always one step ahead of the game.”

It’s no wonder then, that the NC AWWA-WEA approached him to chair the newly-created Career Ladder Task Force from 2014-16. “It’s an exciting initiative,” says Highfill. “It has resulted in the creation of an organized group of training modules that will help operators advance their careers, which will in turn help employers and our entire industry.”

Highfill has found that helping members advance in the industry is a common thread running through all NC AWWA-WEA activities. Highfill first joined the AWWA in 1995, shortly after graduating from NC State University with a Master’s Degree in Civil Engineering. At the time he was working in the North Carolina office of Piedmont, Olsen & Hensley – later taken over by Arcadis.

Over the years, Highfill served on a wide variety of committees, including Computer Applications, Local Arrangements, Collection and Distribution, and Government Affairs. He was a member of the Board of Trustees for two years and a WEF Delegate for three, which also placed him on the national WEF House of Delegates. “I think when you get involved in some of these organizations, you get more out of it than what you put in,” notes Highfill, adding that NC AWWA-WEA brings members in contact with many different areas of focus. “When you step out of your office into a new environment, you see things from a different angle. I helped out with NC AWWA-WEA and I know they helped me a lot too.”

He points out that, along with opportunities for networking with other members of the industry, volunteering with NC AWWA-WEA is also an excellent way to develop abilities such as leadership, time management and presentation skills. “The first time I ever looked at a profit/loss statement was sitting on the board of directors of NC AWWA-WEA,” recalls Highfill. “That was long before I ever thought that I would be running a business.”

Indeed, these skills proved to be invaluable when he launched HIGHFILL in 2004, with a focus on drinking water, wastewater, and stormwater. Today, the company has grown from a one-person operation to a team of 18, with offices in Cary, Wilmington, Winston-Salem, and Columbia. What has *not* changed is the company’s commitment to serving clients, colleagues, and the community.

HIGHFILL offers the personal touch of a small firm combined with the technical knowledge and capabilities needed to

serve some of the larger cities and towns in North Carolina. "One of the reasons we made it through the recession fairly well is that we had built these relationships of trust," explains Highfill, noting that 90% of their clients are repeat customers. "I think it's a measure of whether or not we're serving them well."

For instance, several clients have renewed their 'on-call contracts' multiple times. Instead of tendering for every project, some communities will contract with a pool of companies, turning to them on an as-needs basis for specific work, such as plant improvements, pipeline extensions, and pump station renovations. "Being able to continue doing that kind of work is indicative of client satisfaction," Highfill reiterates. "If you don't provide a high level of service, you don't get work within the on-calls and you don't get renewed."

The sheer variety of projects has enabled members of the HIGHFILL team to develop a wide breadth of experience,

"I want to build a sustainable company, with very dedicated, hardworking employees that also recognize the importance of balancing work and family."

which management has encouraged them to share at conferences and events. In recognition of the leadership role Highfill has played in encouraging this level of involvement with the industry as a whole, the NC AWWA-WEA has recognized him with numerous awards, including the Kasey Monroe Outstanding Service Award and, most recently, the William D. Hatfield Award. He is also a member of the 5S Society.

Outside the industry, Highfill continues to be heavily involved in coaching youth basketball and baseball. In 2012, he led his younger son's team to the all-star

baseball world series, joining teams from all over the world. His older son is playing college baseball this year, and Highfill is looking forward to travelling to different venues and watching him pursue his dreams.

He notes that the other members of his team are involved in similar activities with their families. "I want to build a sustainable company, with very dedicated, hardworking employees that also recognize the importance of balancing work and family," he says. "When they find success, it feels good to know that you had a role in helping them get there." 

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The team

Plant Spotlight: Mebane Bridge Wastewater Treatment Plant

By Melinda Ward, Wastewater Plant Superintendent, City of Eden

Edited by John Rutledge, Smart Cover Systems (NC AWWA-WEA Plant Operations & Maintenance Committee)

General

Located in the central part of the state, just south of the NC/VA state line, the City of Eden is the largest city in Rockingham County. The City of Eden was incorporated in 1967 when three other towns merged. It has the nickname “Land of Two Rivers” because of the Smith and Dan Rivers flowing together on the south side of Eden. In 2011 the city received one of the All-America City Awards.

The City of Eden currently operates one WWTP that services a population of 15,488. It was put into operation in 1967 and is publicly owned. The WWTP currently employs a total of nine staff, consisting of 13 operations and

Table 1

The key treatment processes include:

- (2) Aeration Basins with twelve 20-HP Brush Aerators each
- (4) Clarifiers
- (1) Wet well/Dry well recirculation station #1 with three 1550-GPM centrifugal pumps.
- (1) Wet well/Dry well recirculation station #2 with three 3125-GPM centrifugal pumps.
- (2) 800-GPM Submersible Waste Activated Sludge Pumps.
- (1) Chlorination/Dechlorination System
- (1) Aerobic Sludge Basin with four 20-HP Brush aerators
- (1) Wet Well/Dry Well Waste Sludge Pumping Station
- (1) Belt Filter Presses
- (1) Sludge Storage Tank – 50,000-Gallon Capacity



Aeration Basin



Fine screen

maintenance staff and one laboratory staff, and has an annual operating cost of approximately \$1.5 million.

The plant's effluent discharges into the Dan River, part of the Roanoke River Basin. After leaving the WWTP, the Dan River flows back into Virginia and then eventually to the Kerr Reservoir on the Roanoke River. The WWTP has a design flow of 13.5 mgd and operates with an average daily flow of 4.5 mgd. Peak flow is 14 mgd.

Basic Treatment Processes

The city has 20 pump stations that pump all wastewater to the plant. Currently, the Mebane Bridge plant operates at one-third its capacity and is using half of the plant for treatment, with the other half ready for backup or peak flows. The plant has mechanical bar screens to remove larger inert material and a grit removal system following the bar screens. A fine screen has been added after the grit removal system to

further remove any material that is missed by prior treatment systems. Extended aeration using activated sludge is the next process to reduce and remove biochemical oxygen demand. It consists of 12 brush aerators per basin and three SolarBees® for mixing, allowing the operators to turn off part of the aerators during peak power demand. The sludge is separated from treated water by circular clarifiers. Collected sludge or biosolids are wasted to the aerobic digester or returned to the aeration system. The biosolids from the digester are then dewatered and land applied on permitted sites. Treated water to the effluent leaves the clarifiers and is disinfected with chlorine and then dechlorinated. The treated effluent is then returned to the Dan River, meeting all state permit discharge requirements.

The last plant expansion was in 1992. There are no plans for expansion, but the staff is planning to redo the solids handling section of the plant and do away with the digester.

The plant has limited automation through SCADA. Alarms for high water near the bar screens are monitored along with low DO in the basins. Aerators can be controlled on and off in the aeration basins. Influent and effluent flow can be monitored along with the equipment run time.

The primary sources of influent are domestic, due to the decline of textile manufacturing in the area. There is one textile plant left, along with a chemical recycling plant, a plastic recycling plant, and a small metal finishing boiler plant.

Solids Treatment

Currently, the plant has one digester that handles all of the wasted sludge. It is original to the plant and was not part of the 1992 upgrade. The plan is to eliminate this basin and run all of the wasted sludge through a Clean B system before being dewatered.

The biosolids management program includes a 2-meter belt filter press (BFP) that dewateres all of the sludge. It is then stored onsite on a covered storage pad until it can be land applied on permitted fields in the area. All dewatering and land application is handled by Synagro. The entire system was built through a design-build-operate contract.



Headworks



Plant effluent



Solids handling facility

Disinfection

The plant's disinfection system utilizes chlorine gas for disinfection. The system includes two 500 pounds per day (PPD) flow proportional gas feeders, one 500-PPD manual gas feeder and three baffled chlorine contact basins. Before being released to the river, the effluent is dechlorinated with sodium bisulfite. A flash mixing chamber with a turbine-type mixer provides the required mixing.

The operations personnel have a very active risk management and process safety plan to monitor the safety issues associated with having gas chlorine onsite.

Challenges and Unique Features

The plant operations team faced a difficult problem when it lost its largest industry, one that contributed 3.6 mgd, which was half of the plant's flow. Operations had to quickly figure out how to adjust treatment in a plant with very little flexibility. They were able to use this adjustment period to get the basins cleaned out and the clarifiers

rehabbed while there were still funds available. They have still had to make adjustments during low flows, but they are able to handle high peak flows from rain events with no issues.

One of the most unique or interesting things about the facility is the SolarBee® mixers. They are the only ones in the state that are used for mixing assistance in an aeration basin. A number of trials were performed to address this issue, and it has proven to be a huge savings to the electrical budget by providing flexibility to turn aerators off for several hours every day.

Personnel

The WWTP offers personnel development programs that encourage cross training for all employees in any area of interest.

The plant personnel includes five Grade IV, one Grade III, two Grade II, and one Grade I operators. In addition to this, three have a pretreatment license and three have certifications in lab analysis, one in maintenance tech, and one in

land application. As well, the superintendent has B Surface, B Distribution, and Collections II certifications. One member of the staff is cross-trained at the water plant and one is working on his backflow/cross connection and collections certifications.

The plant's safety and health program personnel have been Safety and Health Achievement Recognition Program (SHARP) certified through the NC Occupational Safety and Health Administration (OSHA) for the past five years. Operators rotate terms on the City's Safety Committee and assist with updating the Safety Manual. They are also active in keeping process safety manuals up to date.

Awards

- George W. Burke Safety Award
- Melinda Ward, William D. Hatfield Award

Contact Information

Melissa Ward,
Wastewater Plant Superintendent
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THEME LEADERS: STEVE HILDERHOFF (DEWBERRY), TOM BACH (CITY OF CONDORD), AND KELLY BOONE (CDM SMITH)



OUTLOOK ON THE FUNDING LANDSCAPE: IS IT ROCKY OR SMOOTH SAILING?

By Angela G. Mettlen, WK Dickson

It is estimated that a minimum of \$17 billion to \$26 billion will be needed over the next 20 years to keep North Carolina's water and wastewater systems in a state of good repair. But where will this money come from? Water utility administrators must carefully weigh the financial alternatives available to them – one of which would be government funding. However, navigating the plethora of funding offered throughout the state and federal governments is an ever-changing landscape.

We all remember the days when significant grant funds for infrastructure projects were more plentiful than they are now. In fact, many of our rural water and wastewater systems were initially funded through Farmers Home/US Department of Agriculture with a minimum of 75% in grant dollars. Those days are gone. Looking at that same funding source today, the average grant award for infrastructure projects is generally around 25-35% of project cost, but usually only available for those located in economically-challenged areas. In recent years, North Carolina has had more state funding for infrastructure

than most other states, as provided by the 1998 Clean Water and Natural Gas Critical Needs Bond Act and the more recent 2015 Connect North Carolina Bond Act. However, the economic downturn of 2007-2008 changed things for everyone. Utilities began to look at taking care of existing infrastructure rather than installing infrastructure extensions, and they also began to take a more critical approach toward rate setting. Customers began to use less and less water in order to save money and this impacted utility revenue. State and federal governments also had to tighten their belts, which resulted in less grant funding, outside of the initial stimulus spending, and made receiving funding more competitive. Everyone was faced with having to do more with less and having to evaluate how to make the available dollars go further. Yet, the infrastructure needs did not go away.

Since 2015, a significant change in how government funding is administered has occurred in our state. As a part of *SL 2015-241*, changes to *NCGS 159G* (Water Infrastructure) were made to require affordability parameters to be examined in

determination for receiving grant funding through the state funding programs administered by the NC Department of Environmental Quality's Division of Water Infrastructure (NC DEQ DWI). This is a shift in how grant awards will be determined for the foreseeable future. The goal of the affordability criteria is to better target state grant funds to those entities that demonstrate the most need and can least afford the project, while maximizing the use of state funds. While population and economic factors are still the basis for determining initial eligibility, they are no longer the only factors. These new criteria use a sliding scale for the maximum amount of grant funds for a project, based on the ability of the applicant to cover the cost of a project with existing revenues, as well as their current rates and future debt service per connection. The bottom line of these changes is that utilities that have long relied primarily on grant funds to complete major infrastructure projects and who have kept their rates low will most likely not receive significant amounts of state grant funds. The utility administrators of these systems,

along with their local elected officials, will have to make some hard decisions and begin to educate their customers on the need for rate increases and for taking on debt to keep their water and wastewater infrastructure sound. State officials do recognize that there will be some systems that cannot take on this financial burden, and they are working on developing a 'troubled system protocol' in order to deal with such cases.

The 2016 North Carolina Water and Wastewater Infrastructure Master Plan, completed by the NC DEQ DWI includes all of this in great detail and provides an in-depth list of tools and resources available for utilities to navigate this new funding landscape, while providing some insight into the future.

Even though less than 10% of North Carolina's infrastructure needs can be met through the use of grant funds, the outlook is not all doom and gloom.

Opportunities still exist to secure grant funding, especially where economic development is involved. However, utilities must become less reliant on these outside sources and look to fund these improvements through rates, loans, public-private partnerships, and other non-traditional approaches. The key to being able to do this is adequate planning and management of infrastructure systems. An investment in knowing what you have and when you need to replace it will allow both utility administrators and local elected officials to effectively budget for and plan on how they will fund these improvements. It is a shift from reactive utility management to proactive utility management, which will allow these leaders to target those projects or needs that would be best suited for, and have the best chance of, securing grant funds.

The saying goes that nothing is constant except for change. This holds true for infrastructure funding. However, a utility that effectively manages its infrastructure and understands its funding needs can be less affected by those changes. The lesson here is that the utilities that do this effectively have more control of their future and are not at the mercy of the changes made to state and federal funding programs, but rather position themselves to take advantage of them.

ABOUT THE AUTHOR

Angie Mettlen, program manager for WK Dickson, has spent her 25-year career working with local government on a wide variety of infrastructure projects. She is particularly skilled in all aspects of funding and has assisted clients throughout the Southeast in securing over \$100M in funding for infrastructure improvement projects. [NC](#)



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THE CANARY IN THE WATER PIPE

By Linda Vaughn, Linda Vaughn, Inc.



Each month when I receive my Chatham County Water Bill, I consider it the best bargain of the month. The amount? Twenty-nine dollars – yes, \$29 is on average the amount I pay each month for clean, fresh, treated water delivered to any of the nine taps in and around my home. It's not that Chatham County has unlimited funds for its infrastructure and plant; the fact is they probably need every nickel they can get their hands on, considering the phenomenal growth taking place in our area. So, why is the rate so low? Per the University of North Carolina's (UNC) Environmental Finance Center, Chatham County's rates are high in comparison to other water utilities in the state. Chatham County charges \$50 for 5,000 gallons of water, while the median cost in the state is \$32.00.

To a large degree, low water rates are related to the public's perception of the value of clean water. In other words, people don't value water – you know, we often hear, "water is supposed to be free." The words that immediately come to mind, but that do not pass my lips are, "Well, put your buckets out and catch all the free rainwater you can – that's free water. The water you have delivered to your tap every hour of every day is a product. A supply has been identified, a plant and distribution system has been built, chemists and operators have worked to treat and test the water. Then it is stored and pumped to your home for on-demand use. That's what you are paying for!"

By way of comparison, my Verizon bill averages \$105 per month, my Time Warner bill is about \$125, my gas heat averages \$135 a month, my electricity is \$110, and my health insurance is \$280. If I were to prioritize these services, I would place water first, then electricity, health insurance, gas heat, cell phone service, and finally cable TV and internet would follow. The good news is that I don't have to make those choices. However, if I had to make choices I might appreciate the good value of the water service I receive from Chatham County.

But would I pay more for water service? ABSOLUTELY! If my water bill were \$100 per month rather than \$29, I might do the standard grumble that most people do whenever the price of something increases, like gas or sugar or coffee. Remember those? In a month or two I would accept the increase, pay the bill, and not think anything about it because I need clean water to live – to drink, bathe, cook, clean, and to water my garden and occasionally wash my car.

So how do you, as a utility executive or board member, determine whether or not you need to raise rates and make a convincing case for the increase? The answer is to focus on providing the best quality water possible rather than to maintain low rates, and then to tell your story every chance you get. We need to do a better job of getting our infrastructure story out to customers. For those of you who have never seen

the Penn State Public Broadcasting documentary, *Liquid Assets: The Story of Our Water Infrastructure*, I encourage you to watch it and spend an hour and 23 minutes learning about our failing infrastructure.

You will view the infrastructure that is currently in the ground and be reminded that it was put there 50, 75, or even 100 years ago, largely paid for by either federal grants or low-interest loans. For years, these pipes have served our communities well, but we, as utilities, have not included in our rates the repairs or replacement costs that are now needed for this aging infrastructure. In many cases, when budgets were being developed, we delayed inspections, repairs, and replacements just to keep rates from increasing. It is almost as though we have operated under the assumption that the pipes were put in the ground for free or at little cost and that if repaired and maintained just a little, they would last forever. Not a good plan!

It is not only true for pumps and pipes, but also for treatment plant processes. Renovating and upgrading treatment plants is expensive. So it has been tempting to just keep operating as we always have and try our best to meet the state testing requirements. It was heartbreaking to read the article, *Flint Water Crisis: What Happened and Why?* in the December issue of the American Water Works Association's Journal. The authors do an amazing job of explaining

the step-by-step treatment processes that resulted in the delivery of water containing high levels of lead to residents of Flint, Michigan.

It makes me sad and angry to think about all the children who were given water containing high amounts of lead by unsuspecting parents, while community leaders and water company officials ignored the facts and repeatedly claimed that the water was safe to drink. The referenced article states that “many warnings and concerns were voiced regarding the use of the Flint River as a community water source.” But those warnings were ignored and, “after failing to come to an agreement on a short-term contract with Detroit Water & Sewer Department, Flint decided to use water from the Flint River and treat it.” It was all about the money and the fact that the people responsible for protecting the citizens of the community were so concerned with cutting costs, making a profit, and keeping the rates low, that they sacrificed their community’s children, many

of whom have experienced growth and development problems. Lead poisoning is not something for which you take an antibiotic for 10 days and its gone – it’s life-changing.

I’m not suggesting that any water utility in North Carolina would act so irresponsibly, but I do think that many of you will agree that, at budget time, there is pressure by your governing board, council, or whomever to submit a budget that does not include a rate increase or only includes a very modest one.

Why do we wait until there is a crisis to communicate? Do you think the people in Flint, Michigan would have been willing to pay higher rates and continue the service with the City of Detroit had they known that the choice was safe water from Detroit or use of a variable water source and treatment by a plant that had not been in full operation since 1967? I have no doubt that the people of Flint, Michigan would have paid more for their water had they been informed.

Water is a valuable resource and it is worth as much or more than any other utility service for which we pay. I challenge you to make 2017 the year that you do a better job of educating your customers about their water, and about what it takes to operate a utility both in terms of chemists, engineers, planners, operators, field staff/personnel, and customer service staff and administrators.

ABOUT THE AUTHOR

Linda Vaughn is a communications and business process consultant with over 30 years of experience in the water industry. With an undergraduate and graduate degree from UNC at Chapel Hill and Duke University, professional certifications as a Project Management Professional and Marketing Professional, she is recognized as a subject-matter expert in customer service. She is the President of Linda Vaughn Inc, located in Pittsboro, North Carolina and can be reached at linda@lindavaughninc.com. 



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NORTH CAROLINA'S STATEWIDE WATER AND WASTEWATER INFRASTRUCTURE MASTER PLAN: THE ROAD TO VIABILITY

By Francine Durso, PE, Senior Project Manager, N. C. Division of Water Infrastructure and
Kim H. Colson, PE, Director, N. C. Division of Water Infrastructure and Chair, State Water Infrastructure Authority

Clean, safe water is needed by every citizen and business in North Carolina, whether for drinking and cooking, or for industrial and manufacturing purposes. There is no more basic infrastructure need than the constructed systems that clean and transport this irreplaceable resource.

The long-term viability of any critical infrastructure system, no matter how resilient and sustainable it is, will ultimately rely on the human and organizational stewardship the infrastructure system receives.¹ Infrastructure investments that are deferred year after year result in growing infrastructure deficits. The owners of utilities and other water professionals must be prepared to invest in their economic future by taking the steps needed to address infrastructure challenges.

A primary challenge is promoting an appreciation of the true value of water and water services, and water's role in the social, economic, public, and environmental health of the community.²

THE VALUE OF WATER INFRASTRUCTURE

An understanding of the value of water can be improved by starting to communicate the concept in straightforward language to governing boards, ratepayers, and stakeholders. One key is to explain the fixed costs that must be covered by a utility, regardless of how much water is used or wastewater is treated. These costs usually include:

- Modernizing systems to become or remain competitive for economic growth
- Renewing or rehabilitating aging infrastructure
- Replacing infrastructure before it reaches the end of its useful life to avoid excessive maintenance costs and catastrophic failures
- System operation and maintenance to prolong the life of existing infrastructure
- Utility administration

As utilities ask their customers to invest in these needs, they must in turn be

able to explain how the investment will provide actual benefits to the community.³ Some utilities are becoming more transparent about the full cost of utility services by showing line item charges in water and sewer bills, such as:

- Water/wastewater infrastructure replacement charge
- Water/wastewater usage
- Water/wastewater operations/administration

Utilities seek to improve customer communication by clearly identifying the services for which they charge and itemizing the many costs associated with operating a utility that are not directly related to the gallons of water used and wastewater discharged.

When a utility includes charges for solid waste, recycling, stormwater management, or other city services in its "water bill" – even if identified separately – customers may unfortunately view the entire bill as the cost they are paying for water. This is also a challenge when explaining the true cost of water.

**ADDRESSING THE CHALLENGES:
THE STATE WATER
INFRASTRUCTURE AUTHORITY**

In 2013, the North Carolina General Assembly created the State Water Infrastructure Authority (Authority) to assess the state’s water and wastewater infrastructure needs, the role of the state in funding needed infrastructure, and the funding programs currently available to local governments and utilities.

**VISION
FOR THE FUTURE**

The state will be best able to meet its water infrastructure needs by ensuring individual utilities are, or are on a path to be, viable systems.

The Authority recognizes that the state’s most important role related to water and wastewater infrastructure needs is to foster the long-term viability of individual utilities.

The Authority’s approach to assisting water utilities is presented in “North Carolina’s Statewide Water and Wastewater Infrastructure Master Plan: The Road to Viability.” (<http://portal.ncdenr.org/web/wi/home>)

The Master Plan applies broadly to owners and operators of water and wastewater utilities and systems that serve the public. The Authority’s goal is for utilities to:

- Recognize that users and beneficiaries of water infrastructure must pay, to the greatest extent possible, for the cost of operating, maintaining, and renewing that infrastructure
- Be proactive in the management of water infrastructure by understanding the condition of infrastructure, identifying the most critical components, and establishing prioritized long-term renewal and modernization plans that promote transparent decision-making with customers and stakeholders

- Establish financial plans that enable the utility to fund both operation and maintenance, as well as long-term infrastructure renewal, without long-term reliance on grant funds

Best practices in utility management are essential for viable utility systems that are robust in the three key integrated focus areas, shown in **Figure 1**.

- **Infrastructure Management** – By taking proactive approaches to enable the right investments to be

made in the right projects at the right time, taking into consideration life-cycle costs and risk management

- **Organizational Management** – Through governing boards (elected officials, appointed officials, and owners), understanding the long-term nature of water/wastewater systems and prioritizing the financing and completion of the most critical infrastructure projects
- **Financial Management** – Through sufficient revenue generation to fund infrastructure construction,

FIGURE 1

Best practices in utility management are essential for viable utility systems that are robust in three key integrated focus areas.

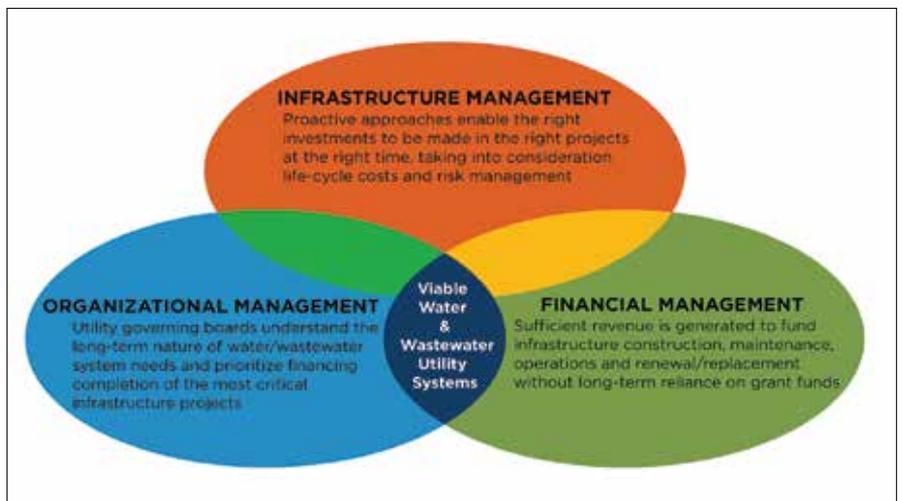
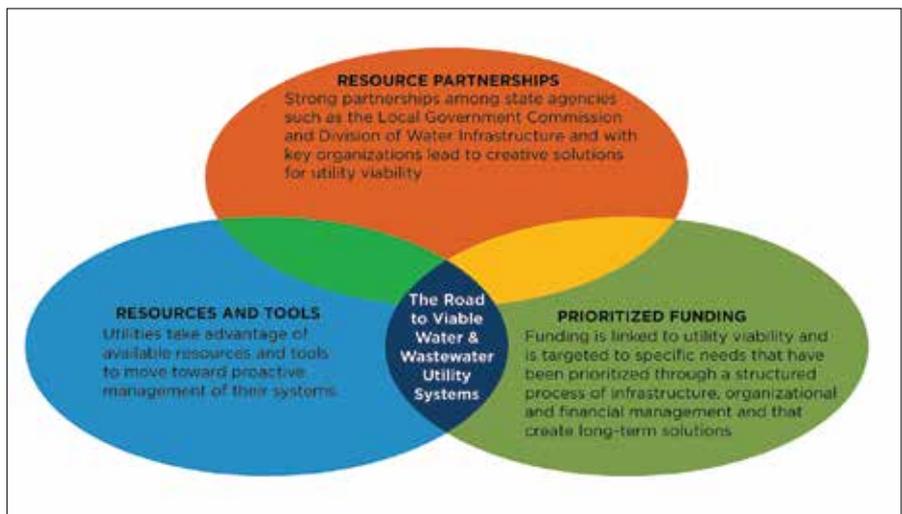


FIGURE 2

Together, the state, local governments, and utility providers will move forward in achieving viability in the three focus areas, through resource partnerships, use of resources and tools, and prioritized funding linked to viability.



maintenance, operations, renewal/ replacement, and reserves for unexpected events, without long-term reliance on grant funds

ACHIEVING THE VISION

Achieving viable water utilities across North Carolina requires actions by the state, local governments, and water utility providers to:

- Ensure that, to the greatest extent practicable, water utilities operate as enterprise systems that generate

sufficient revenue to cover all operating, maintenance, and capital expenditures, as well as funding reserves for unexpected events

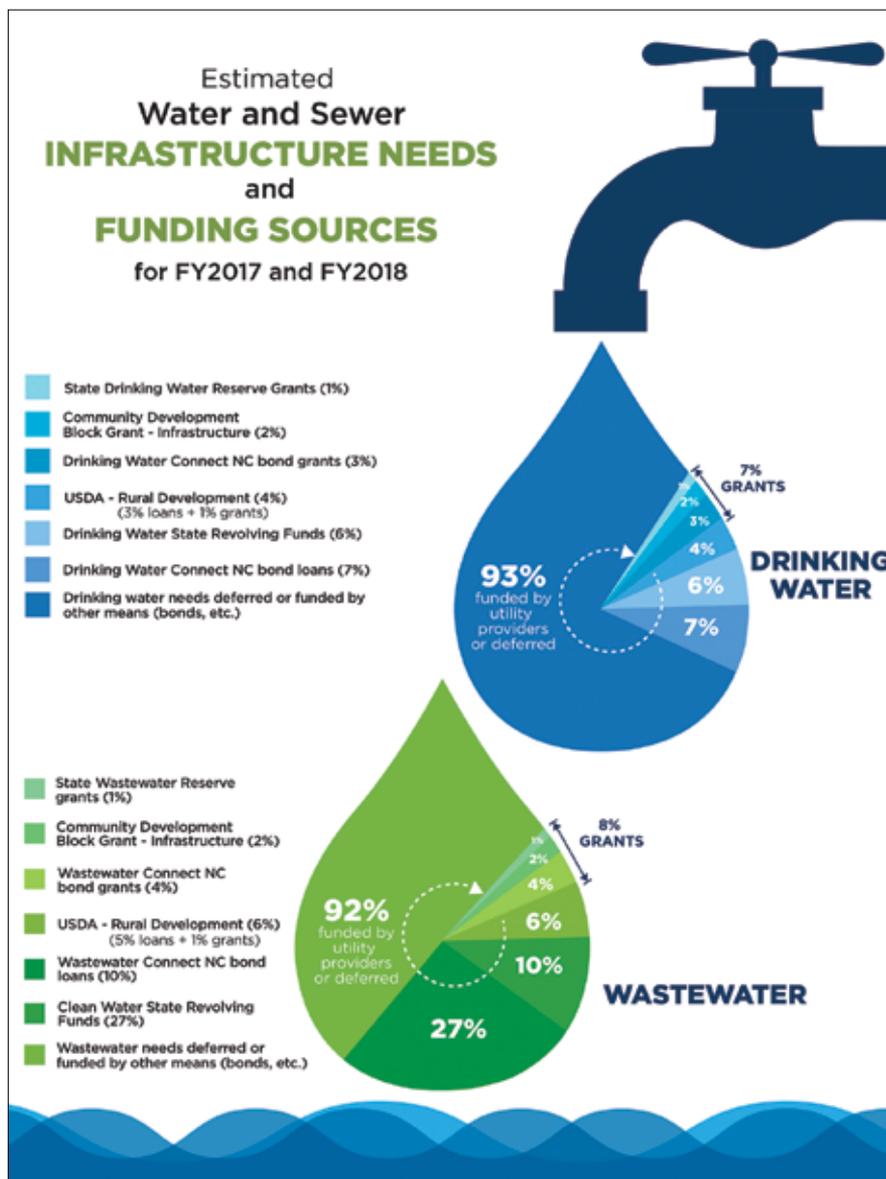
- Promote viable water utilities through the state water infrastructure funding programs
- Acknowledge that when water utilities are not viable or are not on a path to become viable, solutions are needed that go beyond simply constructing or repairing infrastructure

As shown in **Figure 2**, moving forward in achieving utility viability involves:

- **Resource partnerships** among state and federal agencies, key organizations, and utility providers for more cohesive support as they work to reach and maintain viability by leveraging existing resources and programs
- **Resources and tools** that support proactive utility management
- **Prioritized funding** that is linked to utility viability

FIGURE 3

Only a small fraction of North Carolina's water and wastewater infrastructure capital needs can be met with grant funds from state and federal sources.



INFRASTRUCTURE FUNDING

Over the next 20 years, capital cost estimates for water and wastewater system needs in North Carolina range from \$17 to \$26 billion – most likely at the higher end of the range.

While subsidized loans are the primary vehicle to help make infrastructure more affordable, the Authority recognizes that only a fraction of today's infrastructure capital needs can be met with currently available state or federal subsidized funding levels.

As shown in **Figure 3**, just 7% of water infrastructure needs and 8% of wastewater infrastructure capital needs can be met with grant funds from state and federal source grants, which include the Connect NC bonds, only available through this year. The remaining needs – 92% for wastewater and 93% for water – must be funded by the utility providers. If not funded, these add to the backlog of infrastructure investments that continue to be deferred.

SUMMARY

Utilities must know their full cost of providing services in order to establish the value of water to the affected community, including governing boards, ratepayers, and stakeholders. Costs have many components that include paying not only for today's operation and maintenance, but also for yesterday's deferred projects and tomorrow's infrastructure modernization.

A viable system is one that functions as a long-term, self-sufficient business enterprise, establishes organizational excellence, and provides appropriate levels of infrastructure maintenance, operation, and reinvestment that allow the utility to provide reliable water services now and in the future.

The state's role is to provide resources to help utilities address organizational and financial management challenges that may be contributing to the physical infrastructure limitations, and some of these challenges are directly related to communicating the value of water.

ENDNOTES

- 1 American Society of Civil Engineers, Guiding Principles for the Nation's Critical Infrastructure, 2009.
<http://content.asce.org/files/pdf/GuidingPrinciplesFinalReport.pdf>
- 2 Taking the Next Step: Findings of the Effective Utility Management Review Steering Group, 2016.
http://www.awwa.org/Portals/0/files/legreg/documents/201602_EUM_Review_Report.pdf
- 3 American Water Works Association, Buried No Longer: Confronting America's Infrastructure Challenge, 2012.
<http://www.awwa.org/Portals/0/files/legreg/documents/BuriedNoLonger.pdf>

ABOUT THE AUTHORS

Francine Durso, PE, is a Senior Project Manager in the Division of Water Infrastructure, and serves as the staff liaison to the State Water Infrastructure Authority. Her experience includes over 30 years in the field of water and wastewater facility planning and design, with more than 20 years in private engineering practice.

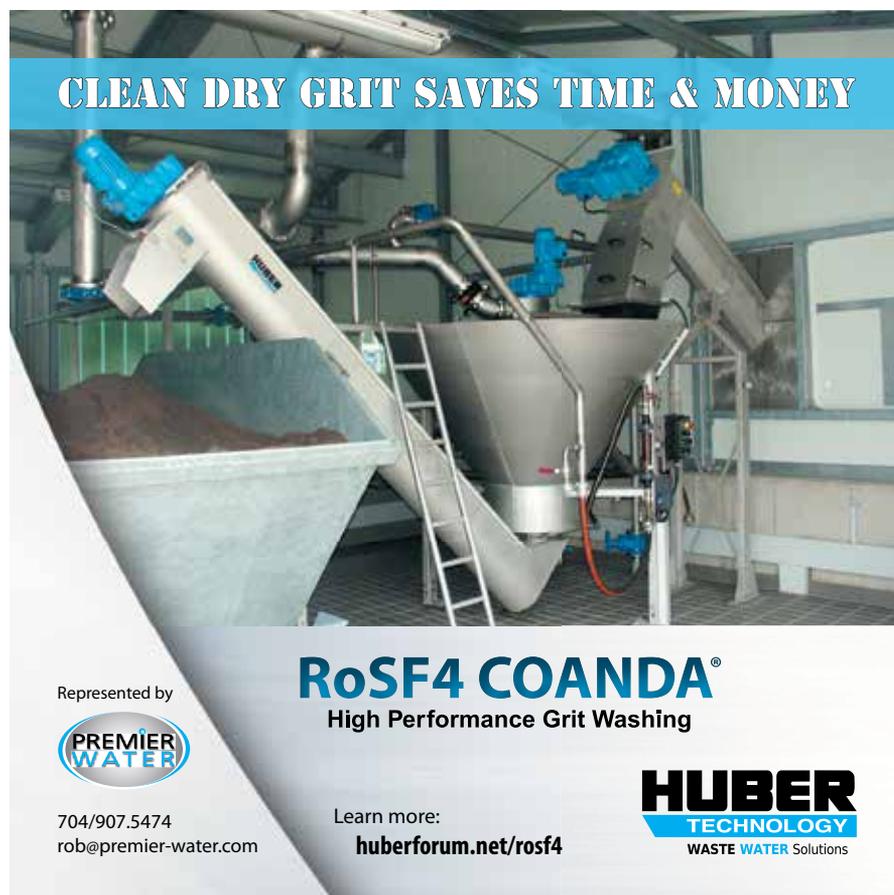
Kim Colson, PE, is the Director of the Division of Water Infrastructure within North Carolina's Department of Environmental Quality, and serves as Chair of the State Water Infrastructure Authority. His water resources experience spans more than 28 years, including work with a privately-owned public utility and many years with North Carolina's environmental agency. 



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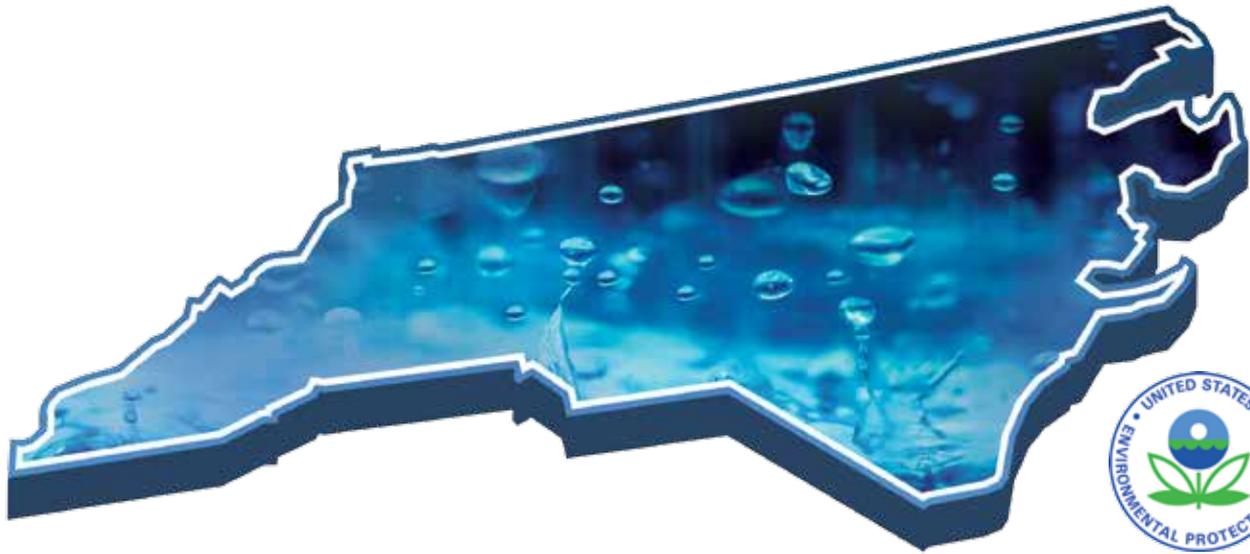
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IS THE CLEAN WATER STATE REVOLVING FUND RIGHT FOR MY PROJECT?

By Michael K. Sloop, P.E., CDM Smith

The Clean Water State Revolving Fund (CWSRF) has been in place for approximately 30 years and has distributed over \$2.5 billion in loans and grants to local governments in North Carolina. The program is administered by the North Carolina Department of Environmental Quality (DEQ), Division of Water Infrastructure (DWI), which is comprised of qualified, courteous, and responsive staff.

The CWSRF funds projects as provided in the Clean Water Act, which generally include wastewater treatment facilities, sanitary sewer collection systems, stream restorations, and stormwater best management practices (BMP). The program offers three basic types of funding opportunities:

- **Principal Forgiveness:** Principal forgiveness (i.e., grants) is reserved for disadvantaged communities, which are defined as local governments with less than 20,000 water connections, utility rates greater than the state median, and are below the state benchmark for at least three of the five Local Government Unit (LGU) economic indicators. Principal forgiveness is awarded as 50% of the

loan amount up to \$500,000, with the remaining amount provided through a 0% interest loan. Principal forgiveness funding represents not less than 10% of the federal capitalization grant appropriations, which has ranged from approximately \$1.0 million to \$2.3 million over the past nine cycles.

- **Zero Interest Loans:** Zero interest loans are generally reserved for wastewater rehabilitation projects and Green projects. Wastewater rehabilitation projects include infrastructure rehabilitation or replacement that does not add capacity, such as replacement of pumps with the same capacity, rehabilitation of gravity sewer lines, and treatment upgrades to provide improved nutrient removal. There is not a limit for how much of the available funding can be awarded to rehabilitation projects. Green projects are projects that restore a stream, wetland, or buffer; addition of BMPs to treat existing sources of pollution; reclaimed water; rainwater harvesting; or improvements that achieve at least 20% reduction in energy use. Green

project funding represents not less than 10% percent of the federal capitalization grant appropriations. Although there are typically fewer funding requests for green projects per cycle, a significant portion of available CWSRF program funds can be awarded, such as the \$71.2 million loan for a single project in the March 2016 cycle.

- **Low Interest Loans:** Low interest loans are awarded to wastewater projects that do not qualify for principal forgiveness or zero interest loans. The loan percentage is based on one half of The Bond Buyer's 20-Bond Index. The 20-year rate is 3.78% as of January 11, 2017, which results in a CWSRF low interest rate of 1.89%.

The funds can be utilized to pay for construction costs, engineering and technical services, legal fees for contract review, and property and easement acquisition.

IS SUBMITTING AN APPLICATION WORTH MY TIME?

The CWSRF implements two funding cycles each year, with applications due March 1 for the spring cycle and September 1 for the fall cycle. The applications can be found on the

DWI website at the following link: <http://portal.ncdenr.org/web/wi/application-forms>. In general, applications include information about the local government, a description of the project, a construction cost estimate, and a completed Integrated Priority Rating System form. The integrated priority rating system is a critical component towards the selection of a project being awarded funding. The total points scored for each applicant are reviewed by DWI and ranked against all other applications received. In general, project funding is awarded from highest to lowest points scored until funding is no longer available.

It is important to note that an application for a first time submitter may take between 40 and 80 hours to complete. Although this can be performed by local government staff or with the help of an engineering consultant, the time and resources required for the application process should be weighed against the likelihood of receiving an award. **Figure 1** compares the amount of funding requested versus awarded for the past nine cycles. It can be seen that the CWSRF program has awarded all of the requested funds for five of the past nine funding cycles, excluding incomplete funding applications or projects in which the applicant declined the loan. Approximately 66% of all funds requested over the nine funding cycles have been awarded, including 100% over the past four funding cycles. Therefore, there is a high likelihood for success when submitting an application for funding.

As previously noted, the projects are awarded based on the points accrued in the Integrity Priority Rating System form with a maximum of 110 points available to applicants. **Table 1** shows the point cutoff for the past nine funding cycles. The point cutoff represents the lowest point total awarded to a project. It can be seen that there is a wide variation in the point cutoff for when projects have historically been awarded funding, with every project application being awarded in the March 2015 cycle (with the lowest total for a project of only 5 points) to 40.49 points in the September 2010 cycle. For six of the past nine funding cycles, all applications

FIGURE 1
Comparison of historical funding requests versus awarded.

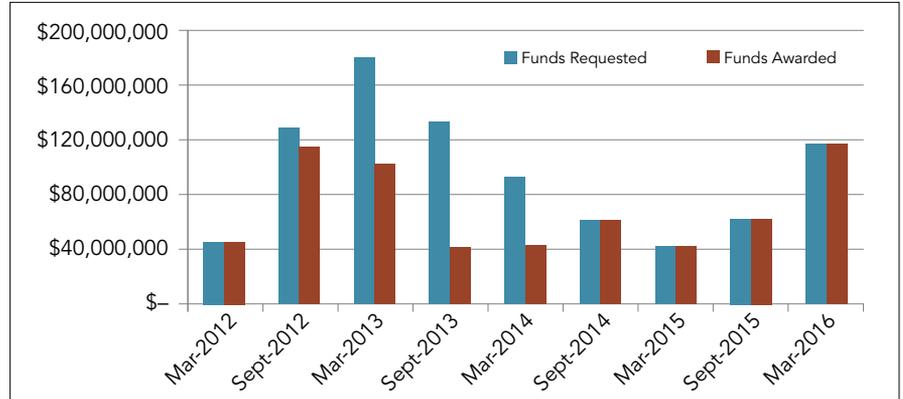


TABLE 1
Historical point cutoff for funding.

Funding Cycle	Number of Applications Submitted ^[1]	Number of Applications Awarded	Point Cutoff ^[2]
Sept-2010	67	42	40.49
Mar-2011	51	19	38.46
Sept-2011	33	33	0
Mar-2012	25	25	0
Sept-2012	35	33	19.55
Mar-2013	36	26	20.51
Sept-2013	30	20	27.02
Mar-2014	39	20	27.64
Sept-2014	21	21	0
Mar-2015	15	15	0
Sept-2015	14	14	0
Mar-2016	16	16	0
Average	32	24	28.9 ^[3]

Notes:
 1) Excludes applications that were not complete or the applicant refused the loan offer.
 2) A zero (0) point cutoff indicates that all applications were awarded funding.
 3) Average Point Cutoff includes only cycles in which a point cutoff of greater than 0 is achieved.

were awarded, at a minimum, a low interest loan. There is, therefore, a high likelihood for success when submitting an application for funding, regardless of how many points are accrued.

WHAT HOOPS DO I HAVE TO JUMP THROUGH?

Once a project has been awarded, there are essentially six key steps that must be performed beyond what a non-funded project would typically require:

1. Engineering Report (ER) and Environmental Information Document (EID) Approval: The purpose of the ER/EID is to document the project

specifics for DWI to verify that the project's recommended improvements are sound and appropriate, that the local government has adequate utility fees in place to reimburse the CWSRF, and that there are not extensive or unnecessary environmental impacts. DWI has developed detailed and extensive guidance documents that lay out exactly the information that is being required and the format in which it is to be presented. Some people refer to this as a preliminary engineering report (PER), but an ER/EID is significantly different and should not be substituted for a well-developed PER.

TABLE 2

Comparison in annual payback and total cost between CWSRF and federal bonds.

Funding Program	Interest Rate	Payback Period (years)	\$1M Project		\$5M Project		\$10M Project	
			Annual Payback	Total Cost	Annual Payback	Total Cost	Annual Payback	Total Cost
CWSRF	0%	20	\$50,000	\$1,000,000	\$250,000	\$5,000,000	\$500,000	\$10,000,000
	2%		\$61,200	\$1,223,000	\$306,000	\$6,116,000	\$612,000	\$12,230,000
Federal Bond	4%	20	\$73,600	\$1,472,000	\$368,000	\$7,358,000	\$736,000	\$14,720,000
		25	\$64,000	\$1,600,000	\$320,000	\$8,004,000	\$640,000	\$16,000,000
		30	\$57,800	\$1,735,000	\$289,000	\$8,675,000	\$578,000	\$17,350,000

Note:

- 1) Annual payback assumes a constant rate of payment over the payback period.
- 2) Total cost is the annual payback multiplied by the payback period.

2. Plans and Specifications Approval: After the ER/EID has been approved, the final plans and specifications must be submitted and reviewed by DWI. In addition to the plans and specifications, the applicant must submit all temporary and permanent easements and permits. This can be an issue for projects that advertise without all appropriate permits or easements in place.
3. Authority to Award (ATA) Approval: After the plans and specifications are approved, the project can be bid, after which time the ATA package must be submitted to DWI for approval. The ATA package includes typical bidding information, such as the recommendation to award, bid tabulation, bid advertisement, as well as a tentative award resolution from the applicant's board.
4. Construction Agreement Issuance: After the ATA has been approved by DWI, a copy of the completed construction agreement must be submitted to DWI. This is the final step before a promissory note can be drafted and funds can be reimbursed. There is nothing additional required outside of a typical construction agreement.
5. Construction Administration: For each project, DWI will assign an inspector with whom to communicate throughout the duration of construction. Coordination with the inspector is required to ensure their availability to attend the preconstruction meeting and monthly

progress meetings. At each monthly progress meeting, the engineer shall have a copy of the shop drawing log and daily inspection reports. The contractor is required to adhere to the Davis Bacon and Iron and Steel Buy American requirements. Pay applications must include a certified payroll, which requires additional effort by the contractor and reviewing engineer. Change orders must be reviewed and approved by DWI if funding is being requested.

6. Repayment: Repayment begins on either May 1 or November 1. The May 1 payment includes principal and interest (if applicable). The November 1 payment is only interest (if applicable).

HOW WILL MY SCHEDULE BE AFFECTED?

DWI lays out a very specific schedule and enforces approval deadlines with strict adherence that, if not followed, could put the applicant at a very real risk for losing funding. The deadlines represent sequential steps to be taken, not when the documentation must be submitted. For example, an applicant can submit their plans and specifications package as far in advance of the deadline as they choose, as long as the ER/EID has been approved first. The following summarizes the sequential steps to be taken for the application and subsequent approval steps.

- Application due
- Receive letter of intent (LOI) to award (approximately 1 month from application submittal)

- Submit draft ER/EID (4 months from LOI)
- Receive approval of final ER/EID (9 months from LOI)
- Submit draft plans/specs (15 months from LOI)
- Receive approval of final plans/specs (19 months from LOI)
- Receive authority to award (23 months from LOI)
- Receive construction contract document approval (24 months after LOI)

Although the review durations have typically remained consistent, there is nothing to ensure the applicant with absolute certainty that the durations will not fluctuate. Experience from past projects suggests that navigating through the approval process typically takes between 11 and 23 weeks of review time. DWI has developed a streamlined process that attempts to minimize the added durations, but any time that additional information and review periods are required, there is going to be added time to a schedule. The amount of additional time is influenced by the ability of the applicant to meet DWI requirements without requiring multiple resubmittals.

DWI has shown a desire to work with an applicant to simplify the process to the extent practicable. For example, DWI allowed a CDM Smith project to be bid without all permits in hand, due to extenuating circumstances. There is no assurance, however, that such leeway will be granted in all cases. The applicant should, therefore, assume that all

TABLE 3

Difference in value between CWSRF and federal bond.

Funding Program	Interest Rate	Payback Period (years)	\$1M Project		\$5M Project		\$10M Project	
			Annual Payback	Total Cost	Annual Payback	Total Cost	Annual Payback	Total Cost
CWSRF	2%	20	\$61,200	\$1,223,000	\$306,000	\$6,116,000	\$612,000	\$12,230,000
Federal Bond	4%	30	\$57,800	\$1,735,000	\$289,000	\$8,675,000	\$578,000	\$17,350,000
Difference =			\$3,400	(\$512,000)	\$17,000	(\$2,559,000)	\$34,000	(\$5,120,000)

Note:

- 1) Annual payback assumes a constant rate of payment over the payback period.
- 2) Total cost is the annual payback multiplied by the payback period.

standard requirements will be enforced when weighing the decision of whether to pursue funding through the CWSRF.

ARE THE COST SAVINGS WORTH IT?

The reason for applying for a CWSRF loan and navigating through the various approval requirements ultimately comes down to the money savings that a local government can achieve. As discussed earlier, the CWSRF offers three types of financial aid options: principal forgiveness, zero interest loans, and low interest loans. The zero interest and low interest loan options have a 20-year payback.

Table 2 shows a comparison of the annual payback and total project cost between zero and low interest CWSRF loans and Federal Government Bonds over 20-, 25-, and 30-year payback periods. Project values of \$1 million, \$5 million, and \$10 million are shown for comparison.

As expected, the 0% interest CWSRF loan provides the lowest annual payback and total project cost of all the options. The Federal Bond 30-year payback option provides the next to lowest annual payback cost of the remaining three options, but also has the highest overall total project cost. The 2% interest CWSRF loan provides the second lowest total cost and has the third lowest annual payback. **Table 3** shows the difference in cost between a standard 2%, 20-year CWSRF loan and a 4%, 30-year Federal Bond loan. It can be seen from the table that although the Federal Bond option has a slightly lower annual payback, the total project cost is significantly higher than the CWSRF option.

CONCLUSIONS

Experience with this process has shown that navigating through the various phases will result in an increased schedule and engineering cost, both of which can vary significantly depending on the engineer's and applicant's experience with the program. The applicant must weigh these considerations with the cost savings that can be realized.

It is recommended that the applicant assume a 3–5 month increase in project schedule beyond a non-funded project. This duration can be reduced or increased depending on project specifics and the experience of the engineer and applicant. This added schedule should be considered when deciding if a CWSRF loan is appropriate for a specific project. If schedule is a critical factor and delays could result in significant financial or environmental impacts, then a CWSRF loan may not be appropriate.

As illustrated in **Tables 2** and **3**, the program offers significant dollar savings over the life of the project, although annual payback rates can be higher than federally-bonded projects due to the reduced 20-year payback period of a CWSRF loan. If an applicant is currently in financial hardship and they would prefer the minimum annual payback amount (regardless of the long-term cost impacts), then a low interest loan from CWSRF may not be appropriate. It is important to keep in mind, however, that local governments in those situations may be eligible for principal forgiveness (i.e., a grant) or zero interest loans. A zero interest loan offers a lower annual payback rate compared to the federal bond option. Another financial consideration is

the additional engineering cost required to navigate through the process. It is recommended that an applicant budget for \$30,000 to \$80,000 in additional engineering fees, depending on the size and complexity of the project. This cost is incurred by the applicant upfront but is reimbursable by DWI.

It is clear that a CWSRF loan can offer a local government significant long-term cost savings when compared to a federally-bonded project. However, there are schedule impacts and additional upfront engineering fees that must be considered when determining if a specific project is appropriate for a CWSRF loan. If the local government has the flexibility to incur the added schedule and upfront costs, a CWSRF loan is a valuable option that should be strongly considered by local governments to improve customer service and reduce environmental impacts.

ACKNOWLEDGEMENTS

I would like to acknowledge the outstanding staff at DWI for their guidance, patience, and assistance in administering the CWSRF. Special thanks goes to Kim Colson, Mark Hubbard, Seth Robertson, and Jennifer Haynie for fielding so many phone calls and emails from me over the years with the same enthusiasm and encouragement throughout.

REFERENCES

- Infrastructure Finance Section, Fiscal Year 2016, *North Carolina Clean Water State Revolving Fund Intended Use Plan*.
- DWI Website: <http://portal.ncdenr.org/web/wi/home>



SUSTAINABLE WATER PRICING: BEWARE OF THE BAR CHART!

By Jeffery Hughes, UNC School of Government

Water and wastewater utilities are many things: essential public health service organizations, community and economic development partners, and environmental protection entities. But water and wastewater utilities are also businesses, in that they have expenses, generate revenues, and sell products to customers. A financially unhealthy utility often runs into problems meeting its primary public health and economic development goals.

Just as with any business, there are financial indicators and metrics that can help managers and owners assess an enterprise's health and help guide their financial decision-making. Some of these metrics are very similar to the metrics that Fortune 500 companies pay attention to, such as debt ratios, operating ratios, net income, etc.

Unfortunately, one water financial metric often seems to rise above all the others during critical financial policy discussions. This metric is the price a family pays for a set amount of water (typically 5,000 to 6,000 gallons per month), and the policy discussion relates to the decision about whether to adjust

that rate. The rate adjustment decision in many areas certainly includes other indicators, and in some cases, utilities employ financial professionals to make pricing decisions that are based much more on costs than existing prices. However, even the most financially savvy utility can succumb to the pressures that arise when its price is compared head-to-head against neighboring utilities.

As monopolies, utilities should expect that the public scrutinizes their prices. Hence, utilities should be sensitive to the impact prices have on customers, although oversimplifying what price can tell you about your utility's financial health is dangerous. Unintentionally, utilities may adversely impact their customers by maintaining artificially low rates that do not allow for needed infrastructure, than if they raised rates. Many of our biggest water crises, such as what occurred in Flint, Michigan, can be traced to decisions that put low costs and low prices ahead of service quality.

So how should a utility consider price when evaluating its finances? The default for many utilities is to develop a simple table or graphic, such as in

Figure 1 that shows how rates compare for utilities in a specific region.

The Environmental Finance Center (EFC) (<http://www.efc.sog.unc.edu/>) at the UNC School of Government promotes financial benchmarking and the analysis of financial indicators as important business practices, but also recognizes the dangers of making decisions based on incomplete or oversimplified information. In an ideal world, every utility would work with its customers (and regulators) to determine the optimum service quality target and then set rates to generate exactly what is needed to meet that target in a financially efficient manner. Most utilities do not operate in that ideal world, and pricing comparisons will continue to be a part of rate analysis. This is why the EFC has developed and promoted financial analysis tools that are an alternative to the old pricing bar chart. The EFC has been providing local communities and others interested in environmental management with information related to the financial health of water and wastewater programs across the state of North Carolina and in numerous

other states as well. The EFC works with a number of partners, including state agencies, professional associations, and utilities, to collect, benchmark, and update information each year.

FINANCIAL SUSTAINABILITY AND RATES DASHBOARDS

Over the past 15 years, the EFC has led efforts to make financial information more accessible and useful to decision-makers in North Carolina and beyond. The EFC has developed water and wastewater rates dashboards for 14 states and for Canada (www.efc.sog.unc.edu/project/utility-financial-sustainability-and-rates-dashboards). Based on feedback from local and state leaders across the country, the EFC has developed a comprehensive information system that includes data the EFC collects directly, as well as public data from a large number of state and federal agencies. The EFC's Financial Sustainability and Rates Dashboards share key utility

financial data through free, easy-to-use, interactive, online, visual dashboards. (See **Figures 2** and **3**.)

The rates dashboards allow communities to see up-to-date information on fiscal health, user fees, and community demographics. Each year, the North Carolina dashboard is accessed by hundreds of communities for a variety of purposes, including analyzing financial performance and communicating with citizens and governing boards. Organizations that support utilities through technical advising, funding, and regulatory oversight also rely on the dashboards to inform assistance efforts.

Many utility managers report that the Financial Sustainability and Rates Dashboards have become essential tools that are critical to developing sustainable financial systems. As one water utility manager in North Carolina stated, "With the information provided, our board realized exactly where we stood and why we were prohibited from

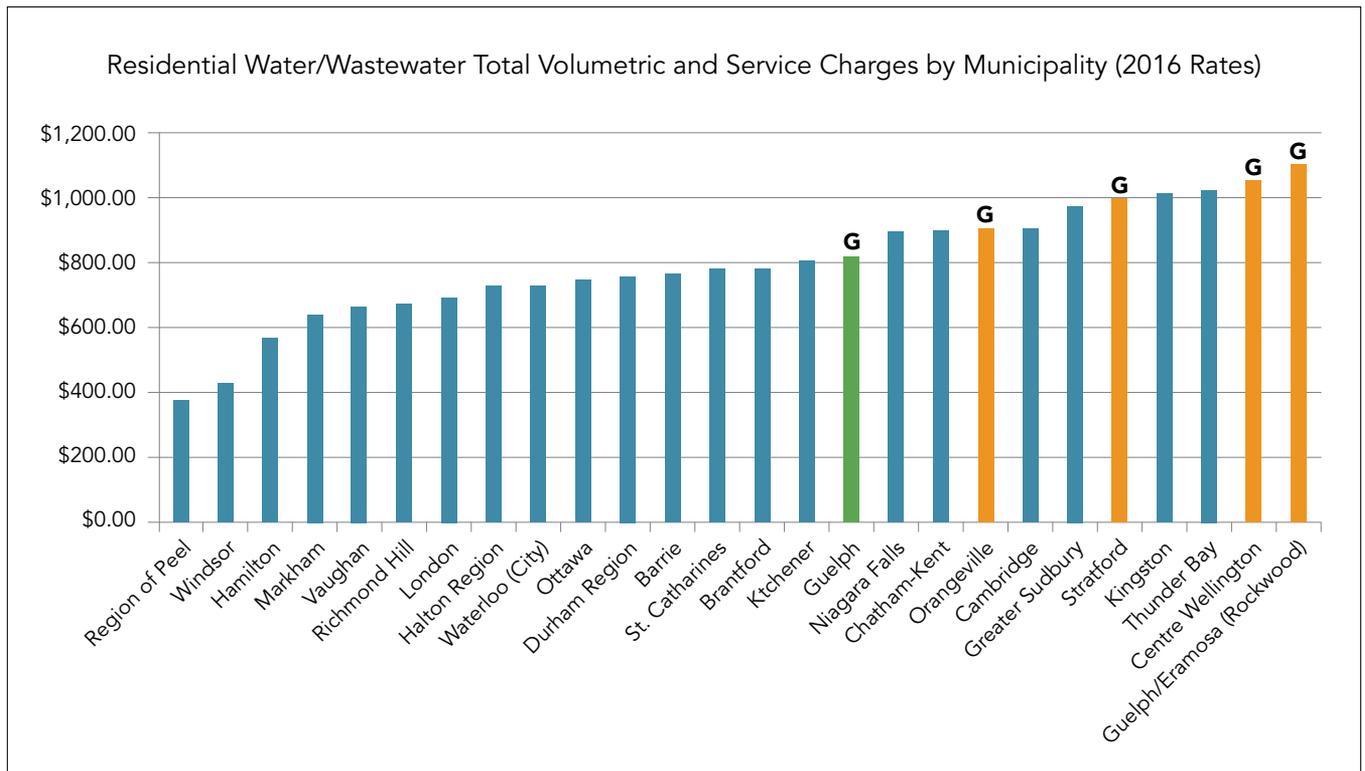
making infrastructure strides. This tool has helped us adopt a rate structure that is fair, and provides for system upgrades such as radio-read meters, strategic pump station repair, etc."

PROVIDING EDUCATIONAL OPPORTUNITIES

The Financial Sustainability and Rates Dashboards also provide an exceptional opportunity for research, teaching, and educational programs. The EFC has engaged dozens of university students from a variety of disciplines to help collect data and build the dashboards. This program provides students with opportunities to work with state and local leaders on issues important to utility management and to test out new information-sharing platforms. Through these efforts, the EFC has also created a research database on utility finance that is 'mined' by researchers from UNC and other institutions to produce periodic white papers on key finance topics.

FIGURE 1

Rates Comparison Bar Chart. Charts like the one below are able to show only part of a utility's financial situation, yet may drive decisions with far-reaching financial implications.



NORTH CAROLINA 2016 WATER AND WASTEWATER RATES DASHBOARD BY THE NUMBERS:

- Number of utilities included in dashboard: 418
- Number of North Carolinians served by utilities in dashboard: 8 million
- Unique page views last year (2016): 5,133
- 80% of users agree that the dashboard provided information that helped form or influence decisions or practices at their organization
- Approximate number of data points accessible using dashboard interface: 100,000+
- Number of students involved in developing dashboards over the last 12 years: 20

To access the North Carolina Dashboard or a host of other financial analysis tools, visit the EFC's website at www.efc.sog.unc.edu.

ABOUT THE AUTHOR

Jeff Hughes is a faculty member at the School of Government and the director of the Environmental Finance Center at the University of North Carolina. He provides research, educational programs, and advising services to local governments, private companies, utilities, and state and federal agencies. Jeff has extensive experience as a researcher, policy analyst, consultant, and practitioner. His current research focus areas include alternative project delivery models, capital finance, and rate setting. Jeff is a member of the American Water Works Association and the Council of Infrastructure Financing Authorities. He serves on the Finance Committee for the Water Research Foundation and the EPA Environmental Financial Advisory Board. He received a master's degree from the University of North Carolina and a bachelor's degree from Duke. [NC](#)

FIGURE 2

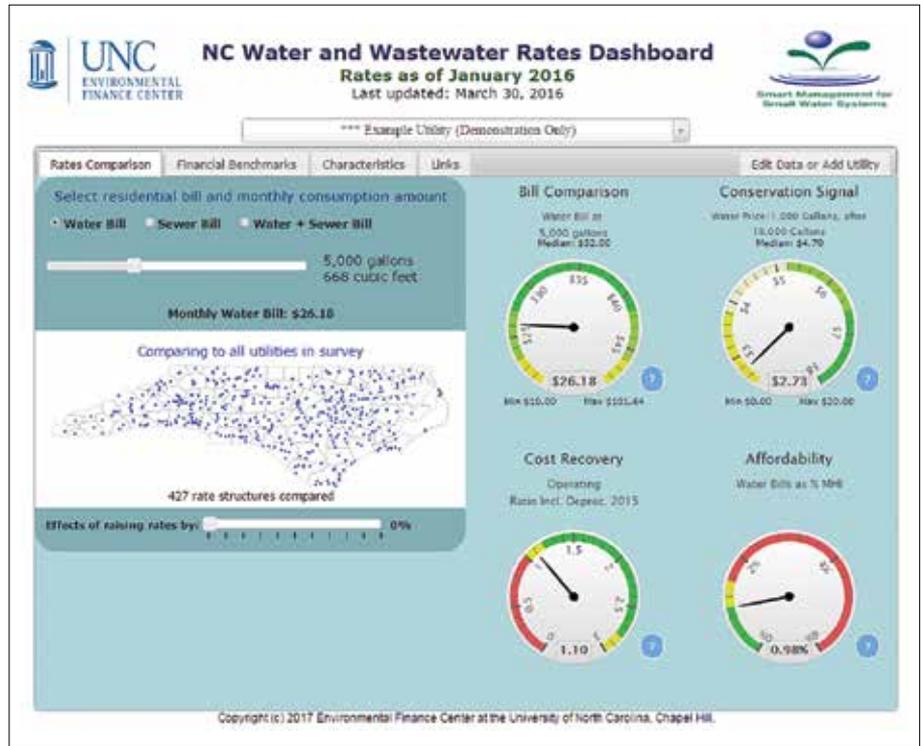
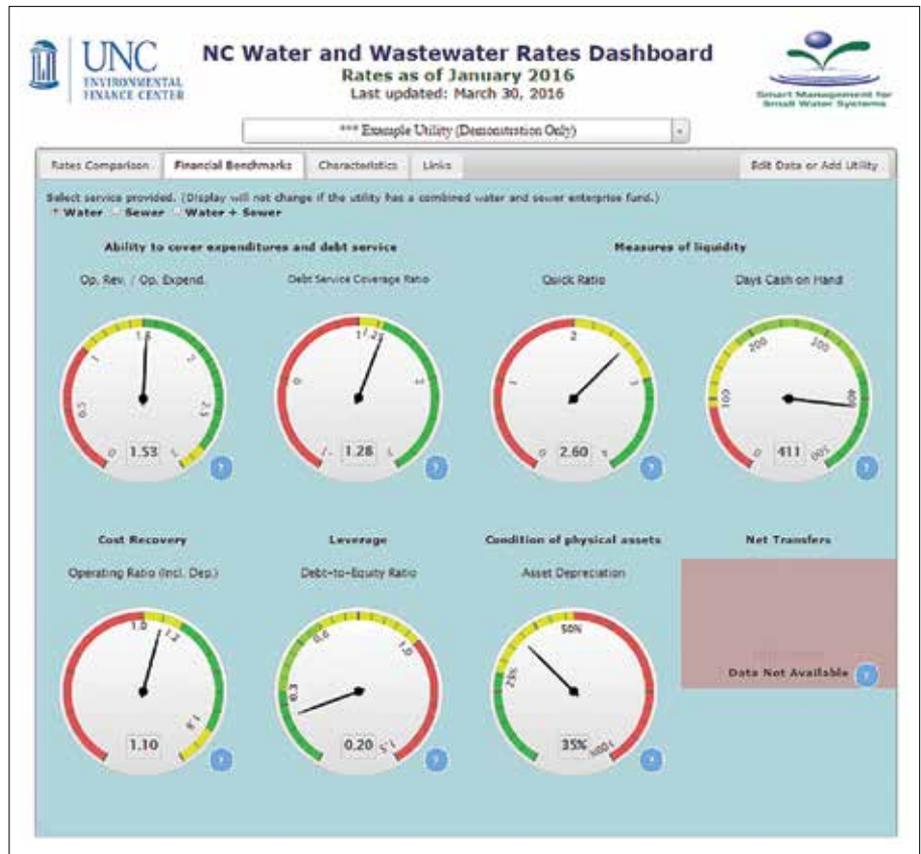


FIGURE 3





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TEAM BUILDING

By Aaron Brower, Assistant Director at City of Raleigh Public Utilities

In the public sector, managing expectations for consumers in an ever-changing population can often be a daunting task. As an Assistant Director of Public Utilities for the City of Raleigh, I recognize that when we deliver utility bills to our consumers, there is an expectation of fairness, consistency, truth, and of course, the lowest fees possible. No one wants to pay for water, let alone water **and** wastewater treatment. Yet here we are in a world where those services come at a cost.

For the past several years, our department has focused on business process improvements for operational efficiency to reduce costs. Because of that, we have been able to keep our operating costs flat for multiple years without reducing the level of service provided. It has not been an easy task, but certainly a valuable one. A specific area of the business that has constant changes and evolving needs is the Customer Care and Billing organization. This group is the customer service center not only for the Public Utilities Department, but for the City Solid Waste Department as well. In addition,

this group is **the** group responsible for delivering those fair and consistent utility bills. The Customer Care and Billing division takes this responsibility very seriously, and delivering a quality product (i.e., the utility bill) month after month is demanding and stressful. This group doesn't like to make mistakes, and they work very hard to make sure that does not happen.

In 2015, the Customer Care and Billing division went through significant growth, which included leadership changes as well as taking on Solid Waste Services calls and using an additional work management system. During this period of time, there was a bubbling of anxiety in the organization due to all the changes. This anxiety led to communication failure and a general level of frustration that was impacting work production.

Early in 2016, our leadership team began a partnership with the City's Organizational Development Manager, Rick Rocchetti, who brought in Barry Mitsch with The Pyramid Resource Group, Inc. to introduce our leadership team to a process known as Team Advantage. Team Advantage is a process-oriented program structured

for your team to stretch itself for an extraordinary goal that is meaningful to the organization's success. The Team Advantage program is designed to take a traditional team building experience to a new level by adding leadership and group coaching over a period of several months. This coaching, when focused on the extraordinary goal, allows the group to be successful in achieving that goal. The coaching that the group received created a strong relationship that helped the individuals and the group gain clarity and built the capacity to achieve our goal.

Our problem as a group was not the work output; it was the lack of relationship within the group that seemed to create the greatest concern. When the group initially came together, there had been a survey taken to get the pulse of the team's expectations and concerns about the organization. With that information, we spent two days working through better understanding of what the true issue was. We wanted to be successful in completing quality work on time **and** having positive relationships within the group. Ultimately, that combination of work and relationship was

what mattered most. At the end of two days, a Team Charter was developed, with each team member's input and buy-in. We needed to make a concentrated effort on honest communication, and we believed **that** would be the key to rebuilding the relationships.

During the time we were working on the Team Advantage process, our Organizational Development Manager also brought in some additional tools that helped us better understand ourselves and the tensions that were present in the organization. These additional tools, such as Tilt®, truly helped the group understand on a more personal level how we could better interact with one another. Our goal became more focused on improving relationships and that ultimately increased our task performance. By breaking down some of the barriers within the organization, we started seeing how each person was helping the group, but we also recognized when those same individuals needed help.

Over the period of four months, the team met diligently to address issues, provide affirmations for assistance, acknowledge growth, and hold each other accountable for the Team Charter, while ensuring follow-through on work. As a group, the communication was slow and cautious in the beginning, but, as time went by, the team started having more open and honest conversations. There was a lot more laughter and less apprehension about bringing up a difficult topic. Throughout this process, our partners supported the group by offering insight, honest observation, and positive encouragement. They helped draw out conversations that might have been challenging for others to bring forward without assistance. Where previously, there were excuses around not meeting as a group, those meetings had become a priority and trust was being built. The group has developed much stronger relationships with each other, and there is better definition of role clarity, not to mention a reduction of fear in reaching across boundaries to resolve issues.

This organization was able to work together to truly start identifying problems that were preventing staff at all levels from being their best versions of themselves. By opening the door to sharing information, we were able to tackle a few technical system issues that helped improve the Customer Service group's ability to assist customers in a more timely manner. In addition, our staff was encouraged to bring forward new ideas, and managing work became much more fluid. Cross-training became more available, and employees were sharing ideas and knowledge rather than holding onto it.

Process improvement is very important to our business, as is customer service delivery. For our group, improving the process of resolving conflict and improving relationships has moved our organization into a new way of working. Because we don't exist in a static environment, we need to be able to embrace change and work through process improvements quickly and efficiently. We want to be able

to address concerns brought forward by our citizens or our Council and address them in a timely manner. We want to have the flexibility to modify existing processes in order to make interactions more seamless and less stressful for our customers and our employees, without there being an extraordinary cost involved. Ultimately, providing quality service without unnecessarily raising rates is very important to our ratepayers.

Through this experience we have, as a group, built our capacity to work in a more skilled manner. The group is more confident and open, allowing more creativity and sharing. We still deliver a quality product, and the service delivery to our citizens has improved. We are even more focused on continuing to improve that service. By recognizing there was an issue and bringing in the assistance and tools to help correct the problem, we have become a stronger organization, capable of tackling any challenge in a collaborative manner. 

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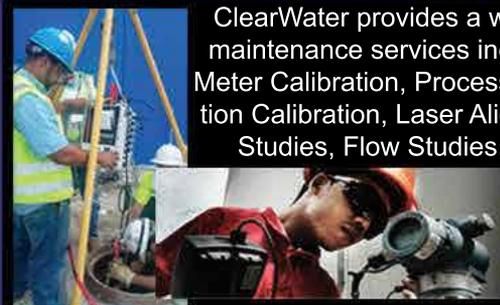


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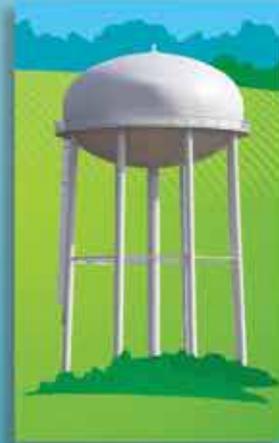
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As we continue to deliver valuable information through the pages of this magazine, in a printed format that is appealing, reader-friendly and not lost in the proliferation of electronic messages that are bombarding our senses, we are also well aware of the need to be respectful of our environment. That is why we are committed to publishing the magazine in the most environmentally-friendly process possible. Here is what we mean:

- We use lighter publication stock that consists of recycled paper. This paper has been certified to meet the environmental and social standards of the Forest Stewardship Council® (FSC®) and comes from responsibly managed forests, and verified recycled sources making this a RENEWABLE and SUSTAINABLE resource.
- Our computer-to-plate technology reduces the amount of chemistry required to create plates for the printing process. The resulting chemistry is neutralized to the extent that it can be safely discharged to the drain.
- We use vegetable oil-based inks to print the magazine. This means that we are not using resource-depleting petroleum-based ink products and that the subsequent recycling of the paper in this magazine is much more environment friendly.
- During the printing process, we use a solvent recycling system that separates the water from the recovered solvents and leaves only about 5% residue. This results in reduced solvent usage, handling and hazardous hauling.
- We ensure that an efficient recycling program is used for all printing plates and all waste paper.
- Within the pages of each issue, we actively encourage our readers to REUSE and RECYCLE.
- In order to reduce our carbon footprint on the planet, we utilize a carbon offset program in conjunction with any air travel we undertake related to our publishing responsibilities for the magazine.

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Thank you to all the advertisers who support the North Carolina AWWA-WEA through this magazine.



BIG Ideas in Microbubbles

Many rural communities use wastewater lagoons as a cost efficient way to collect and treat municipal and industrial wastewater. Historically, these lagoons have done a sufficient job of treating wastewater, but with newer regulations, it is now necessary to upgrade and enhance the current operation of many of these lagoons.

Bradley Innovation Group (BIG) and Covalen together have 48 years of experience in the water and wastewater treatment industries, and we have found five common culprits of poor performing lagoons:

1. Short-circuiting
2. Poor mixing
3. Excessive algae
4. Low dissolved oxygen
5. Excessive sludge

These problems ultimately cause issues with ammonia, biochemical oxygen demand (BOD), pH, and total suspended solids (TSS) levels. Many communities feel as though the only way to fix these problems is to start over and build a mechanical treatment facility. It is challenging for communities with limited resources to come up with the time and money needed to build, operate, and maintain.

BIG and Covalen have teamed up to help enhance the overall performance of lagoons using the patented ProFusion. The ProFusion floating aerator/mixer/pump by BIG efficiently maintains wastewater lagoons using the following:

- One horsepower pump that moves over 600 gpm from any depth for mixing and aeration
- Customizable discharge ports for directional flow to break short circuiting
- Patented two-blade process that adds a microbubble rich fluid (1.5 lb/hr per pump) and strips CO₂

One of the most costly issues to contend with in lagoons is excessive sludge. It can wreak havoc on BOD, TSS and ammonia removal, while reducing much needed retention time by causing short-circuiting and taking up valuable space where water needs to work.



Before – August 2012

After – October 2014

A waste stabilization lagoon in Morgantown, Indiana was having issues with excessive sludge and short circuiting. In June 2014, BIG installed four ProFusions in a line and created a 'hydraulic curtain' that pushes the water against the natural flow of the lagoons. Creating this 'hydraulic curtain' instantly stopped the short-circuiting since the natural flow of the lagoons was disrupted significantly. In addition to the ProFusions, the town added CBX Pro Oxidizer by Environmental Techniques International (ETI). The CBX resulted in faster rates of cellular metabolism and cell wall permeability to speed the sludge degradation process. Through the combination of CBX, aeration and mixing from the ProFusions, Morgantown saw a significant removal of sludge from the lagoon with a relatively small investment. The lagoon is 3.6 acres and approximately 5 feet deep. Before BIG started the project, the first lagoon had approximately 4 feet of sludge. In just one year, through ProFusion and CBX, the town saw reduction of 2 feet of sludge from its first cell. Since the reduction of sludge has started, Morgantown has seen lower N, TSS, & CBOD and came into compliance by meeting its NPDES permit limits.

For more information on how BIG and Covalen can help your community, please visit us at www.big-h2o.com or contact directly at 317-789-8888. 



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All products are manufactured and tested in accordance with industry wide standards, and are designed for use on all pipe materials including high density polyethylene.

For over 15 years, Total Piping Solutions, Inc. has provided utilities, contractors and distributors high value products with exceptional quality in product sizes ranging from ½" to 48" in diameter.

This includes the best in class wide range Quick Cam® Repair Clamp. This clamp is available in sizes from 2" to 48" in diameter, and carries a working pressure rating of up to 200 psi. All single panel clamps carry an extended range of nearly 1", allowing for a reduction of inventory since more pipe diameters can be covered with fewer sizes. This high value product maximizes performance, minimizes inventory and streamlines the installation process..

The Quick Cam Wide Range Repair Clamp is available as an all type 304 stainless steel product or may be equipped with ductile iron lugs and various bolt material options. It is also equipped with removable lugs to allow for installation in tight spaces, and comes in lay lengths ranging from 9" to 36" wide.

The New Quick Sleeve Bell Joint Encapsulation Sleeve is a ductile iron full joint encapsulation sleeve built to accommodate diameters of 2, 2.5, 4, 6, 8, and 12". Each wide range sleeve covers IPS, CIP and DIP pipe diameters, is epoxy coated for long life and comes with stainless steel nuts bolts and washers. By eliminating the need to perform an open cut repair, the Quick Sleeve for Bell Joint Encapsulation reduces labor, time and material. By eliminating the need for an open cut repair, the Quick Sleeve removes the need to disinfect the line and saves on downtime.



The Triple Tap® Tapping Sleeve and Line Stop Fitting Product line, available in sizes from 4" to 24" in diameter, provides the same exceptional benefits as the Quick Cam® Rapid Seal Repair Clamp. Tapping sleeves and line stop fittings are designed with an extended range feature that allows for maximum pipe coverage, and provides the opportunity for an across the board reduction in inventory.

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The Triple Tap® Line Stop Fitting features an equipment interface that works with all industry standard tapping and stopping machines, and completion plugs may be ordered in either a threaded or push type configuration.

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SMART INFRASTRUCTURE

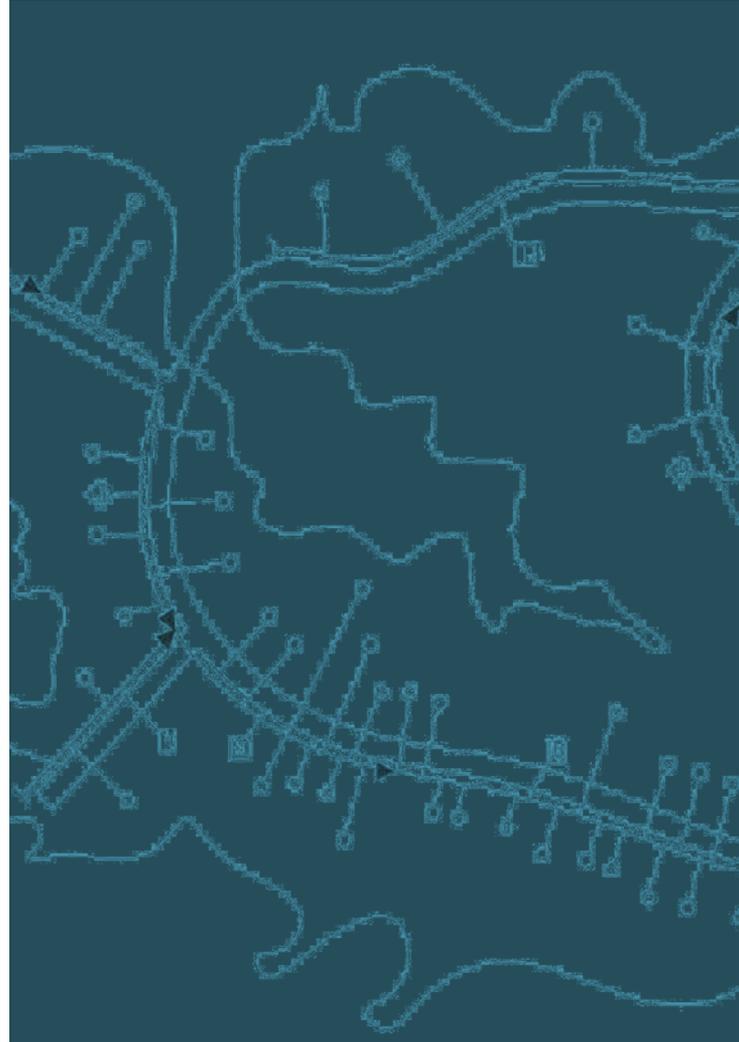
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ENDOWMENT *Update*

HOW THE NC SAFEWATER FUND WORKS

The NC Safewater Fund is an endowment comprised of donations made to a funding pool with the intent that the original value of the donations (the principal) will be invested and never spent, and a portion of the investment earnings (the distribution) will be used to fund the mission of the endowment, in the case of the NC Safewater Fund, awarding scholarships and grants for water/wastewater education.

The NC Safewater Fund is comprised of one general and several “Named Funds”. All the funds are used to award scholarships and grants, but the “Named Funds” have additional qualifications that must be met before an award is made.

The NC Safewater Fund allows donors to make donations to the general endowment fund or to a specific restricted fund.

SCHOLARSHIPS AND GRANTS

Scholarships are available for community college and university students at the undergraduate and graduate levels, as well as for educators at the elementary, middle, and high school levels.

This year we are excited to announce our first scholarship for operators – the AWWA Operator Scholarship! Operators Scholarship awards can be used for certification/licensure, two-year water related associate degree, technical school program, professional training program, books and manuals, and operator related conferences.

To learn more about all of our scholarship opportunities, see ncsafewater.site-ym.com/Scholarships and download our 2017 Overview of Scholarships.

CONGRATULATIONS TO OUR 2016 SCHOLARSHIP RECIPIENTS!

To learn more about our 2016 scholarship recipients, see pages 65 to 80 of “2016 NC AWWA Award Winners” in this issue of *NC Currents*.



ENDOWMENT *Update*

MAKE A DONATION

Anyone can donate. All donations are helpful. The current donation form is available on the Scholarship or NC Safewater Endowment Fund page of www.ncsafewater.org. You may also contact NC AWWA-WEA staff at 919-784-9030 to have a donation form sent to you.

Both NC AWWA and NC WEA (commonly referred to as NC AWWA-WEA) are 501(c)(3) non-profit corporations; therefore donations made to the NC Safewater Fund are fully tax deductible. Consult your tax professional.

INTO THE FUTURE...

Who Will Replace You When You Retire?

Baby-boomers are retiring at a quick pace, and there is an unmet need to grow the ranks of the water and wastewater professionals who will follow in their footsteps.

Since 1923 NC AWWA-WEA has been a leading force in the field of water and wastewater education through the seminars, schools, and conferences conducted by our volunteers. The work of NC AWWA-WEA serves to support and train our existing workforce, but sustaining the water/wastewater profession in North Carolina also requires the cultivation and development of future generations of water/wastewater professionals.

NC AWWA-WEA's Solution – the NC Safewater Endowment Fund

In September 2009, the NC AWWA-WEA Board of Trustees established the NC Safewater Endowment Program for the purpose of promoting safe water, increasing knowledge and understanding of safe water, and preserving and enhancing the water environment. Since the inception of



the Endowment Program, the Endowment Committee and other volunteers have worked diligently to solicit donations to fund it. As a result of these efforts, the NC Safewater Endowment Program plans to award a total of \$14,000 in scholarships and grants in 2017.

You Can Help!

Make a donation, of any amount, to the NC Safewater Endowment Fund. Intangible benefits of your donation include personal satisfaction in knowing that your contribution will make a difference in the lives of students as they are awarded scholarships to assist them in pursuing a degree that will qualify them to be a water/wastewater professional, and thereby help to maintain a well-educated workforce into the future. Grants awarded to teachers will enable them to teach future generations of students more about the water environment and its importance in sustaining a good quality of life for existing and future generations.

Spread the word about available scholarships to anyone that may be considering a career in a water/wastewater, environmental, or engineering field.

Donors Make These Stories Possible

While many of our funds were started by substantial corporate or individual gifts, when combined with existing funds and other donations, contributions of any size can have an impact. If every NC AWWA-WEA member donated \$3 per month – the cost of a couple movie rentals, some coffee, a vending machine visit – that would be \$100,800 per year! 

The One AWWA Operator Scholarship

The **One AWWA Operator Scholarship** is funded through the support of AWWA's The Water Equation Campaign and the NC AWWA-WEA.

PURPOSE OF AWARD

AWWA's The Water Equation Campaign and the NC AWWA-WEA will award five (5) One AWWA Operator Scholarships in the amount of \$400.00 for Water Operator training and education.

Scholarship award can be used for certification/licensure, two-year water related associate degree, technical school program, professional training program, books and manuals, and operator related conferences.

Each scholarship recipient will receive a one-year AWWA Operator membership.

ELIGIBILITY/GUIDELINES

- Applicant must be a current water operator or seeking to enter the water operator profession.
- Applicant must be pursuing an Operator's License or Certification, two or four-year degree related to the water operator profession, or professional development.
- Disbursement of the funds will be made directly by the Section to the financial office of recipient's college, university, or technical school.
- Items related to books, manuals, conferences, professional development courses, and other eligible expenses will be reimbursed to recipient upon presentation of eligible receipts.
- Applicant must reside or work within the geographical boundaries covered by the sponsoring Section.
- Acceptance of scholarship constitutes permission to use recipient's name and scholarship story for purpose of promotion.

APPLICATION PROCESS

- Complete application form and submit with additional materials to NC AWWA-WEA by mail at 3725 National Drive, Suite 217, Raleigh, NC 27612, or by email to Rebecca Aguié at raguie@ncsafewater.org.
- Primary application deadline is March 23, 2017. Secondary deadline is June 30, 2017.
- Letters of notification will be mailed to all applicants in June 2017 for the March deadline, and September for the June deadline. If notification of the decision has not been received please contact NC AWWA-WEA staff member Rebecca Aguié at (919) 784-9030 x 1001 or raguie@ncsafewater.org.



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WASTEWATER CERTIFICATION QUESTIONS

Submitted by the NC AWWA-WEA Wastewater Board of Education & Examiners

- When performing deflection test on 8" sdr35 pipe, what size mandrel is required?**
a) 8" b) 7.6" c) 7.5" d) 7.4"
- During an inspection process, you find clear water flowing in a newly-installed collection system that contains 2,300LF of 8" DIP. The collection system has not been accepted nor have any service connections been made. You place a plug in the lower downstream section of pipe to determine the amount of leakage. After 24 hours, you remove the plug and calculate the water collected to be 300 gallons. According to NC DENR, minimum design criteria for permitting of gravity sewers, is this an acceptable amount?**
a) Yes b) No
- Manhole minimum access diameter is _____.**
a) 26" b) 24" c) 22" d) 20"
- A wastewater collection system contains 1,012 miles of sewer lines. To be in compliance with NC DENR system-wide collection system permits, the permittee shall appropriately clean a minimum of _____ LF of lines.**
a) 26" b) 24" c) 22" d) 20"

Answers:

- c) NC DENR Min. design criteria for permitting of Gravity sewers.
- a) NC DENR Min. design criteria for permitting of Gravity sewers.
- c) NC DENR Min. design criteria for permitting of Gravity sewers.
- b) NC DENR System-wide collection system permit.

WATER CERTIFICATION QUESTIONS

Submitted by the NC AWWA-WEA Water Board of Education & Examiners

- A test cock on an approved backflow prevention assembly must be:**
a) closed b) a gate valve c) blow-out proof d) a ball valve
- To be an 'approved' assembly, a backflow preventer must:**
a) be inline testable and repairable b) have OS&Y gate valves c) be accessible d) be visible
- A rectangular tank has dimensions of 20' X 40' and has an overflow of 10' above the bottom. It is desired to bring the chlorine level up to 10 ppm from the current level of 2 ppm. How many pounds of gaseous chlorine need to be added to accomplish this?**
a) 2 pounds b) 4 pounds c) 6 pounds d) 10 pounds
- A water tank is 244 feet tall and has an overflow at 235'. When the tank is full to overflowing, what is the pressure in pounds per square foot at a test cock 4 feet above the ground?**
a) 50 psi b) 75 psi c) 100 psi d) 125 psi
- Recently in the news, Flint, Michigan, had problems with a heavy metal in their drinking water. What was that metal?**
a) Chromium b) Copper c) Uranium d) Lead

Answers:

- c) Backflow Prevention Theory and Practice, 2nd Ed, Chapter five, pg. 83.
- a) Backflow Prevention Theory and Practice, 2nd Ed, Chapter five, pg. 83.
- b) $20' \times 40' \times 10' = 8,000$ cubic feet... $8,000$ cubic feet $\times 7.48$ gallons/cubic foot = $59,840$ gallons...
 $[59,840 \text{ gallons} \times 8.34 \text{ pounds/gallon} \times (10 \text{ ppm} - 2 \text{ ppm})] / 1,000,000 = 3.993$ pounds of gaseous chlorine...round to 4 pounds
- c) $235' - 4' = 231'$... $231' / 2.31'$ per psi = 100 psi
- d) Current Events...Lead can cause serious health problems!

CERTIFICATION INFORMATION

If you have any questions regarding operator/engineering certification and exams, please contact the appropriate agency.

NC Board of Examiners for Engineers & Surveyors

919-791-2000

www.ncbels.org

Exam Dates: 4/21/17 and 10/27/17

Responsible for Professional Engineers and Professional Surveyors

NC Water Treatment Facility Operators Certification Board

919-707-9040

<http://www.ncwater.org/pws>

Traditional Exam Dates: 5/25/17, and 8/31/17

Electronic Exam dates: 7/25/17, and 9/26/17

Responsible for Drinking Water Certifications

(Surface, Well, Distribution, & Backflow/Cross-Connection)

Water Pollution Control System Operators Certification Commission

919-807-6353

<http://portal.ncdenr.org/web/wq/admin/tacu>

Exam Dates: 6/8/17, and 9/14/17

Responsible for Wastewater Certifications
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Welcome New Members!

The following people became members of NC AWWA-WEA in October, November, and December of 2016 by joining AWWA or WEF and choosing NC as their home state or as an additional membership state, or by joining at the state level with an NC SLAM membership. We welcome these professionals to NC AWWA-WEA and look forward to seeing them at future events and working with them on various projects and committees.

For information on how to join, and the membership options available, please visit www.ncsafewater.org/page/Membership. Most of NC AWWA-WEA's work is carried out through committees. To learn more about each committee, review the list of active committees at www.ncsafewater.org/page/Committees. To express your interest in learning more about a committee, contact the committee chair directly, contact the NC AWWA-WEA office, or complete the online volunteer form.

American Water Works Association (AWWA)

Richard Admani, Sterimed-Mena
Grace Allen
Dave Arias, Emerson Process Management
Power and Water Solutions
Michaela Bate,
North Carolina State University
Drew Blackwell,
Cavanaugh & Associates PA
Mark Bowman, Town of Walnut Cove
Katy Brown
Dean Carter,
Fayetteville Public Works Commission
Shay Coombs
Ted Credle, Town of Smithfield
Dawayne Crite,
Critek Engineering Group P.C.
Ryan Cronk, UNC – Chapel Hill
Nicole Dyess
Shiqi Fang,
North Carolina State University
Allison Fechter, UNC – Chapel Hill
Tim Foley, Hensonfoley
Katie Friedman,
University of North Carolina
William Fuller
Dean Gaster, City of Dunn
Earl Greene,
City of Greensboro Water Department
Jay Guffey, City of Greensboro
Bridget Hayes, Charlotte Water
Melissa Hershberger, Charlotte Water
Chad Howell, Charlotte Water
Jonathan Hubbard
Monica Jarrett, City Of Greensboro
Ashley Kabat
Michael Knepper
Christof Kundel, Burkert Contromatic

Jiawen Liu,
North Carolina State University
Jeremy McCall,
City of Greensboro Water Department
Bryan McLaughlin, DMP Corp
Catherine McMillan,
North Carolina State University
Laurie McRae, AMD Solutions
Richelle Mechenbier, Charlotte Water
Matthew Morris,
Montgomery County Water System
Perry Pelitera,
Burkert Fluid Control Systems
Curtis Smith, Charlotte Water
Virginia Spillman, City of Greenboro
Gary Stansbury,
City of Concord Public Utilities
Joseph Threadcraft,
Wake County Government
Hilton Villines, Hoke County
Alice Wang, UNC – Chapel Hill
Diyuan Wang,
North Carolina State University
Alex Womack
Jing Wu
Chuhui Zhan

Water Environment Federation (WEF)

Richard Blong, Xylem Inc – Flygt
Steven Bond
Sydney Carr
Shay Coombs
Mike Davis, Heyward Incorporated
Clarissa Lipscomb,
Kerr Lake Regional Water
Noel Lyons, McGill Environmental Systems
Matthew Seng, Baswood
Jeffery Sutton,
Greenville Utilities Commission

NC SLAM

Austin Alexander, Xylem, Inc.
Earl Bailey, Johnston County
James Baltzer, NC DEQ DWI
Marius Basson
Dee Browder, NC DENR
Bill Carr, RFID Sensor Systems
Gisele Comer, City of Lexington
Kelvin Creech
Mathew Deese, City of Lexington
Drew Edwards, City of Elizabeth City
Rachel Ferguson
James Gray
Daniel Griffee, McGill Associates
Jeremy Haislip, City of Elizabeth City
Keith Hall, Mechanical Equipment Company
Jonathan Hasson, ADS LLC
James Hennessy, Hazen and Sawyer
Mark Hubbard, NC Department of
Environmental Quality (DEQ)
Tony Kelly, Otis Instruments Inc.
Jordan Lakey, City of Lexington
Jared Lebo, AquaAeTer Inc.
Jessica Leggett, NC DEQ
Antuan Lewis, Elizabeth City
Chonticha McDaniel, NC DEQ
Division of Water Infrastructure (DWI)
Michelle McKay, NC DEQ DWI
Sidney Moody, Self-Employed
Chris Parish, Retired
Robin Peele, NC DEQ
Tom Poe, NC DEQ DWI
Ken Pohlig, NC DEQ DWI
Chad Riesett, City of Winston Salem
David Shellenbarger, City of Gastonia
Chiquita Stephenson, City of Raleigh
Laura Styles, WithersRavenel
Steve Tsadwa, NC DEQ DWI
John Tucker, NC DEQ DWI
Daniel Turner, Hazen & Sawyer
Chad Whitley, City of Winston-Salem
Dave Wilson, Mattern & Craig
Steven York, PPG Industries 



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CONTACT US: To see if we can assist with your next project, please contact Brandon Phillips in Raleigh at (919) 544-1100 or Tom Yocon, PLS in Charlotte at (704) 916-1500.

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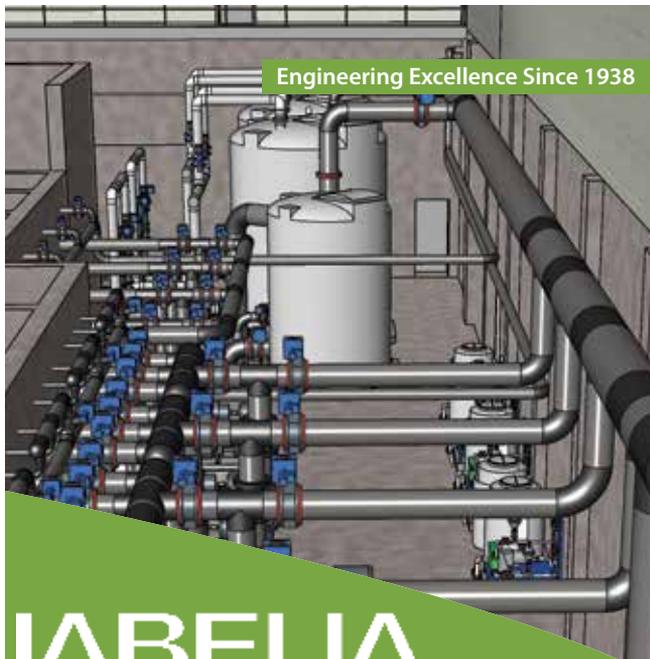
Surveying Services (list is not all-inclusive):

ALTA / ACSM Surveys ❖ Utility As-Built Surveys ❖ Boundary Surveys ❖ Topographic Surveys ❖ Route Surveys ❖ Static RTK / GPS Surveys ❖ Photogrammic Ground Control ❖ GIS Mapping

Geophysical Services:

Borehole Logging ❖ Site Assessments (Contaminant Plumes, Drums, Tanks, Debris) ❖ Geological Investigations (Stratigraphy, Mining, Voids, Karst, Bedrock) ❖ Archaeological (Graves, Foundations, Artifacts) ❖ Non-Destructive Evaluation (Concrete / Rebar Mapping, Void Detection) ❖ Unexploded Ordnance Detection (UXO) ❖ Digital Geophysical Mapping

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Award Winners

Congratulations to all of our 2016 award recipients. NC AWWA-WEA is proud of your dedication and service to the water/wastewater profession.

Thank you to the NC AWWA-WEA Awards Committee, and the many individual award-specific subcommittees and representatives who invested countless hours to collect and review nominations, and then select recipients and gather final award information. We would be unable to recognize so many outstanding professionals without your efforts!

Many of the award recipients listed here were nominated by their co-workers. NC AWWA-WEA knows that there are many other deserving professionals and we count on you to nominate them for recognition.

The 2017 Award Nomination Packet is available online at www.ncsafewater.org/awards. Most nomination forms are due by July 1, 2017. You are encouraged to review the available awards and make a nomination. If you are unsure about a nomination, or have additional questions contact the NC AWWA-WEA office at 919-784-9030.

Select Society of Sanitary Sludge Shovelers (5S)



Kelly Boone, CDM Smith

- NC AWWA-WEA member since 1998
- Leader in the NC Environmental & Regulatory Compliance area for over 15 years

- Served on Communication Committee and Resource, Recovery & Reuse Committee
- Current member & Previous Chair of Membership Committee
- Received the NC AWWA-WEA Special Recognition Award in 2014

Jeff Coggins, Black & Veatch

- NC AWWA-WEA member since 1998
- Employed with Black & Veatch for 27 years
- Previously served as Co-Chair of Annual Conference Program Committee
- Served on Regulatory Affairs Committee, Local Arrangements Committee, Resource Recovery & Reuse Committee
- Currently serves on the NC AWWA-WEA Board

Ryan LeBlanc, Charlotte Water

- NC AWWA-WEA member since 2007
- Previously served on Local Arrangements Committee, Program Committee, and GROW Taskforce
- Strong advocate for Student & Young Professionals Committee
- Currently serves on the NC AWWA-WEA Board

Hank Lewis, Charlotte Water

- NC AWWA-WEA member since 2007
- Member of the Plant Operations & Maintenance Committee since 2007
- Developed and delivered presentations at the Maintenance Technologist Schools and O&M Track at Spring Conference
- Coordinator for the Operations Challenge
- Maintenance Event for past five years

Wendell Pickett, City of High Point

- NC AWWA-WEA member since 1995
- Previously served on Local Arrangements Committee and Safety Committee
- Currently member of Plant Operations & Maintenance Committee and Risk Management Committee
- Current member of the NC Water Treatment Facility Operators Certification Board
- Received the 2011 "Above & Beyond" award for the City of High Point

NC Safewater Fund Scholarship Recipients

Carol Bond/Lynn & Lars Balck Water Environment Stewardship Fund/Rivers & Associates Clean Water Education Fund

Haley Brinkley, North Carolina State University

Ms. Brinkley is currently studying Environmental Engineering. During her studies, she took on an honor's project where she tested and observed a stream's health. After learning so much about wastewater issues, she has decided to concentrate on the pollution of water sources.

"When I entered college, I knew that I wanted to study our environment, but I also wanted to be involved in innovation for the future. I am currently on track to do both [...]. With the help of this NC AWWA-WEA scholarship, I look forward to continue learning for many years."

Environmental Manufacturer's Representative Scholarship Fund

Eric Polli, North Carolina State University

Mr. Polli is currently an undergraduate majoring in Environmental Engineering and Spanish. He became interested in a

career focusing on the water environment in high school after visiting a wastewater treatment plant. In 2014, he studied abroad in Ecuador where had the opportunity to visit petroleum-contaminated areas around major drilling towns.

"My goal is to gain knowledge of disasters dealing with water due to my experience of seeing petroleum pollution of the waters in Ecuador. I hope to be able to research a possible method of purifying water polluted by environmental catastrophes."

**Frank & Susan Stephenson
Water Environmental Scholarship Fund
Meredith Bullard,
North Carolina State University**

Ms. Bullard is majoring in Civil Engineering with a concentration in Water Resources. She has served as an Engineering Ambassador and has also served as a teacher's assistant in the introductory engineering class.

"I am confident that the engineering skills I will gain will equip me to benefit society, protect and improve the quality of the environment, and meet a basic human need. [...] I am thankful for the opportunities that I have had so far to learn more about this critical area, and I look forward to continuing my education."

**Les & Elaine Hall Water
Environmental Stewardship Fund
Caleb Bynum,
North Carolina State University**

Mr. Bynum is pursuing a degree in Civil Engineering with a concentration in Water Resources. During the summer of 2015 he interned with the City of Gastonia. After graduation, he plans to work in a municipal setting where he can help provide clean water for residents and manage wastewater.

"I am very grateful that I have been selected [...]. As I move forward with my education, this scholarship will help to alleviate some of the financial burden that college brings."

**NC Safewater Fund
Mikayla Armstrong, University of
North Carolina at Chapel Hill**



Mikayla D. Armstrong knew in high school that she wanted to have a positive influence on the environment. While attending North Carolina State University to earn her undergraduate degree, experiences in the Environmental

Engineering Department focused Mikayla's interests on water treatment. Currently a Ph.D. student in the Environmental Sciences and Engineering Department at the University of North Carolina at Chapel Hill, Mikayla is passionate about combatting the urgent problem of water scarcity in the context of public health.

"Receiving the NC Safewater Scholarship fills me with gratitude, knowing that I have the confidence of an entire organization supporting my education and my passion for water. This generous gift reduces the burden of funding my Ph.D. research and gives me the freedom to pursue my research in a way that fits my goals best. I thank NC AWWA-WEA for their support."

**Raftelis Financial Consultants
Environmental Finance and
Management Scholarship
Megan Murray, Duke University**

Megan Murray is an incoming graduate student in the Masters of Environmental Management, Water Resource Management program at Duke's Nicholas School of the Environment. She plans to use this educational opportunity to enhance and broaden her skill-set to position herself where she can be

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--	--

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the most useful and effective in the water industry. It is her personal and professional goal to work on issues of potable water in Latin American as a means to achieve the United Nations Sustainable Development Goal 6.

"While I have been very interested in [my graduate program], the cost has weighed heavily on me to the point where I was debating if I should even attend. This scholarship will lessen the amount of loans I have to take out, on top of the ones I have from undergrad."

**Safewater Fund/
GHD Clean Water Fund**

**Zachary Hopkins,
North Carolina State University**

As an undergraduate, Mr. Hopkins worked as a research assistant in Dr. Lee Blaney's lab at the University of Maryland – Baltimore County. Upon gaining an understanding of the implications of discharging chemicals into water supplies, he decided to pursue a Ph.D. in Civil Engineering.

"I am further encouraged by this award to make sure I do everything in my power to help bring knowledge on safe water to the public and better educate the next generation on what safe water truly means."

**Carol Bond Fund Scholarship
for Middle and High School
Environmental Educators**

**Carrie Jones,
Middle Creek High School**



Carrie Jones is a science teacher at Middle Creek High School in Apex, NC (Wake County School District). She teaches 9th grade Earth/ Environmental Science and Marine

Science. She is the president of the North Carolina Science Teachers Association (NCSTA) and High School Division Director for the National Science Teachers Association (NSTA). She has been a classroom teacher for 17 years. She intends to use the scholarship funds to take students to their local watershed and investigate water quality. Outcomes from this project include students' ability to articulate cause/effect and to generate solutions to water pollution.

"My hope is that students will make connections between human impacts on water resources and promoting sustainable water conservation practices."

**NC Stockholm Junior Water
Prize Winner**

**Joshua Zhou, North Carolina School of
Science and Mathematics in Durham**

Joshua Zhou, a student at The North Carolina School of Science and Mathematics in Durham, NC, was selected as the North Carolina 2016 Stockholm Junior Water Prize (SJWP) competition winner for his project, "Low-Cost Heterostructure Semiconductor Uses Energy in Visible Light to Efficiently Breakdown Environmental Toxins Threatening Aquatic Life." Joshua conducted his research at Duke University, and his project worked to reassess a common water pollutant's environmental disruption and develop a material to break it down under sunlight.

AWWA Partnership for Safe Water

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improve performance above and beyond even proposed regulatory levels. This list recognizes new awardees, and those reaching 5, 10, and 15-year milestones.

- Fayetteville Public Works Commission, Glenville Lake WTF
 - 15-Year Directors Award
- Fayetteville Public Works Commission, P.O. Hoffer WTF
 - 15-Year Directors Award
- Orange Water & Sewer Authority, Jones Ferry Road WTP
 - 5-Year Excellence in Water Treatment
- Charlotte Water, Vest WTP
 - Directors Award

Golden Manhole Award

Recognizes individuals who are significant contributors to the advancement of the systems design, education, training, certification, construction, operations, maintenance, and management of water distribution systems or wastewater collection systems.

Dan Anderson, Frazier Engineering



Dan has been active in the NC AWWA-WEA Wastewater Collections and Water Distribution Systems committee for the past 6 years. His efforts have included providing

assistance to the Collections and Distribution schools, participating in the Annual Conference, and serving as a sub-committee chair working with industry representatives to present educational topics at committee meetings. Dan works with various municipal clients to analyze their collection systems and makes recommendations for improvements. As part of that effort, Dan has utilized various technologies to facilitate the collection of flow monitor data, saving his clients time and money.

Angela Lee, Charlotte Water

Angela was recognized at WEFTEC for her participation on the national WEF Collection & Distribution Committee.

Wastewater Collections Operator of the Year Award

Given to an individual who has contributed to the successful operation and maintenance of a sewage collection system.

Alvin Robertson, Town of Hillsborough



Alvin Robertson began his employment with the Town of Hillsborough in 2002 as a wastewater treatment plant operator. He was promoted to utility



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mechanic in 2008, and later in 2008 transferred to the Utility Maintenance Crew. When three different levels of the utility mechanic position were created in 2012, Alvin was promoted two levels to a utility mechanic 3, due to his certifications and many years of experience, both with Hillsborough and in previous private employment. Alvin strives to further his knowledge by attending trainings and receiving updated certifications. He voluntarily took the lead in implementing and becoming an expert on the Town's cloud system. Although this task was not required of him, he recognized its usefulness and took it upon himself to input data and make modifications to greatly enhance our Utility Cloud experience. Alvin has a positive outlook on life, and it shows in his work. He is cooperative, helpful and dedicated to the Town, his fellow employees, and to the public that he serves.

Water Distribution Operator of the Year Award

Given to an individual who has contributed to the successful operation and maintenance of a water distribution system.

Derek Williams, Town of Morehead City



Derek started with the Town of Morehead City in 1999 as a service technician and then moved up to crew leader and has since been promoted to utility supervisor. Derek

has taken advantage of all opportunities to learn the utility department inside and out. Derek holds several certifications, and maintains all of them by completing the required continuing education, while encouraging others to go to school.

Derek has been instrumental in implementing the Utility Cloud by allowing each staff member access

to training on how to effectively use the tablet and Utility Cloud to increase productivity and accurately track work. Derek also helped in transitioning the utility department, to paperless work orders, allowing the 'City Hall' tech to spend more time in the field.

Derek's actions on the job are always professional whether it is with staff or residents, and he always explains the job and outcome to all involved. Derek's knowledge and experience have served the town and its residents by maintaining high quality standards and attention to detail. Derek's character is what allows him to motivate the staff that he works with every day to strive to make the Town of Morehead City proud. Derek has a way of motivating those around him to want to be the very best. Derek takes pride in his job and treats every citizen as if they were his boss. He goes out of his way to make sure that Morehead City has high quality water.

Wastewater Collection System of the Year Awards

Recognizes municipalities that protect the public health and the environment through pro-active practices of management, operations, and maintenance beyond what is required of its NC DEQ collection system permit.

Charlotte Water – Large System



Charlotte Water takes several innovative approaches to improve the efficiency of management, operations, and maintenance activities to reduce sanitary sewer overflows (SSOs). These approaches include:

- Contracting with a leading industry expert to evaluate and standardize cleaning practices through an extensive training program with in-house certifications.

- Continuing to incorporate and expand the use of the innovative mainline acoustical testing method in their manhole inspection and condition assessment process. Manhole inspectors now utilize this inspection equipment daily and over 300 miles have been tested.
- "Smart Cover®" flow monitoring/surcharge alarms continue to be placed strategically around the system to give an early warning of blockages and elevated levels in manholes before SSOs occur.
- Refined and continued use of 'Jet Scan' cameras to increase the efficiency and quality of sewer line cleaning. The cameras attach to the end of a combination truck jetter hose and enable the crew to video the line after cleaning, while the crew is still onsite. The crew can then immediately review the recorded video footage to determine the quality of cleaning and re-clean before leaving the site. It also enables them to look for damage and report it immediately.
- Continuing with the implementation of best practice standards throughout the department by promoting the International Standards Organization (ISO) programs along with other similar standards.

Town of Mooresville – Medium System

- 13,823 Sewer Accounts
- 6,473 Manholes
- 254 Miles of Gravity Sewer Main
- 43 Pump Stations
- 42.3 Miles of Sewer Force Main

Town of Hillsborough – Small System

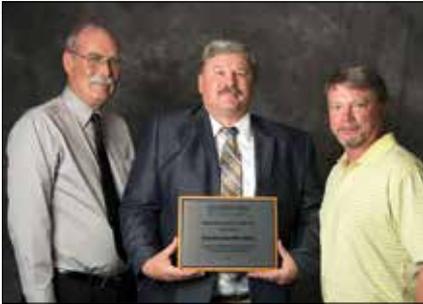


- 80.28 miles of public gravity sewer
- 16.23 miles of sewer force main
- 9,860 served
- 24 pump stations

Water Distribution System of the Year Awards

Recognizes municipalities that protect the public health through pro-active practices of management, operations, and maintenance of their water distribution system beyond minimum standards.

Brunswick County Public Utilities



- 1,079 miles of drinking water pipe
- 89,507 population served
- 15 storage tanks
- 9 pump stations
- 27 water distribution staff (19 certified)

Brunswick County Public Utilities faces a number of unique challenges to provide potable water service to its customers and meets its goals of providing high-quality water and a cost-effective rate. The County and its employees have implemented a number of different programs that has allowed the County to meet its customer's potable water needs in one of the fastest growing counties in the nation over the past 15 years.

In 2006 the County implemented a Career Ladder Program to encourage employees to pursue additional training and distribution system licenses. Of the 22 employees who provide maintenance of the water distribution system, 10 have a Grade A Distribution License, 6 have a Grade B Distribution License, and 3 have a Grade C Distribution License.

In fiscal year 2016, Brunswick County assumed ownership and operational responsibilities of its fifth municipally-owned water system over the past 8 years. The County staff developed a plan to bring the water system up to County standards prior to assuming maintenance responsibilities and

implemented the plan after assumption of operation responsibilities. Overall, the County's water customer base grew by 4.4% in fiscal year 2016 with no additional staff.

In fiscal year 2016 the distribution staff completed installation of all of the meters associated with the transition to an Advanced Meter Infrastructure (AMI) system. The distribution staff installed more than 45,000 meters over a 7-year period. Using distribution staff to install the meters and implement the system saved the County more than \$4.5 million.

Due to the number of irrigation meters in the system with the associated backflow prevention devices, the County implemented a County-wide testing program where the County hired a contractor to perform the testing at a substantially reduced cost. While the property owner can opt out of having the County test their backflow device,

most have enthusiastically endorsed the program as it reduces their costs and eliminated the need for separate testing.

In fiscal year 2016 the County rehabilitated and upgraded two of its water booster pump stations using the County's Distribution and Instrumentation and Electrical Division staff.

Town of Mooresville – Medium System



- 275 miles of drinking water pipe
- 36,391 population served
- 5 storage tanks
- 1 pump station
- 29 water distribution staff (7 certified)

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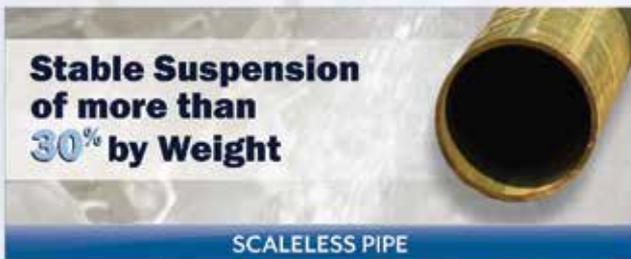
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Disaster Preparedness Award, Large Utility

Presented to utilities in acknowledgment of outstanding achievement in advancing disaster preparedness initiatives thereby strengthening our preparedness.

Cape Fear Public Utility Authority



Cape Fear Public Utility Authority has taken several steps to prepare for future disasters, including:

- Uploading all of its critical facility power needs into the US Army Corps

of Engineers Emergency Power Facility Assessment Tool website

- Acquiring Department of Defense ICWater Impact and Modeling Software, which enables real-time tracking of chemical, biological, and radiological events in the surface water system.
- Participation of their Emergency Management Coordinator in the local Emergency Planning Committee and the US Coast Guard's Area Maritime Security Cyber Security Sub-committee
- Holding an internal table top exercise featuring a water contamination event for the New Hanover County local Emergency Planning Committee and invited community members

- Holding a full-scale water emergency exercise requiring real-world response actions
- Creating its first seasonal Algal Bloom Incident Action Plan (IAP), which is enacted under conditions favorable to creation of algal blooms. The formal IAP dictates gradual tactics for monitoring, credible, and confirmed stages
- Developing a formal Laboratory Operations Continuity of Operations Plan. Alternate sites were selected at CFPUA facilities to allow continued laboratory operations if the main laboratory is damaged or can't be accessed due to natural storm hazards.

Disaster Preparedness Award, Individual

Presented to individuals in acknowledgment of outstanding achievement in advancing disaster preparedness initiatives thereby strengthening our preparedness.

John McLaughlin, Merrick & Company



John has been a consulting engineer for several firms in the Charlotte area for over 35 years, and is currently working for Merrick & Company. For many years his work has included water

security and preparedness.

Jack Moyer, AECOM



Jack has served as the Water Security and Preparedness Practice Lead at URS/AECOM for over 10 years, following his retirement from the City of Raleigh, where he served as

Assistant Public Utilities Director. He has led and served as a technical expert on water/wastewater security and preparedness projects across the US.

WWTP Operations & Maintenance Excellence Award

Awarded for outstanding plant operation and maintenance efforts, according to the best use of the resources available to that facility.

Greenville Utilities Commissions Wastewater Treatment Plant – Eastern Region



The Greenville Utilities Commission Wastewater Treatment Plant has demonstrated a consistent high level of professionalism and dedication to the environment.

The Greenville Utilities WWTP began

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operation in 1985 as a 10.5 mgd facility and was later expanded and upgraded to 17.5 mgd.

Greenville Utilities WWTP makes every effort to leverage technology effectively in its business processes. All WWTP mechanics and operations staff members utilize tablets to access SCADA, a work and asset management system, and GIS tools. Work is recorded in an asset management system, which enables more accurate preventative maintenance planning, budget forecasting, and capital planning.

In addition, employees are encouraged to pursue the highest level of certification in their skill set and attain certifications in other complementary areas as well. Many of the O&M staff are cross-trained and certified as both biological operators and maintenance technologists. Greenville Utilities hosts an 'open house' at the WWTP annually on Earth Day. Throughout the year, plant staff provides plant tours and

presentations to schools and community groups in an effort to educate the public and maintain partnerships that enhance environmental awareness and health.

Congratulations to the ORC, Jason Manning and his staff for their hard work.

Town of Apex Reclamation Facility – Central Region



The Town of Apex Water Reclamation Plant has demonstrated a consistent high level of professionalism and dedication to its customers and the environment. When you arrive at the WWTP you will notice the beautifully landscaped grounds and facilities. The Department of Environmental Quality has stated that the plant's appearance is superb in comparison to other plants that they have visited. The staff is very proud

of their facility's appearance, but also proud of achieving removal rates of BOD, TSS, NH-3 with an average efficiency of 99.2%.

Throughout the plant, there are plenty of signs that this group knows how to work together as a team. Preventative maintenance is a priority. Over the years, the staff has designed, constructed, and installed aluminum covers to help prevent algae growth on the clarifier weirs, resulting in fewer man-hours spent on cleaning. They have also installed variable speed drives on all the rotors in the oxidation ditches in order to more efficiently maintain the dissolved oxygen levels. While yielding significant annual energy savings, this also gives the operators better control of manipulating the DO to create anoxic zones and aerobic zones in the oxidation ditches. This has resulted in a decrease of total nitrogen by 30% annually.

The Town of Apex staff has been very involved in several areas dedicated to the protection of the environment.



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Staff members actively serve on the Pretreatment Consortium, and in the Lower Neuse River Basin Association.

The Town of Apex has built a strong commitment to public education and outreach. The Apex WRF facility has done an excellent job of educating and engaging the public to understand how water reclamation facilities ensure safe water and protect our waterways through tours and public engagement. The Town hosts an annual Peak-Fest where the Public Works and Utilities Department staff set up booths to discuss various topics such as stormwater control, illicit discharges, protecting the environment, and the dos and don'ts of grease disposal.

Congratulations to the ORC, John Cratch, and the rest of the outstanding WWTP staff on this well-earned award!

Water & Sewer of Cabarrus County, Rocky River WWTP – Western Region



The Water & Sewer Authority of Cabarrus County's Rocky River WWTP distinguishes itself in the maintenance of its plant and unique solids handling system, its consistent record of compliance, and the transfer of knowledge from retiring staff to promoted and new staff.

This WWTP maintains an innovative treatment facility and solids handling system that utilizes a 95% pure oxygen activated sludge biological process. The plant utilizes a disinfection system that uses sodium hypochlorite, thus eliminating the use of hazardous chlorine gas. The plant's most innovative aspect is the design and maintenance of its sludge processing system that features:

- High biosolids centrifuges to dewater and achieve an efficient continuous

feed of low-moisture biosolids to a multihearth incinerator

- Dewatering biosolids bunker to maintain an inventory of dewatered biosolids to allow for changes in furnace feed rates and variable centrifuge operation
- Piston-type biosolids pumps to pump 30% biosolids. This plant was one of the first in the US to install these pumps, which reduce pumping energy by 50%
- Flue gas heat exchanger to preheat incinerator combustion air, greatly reducing fuel needs for incineration
- Heat exchanger to extract heat from gas to warm plant buildings, reducing the electrical needs for heating
- Wet electrostatic precipitator to remove fine particulates from flue gas, lowering costs and improving reliability to meet air permit limits

The plant staff's diligence and attention to detail have resulted in a stellar compliance record with 12 consecutive years of 100% compliance, earning it the Peak Platinum Award. The plant's lab conducted over 21,200 water quality control tests in 2015.

The plant has maintained consistent compliance and a high level of plant maintenance despite a recent large wave of senior staff retirements. This is in large part due to careful succession planning, planned transitions, and a strong commitment to staff training.

Kasey Monroe Outstanding Service Award

Given to a member of NC AWWA-WEA whose efforts and contribution demonstrated outstanding service to NC AWWA-WEA.

Greg Morgan, Union County



- Instrumental part of development of the Collection & Distribution ladders of The Academy
- Currently serves as co-chair of the Operations Challenge subcommittee

- Professional WW Operators Representative on the NC AWWA-WEA Board Trustee 2014-2016
- Utility Operations Supervisor at Union County Public Works

George W. Burke, Jr. Safety Award

Encourages an active and effective safety program in municipal and industrial wastewater facilities, and stimulates the collecting and reporting of injury data.

City of Eden, Mebane Bridge Wastewater Treatment Plant



- 9 employees
- 18,304 worked hours in 2015
- No injuries that resulted in loss of life, or days away from work
- Received OSHA Safety and Health Achievement

Recognition Program (SHARP) award 2013 and 2016

- Active safety committee and written safety program

Wastewater Laboratory Analyst Excellence Award

Recognizes an individual for outstanding performance, professionalism and contributions to the water quality analysis profession.

Amanda Hill, Town of Mebane



Amanda is extremely proud of the important work that is done by the wastewater industry and has a knack for cultivating in students an interest and excitement for the field. Amanda

thoroughly enjoys leading tours of the Mebane WWTP and has become the 'go-to' tour guide for the facility. She leads tours of local high school students in both the fall and the spring every year,

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and conducts annual tours for the Environmental Biology and Microbiology classes from the local community college. In addition, Amanda represents the Mebane WWTP at career fairs for local middle schools and at the annual Earth Day event at the local high school. This spring, she also volunteered to spend a day in one of the area middle schools teaching a unit on wastewater treatment for the science classes.

Amanda is an invaluable asset to the Mebane WWTP team and consistently exceeds the expectations of her position. She readily accepts new or additional duties and responsibilities while maintaining quality in her current assignments. Amanda also makes an effort to understand the roles and responsibilities of others in the department in an effort to seek additional duties or, at the very least, perform those already assigned to her in a way that enhances the work done by others in the department. Because of the process control analyses that she performs, Amanda is often one of the first to become aware of a potential problem in the treatment plant. She is quick to recognize these potential issues and doesn't hesitate to communicate them and offer assistance in arriving at a solution.

Amanda's involvement in multiple associations, specifically her position of secretary for the Central Region LabNet set her apart from the other candidates nominated for this award.

William D. Hatfield Award

Recognizes an individual who pursues the advancement of the art and knowledge of wastewater treatment.

Melinda Ward, City of Eden



Melinda Sessoms Ward has been involved in the wastewater treatment industry from the time she was a young girl helping her father at his plant. Her father is Lynwood Sessoms, who worked for the

Town of Tarboro in wastewater operations for almost 43 years and retired as the

superintendent several years ago. Her admiration for her father influenced her career choice in water utilities and, after graduation from Western Carolina in 1993, with a bachelor's degree in environmental health, she followed in his footsteps.

She began her career as a laboratory technician at the City of Rocky Mount WWTP and then spent time working for the Town of Newton Grove and then Martinsville before becoming the wastewater treatment plant superintendent for the City of Eden. She has served in this position for eight years and has done an excellent job managing the plant, as shown with six consecutive years of permit compliance with no violations.

Melinda strives to have her plant operate as effectively and efficiently as possible, and continually searches for improving treatment processes at every opportunity. She also strives for growth and improvement in herself.

Melinda's strength in leadership is no accident. She received the Local Government Federal Credit Union Fellows Scholarship and completed the Fellows Program through the UNC Institute of Government. She is also a graduate of the UNC Institute of Government Municipal Administrative course. Melinda has used her education and training to be very effective in a multitude of applications, devoting some of her time to work on projects with other city departments, the NC Pretreatment Consortium, the Dan River Basin Association, and elsewhere as needed. She also strives to grow her working relationships with peers around the state and has an earnest desire to help others.

Melinda is very active in NC AWWA-WEA and is currently serving as vice chair on the Wastewater Board of Education and Examiners and also the chair of the NC Professional Wastewater Operators Committee Central Region. She is also very involved with safety training and OSHA compliance. She has been a leader with the City of Eden Safety Committee and completed the review and revision of the City Safety and Loss Control Policy. Her WWTP has twice received the SHARP certification from OSHA.

Congratulations Melinda, for your selection as the 2016 William D. Hatfield award winner. Your successes and sacrifices in leadership and volunteerism make you very deserving of this honor.

Arthur Sidney Bedell Award

Acknowledges extraordinary personal service to the WEF member association based on organizational leadership, administrative service, membership activity, and stimulation of technical functions or similar participation.

David L. Wagoner, CDM Smith



Selection considered length of association membership for a period of at least five years, as well as service and contributions. This included administration of association affairs, outstanding service

on association committees including membership on certification and examination board committees for the association, and outstanding contributions in the field of wastewater research, design, operation, and administration.

David's professional and personal accomplishments include the following:

- Received B.A. in biology from Wake Forest in 1979 and M.S. in engineering from University of North Carolina Charlotte in 1992 and
- Possesses North Carolina professional engineering registration (2000) and North Carolina Grade IV wastewater operator certification
- WEF member since 1985 and AWWA member since 2007
- Biological Wastewater School instructor for many years and many subjects
- Delivered many presentations locally and nationally on diverse wastewater topics, including biological nutrient removal, residuals management, odor control, and process optimization
- 5S recipient
- Past chair and continues to serve the NC AWWA WEA Wastewater Board

- of Education and Examiners since its inception in 2009
- Recipient of the WEF Gascoigne Medal in recognition of wastewater treatment operational improvement and excellence
- Member of the Public Education Committee and served on the Public Education Task Force, identifying directions for NC AWWA-WEA public education efforts
- Significant involvement with the Stockholm Junior Water Prize, including serving as its committee chair for WEF for three years and continuing to serve as an active national committee member; attracting the national competition to North Carolina and continuing its coordination and management; and mentoring several students and traveling to its competitions
- Involved in Scouting since the age of 8, eventually attaining Eagle Scout rank, former Scoutmaster, and remains involved with his son's troop

- Avid gardener and hiker, including the Appalachian Trail
- Active in his religious congregation, a lifelong member also serving its committees, councils and as an officer, usher, adult Sunday school and vacation Bible school teacher

Walter J. Courmon Safety Award

Encourages an active and effective safety program in municipal water facilities, and stimulates the collecting and reporting of injury data.

Union County Public Works



Union County Public Works (UCPW) does not have a typical safety committee. There are “safety champions” in each department that perform walk-throughs and bring up any safety

concerns to the safety manager. Each utility crew performs a site safety audit before the start of each job, in which they look for hazards relating to trenching/excavations, lockout/tagout, work zone safety and confined spaces.

The County's safety programs can be readily accessed by the employees on its intranet (County Connect) and employees can sign up for training sessions online as well.

Job hazard analyses have been conducted for all field positions and are evaluated on an annual basis. In 2015, UCPW experienced five recordable injuries and one lost time case. The utility has never had a workplace fatality. In the event of an accident or near miss, a root cause analysis is conducted by the injured employee, crew leader, and immediate supervisor. The scenario is reenacted and thought through to prevent any reoccurring injuries and eliminate any existing hazards if possible.



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UCPW's health & safety manager works in conjunction with the County's risk manager to eliminate injuries and transition employees back to work safely if an injury happens to occur. UCPW is the only department within Union County that has a dedicated safety and health professional, which demonstrates management's commitment to safety and health. For 2015, Union County was presented with the Gold Award from the Department of Labor (NCOSHA) for having an injury/illness rate that was below industry standards.

George Warren Fuller Award

Presented to a member of AWWA for distinguished service to the water supply field in commemoration of sound engineering skill, brilliant diplomatic talent, and the constructive leadership that characterized the life of George Warren Fuller.

Barry Shearin, Charlotte Water



Barry Shearin mirrors many of George Warren Fuller's traits and interests.

He is a very practical person. He has a way of putting folks at ease in difficult situations. He has been called

on to solve many complex and adversarial situations through the years. Peers, contractors, consultants, customers, employees, and elected officials respect his diplomatic skills and honest, straightforward manner. They appreciate his ability to apply technical knowledge to find workable, practical resolutions.

Barry's employers have relied on him heavily. For more than 30 years, he provided sound engineering skills, constructive leadership, and guidance on many complex projects. His work history includes major water and wastewater plant upgrades and expansions, some of the largest pipeline projects in the history of the state, and development of major regional agreements between municipalities to

provide efficient long-term water and sewer service. He understands how things work and what it takes to keep them working. He uses that understanding to help prioritize needs and the use of limited resources.

Barry also serves the profession as a volunteer. In addition to his informal mentoring of employees, he has served as trustee and chair of NC AWWA-WEA and has received numerous awards and recognitions. He is a frequent instructor at Operator Schools, where he shares his knowledge openly.

He has worked his way up through the water industry by using his technical leadership, and diplomatic skills. Those skills took him from an entry-level civil engineer to the role of utilities director for Winston-Salem and then to chief engineer and deputy director of engineering and operations for Charlotte Water. Since retirement, he has continued to be involved in the industry, helping Charlotte Water develop training for employees and taking a position in the consulting field.

There are few people who can engage in so much work and influence so many people over such an extended time period and have such a spotless reputation as this year's recipient. It is such distinguished service that makes Barry Shearin so deserving of the George Warren Fuller Award.

AWWA American Water Landmark

To recognize and preserve an American, Canadian, or Mexican Water Landmark at least 50 years old that has had a direct and significant relationship with water supply, treatment, distribution, or technological development.

City of High Point, Arnold J. Koonce, Jr. City Lake Dam



The High Point City Lake Dam was a 2016 recipient of this prestigious award. The site was designed in 1926, and was constructed over a period of three years as a WPA project designed to impound water specifically as a drinking water source for the City of High Point. The City Lake Dam is being used as designed, to serve a drainage area of 60 square miles and impound 1.2 billion gallons of water. It remains the primary drinking water source for the City of High Point. In later years, a park was added. A remarkable and historic water resource for the community, this dam and surrounding parkland are used by thousands of visitors each year.

Kenneth J. Miller Water For People Award

Honors an individual for outstanding service to Water For People.

Paul Judge, NC DEQ

Paul was a member of North Carolina Waterworks Operator's Association for over 20 years and served as chair of the South Piedmont Section. In addition, he was also an active member of NC AWWA-WEA, most recently serving as vice chair of the Water For People Committee. Paul taught at water schools, proctored certification exams, and was a guest speaker at many seminars and workshops. In short, he was a hero to the water industry in North Carolina.

Paul was also able to effectively combine his affinity for adventure with water quality issues on a global scale. After observing the success of the first Climb for Water campaign to Africa's Mt. Kilimanjaro in 2011, he got heavily involved in the effort going forward. During the next two campaigns, Paul helped raise another \$25,000 for clean water and hygiene projects around the world. Perhaps Paul's greatest contribution to the team was his infinite patience. He was more physically fit than anyone who participated in Climb for Water, but always stayed in the back of the pack to make sure

he was there to lend a hand or an encouraging word. Climb for Water was a turning point in Paul's life, it gave him purpose while allowing him to pursue ever greater adventures. Paul died on the morning of March 9, 2016 on the steep and dangerous slopes of Ixtaccihuatl, a 17,159-foot extinct volcano in Central Mexico.

In life, Paul Judge was more than a hydrogeologist and outdoorsman. He was a loving son, a beloved brother, a devoted father, and a best friend to everyone he met. Paul was a man who could take you out of your comfort zone and help you conquer your fears. In addition, he was a hero to all of us who knew him and to countless others around the world who never got the chance to meet him.

Raymond E. "Red" Ebert Award

Presented to a member who has made significant contributions to the practice of operating a water distribution or wastewater collection system.

David Wichtl, Town of Morehead City



David Wichtl has been pivotal in the start-up and operation of all three recently constructed water treatment plants in Morehead City. He was able to make the transition seamless and his efforts brought the Town's new water treatment facilities online flawlessly. David developed and runs the water treatment plants using a method that allows the Town increased productivity and reduces the risk of multi-plant failure in the event of a natural disaster. Not only has he been the chief operator of the Town's three

water plants, but he also takes part in any water quality concerns and deals directly with the customer to educate and explain the results. David's efforts and attention to detail far exceed the expectations of our customers. He takes advantage of all training offered to him within his specialty, even when no additional compensation is offered for acquiring new certificates. He strives to gain additional training not only for himself, but also for the overall betterment of the town. His high level of integrity is greatly recognized by all.

Safe Water Maintenance Technologist of the Year Excellence Award

Recognizes the hard working maintenance professionals involved in the day-to-day maintenance and upkeep of our state's plant assets.

Jamie Chandler, Town of Marshall



Jamie joined the Town of Marshall in 2004 with a background in construction and learned about every aspect of the Town's water and sewer system. Due to his willingness to learn and work ethic, five years later he became the supervisor. Described as a "committed and humble" leader, Jamie tirelessly works to maintain and upgrade the systems he manages. In a small town, resources are limited and Jamie exhibits servant leadership not only during business hours but also in the wee hours of the morning when searching for that elusive leak or responding to an emergency call. The Town's mayor, town administrator and the regional engineer from NC DEQ commended Jamie's

dedication and professionalism in serving the citizens of his small town. If you have a chance, ask him what he does when he is not working on the water system. It's for these reasons, that we recognize Jamie Chandler with the NC AWWA-WEA Safewater Maintenance Technologist Excellence of the Year Award.

Donald E. Francisco Educator of the Year Award

Given annually to a member who demonstrates outstanding service to the Association and industry through education and training of water and wastewater professionals.

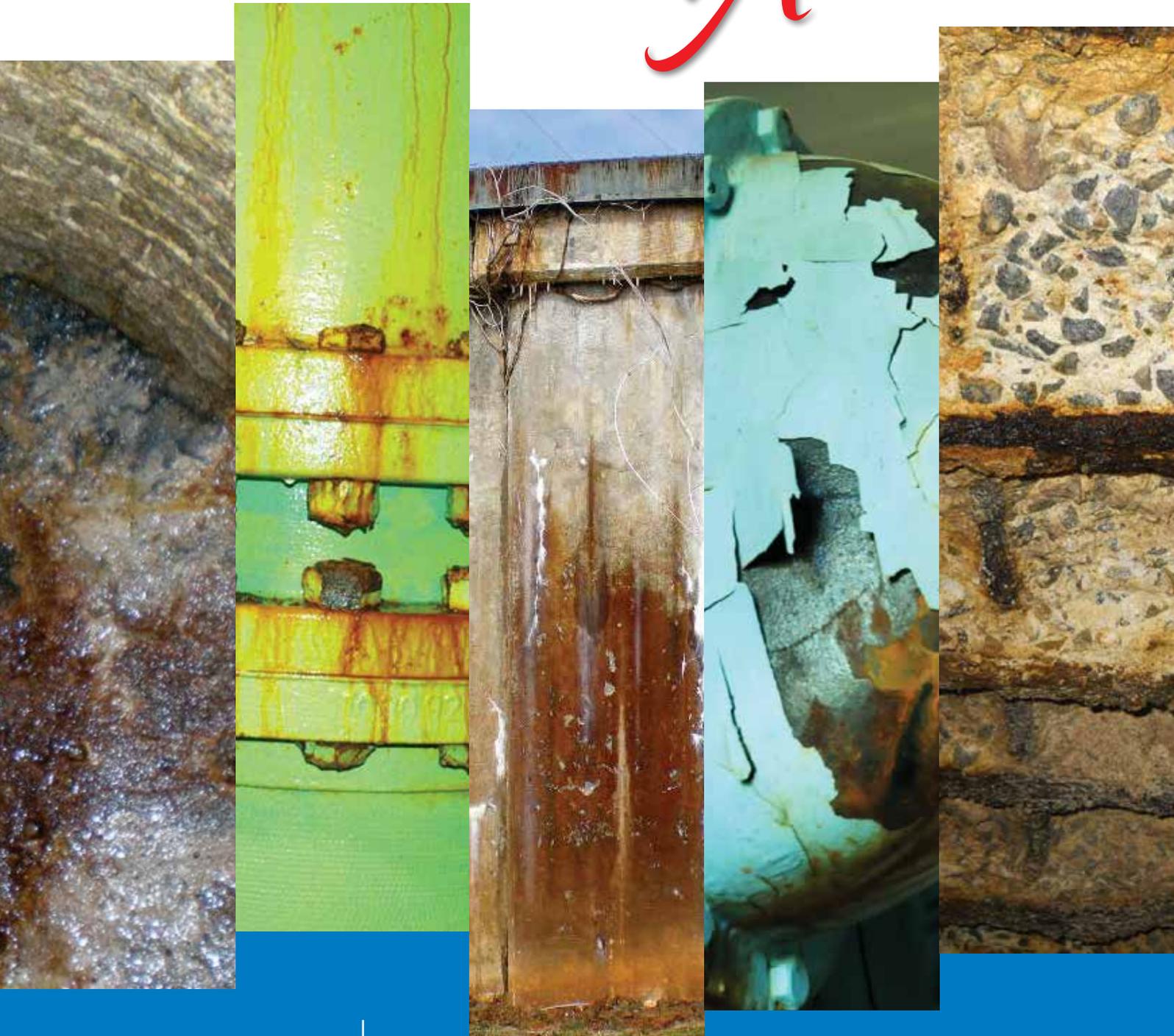
Mark Wessel, City of Raleigh



Mark Wessel has had a lasting impact on the North Carolina water and wastewater industry due to his involvement and leadership of the Plant Operations and Maintenance Committee and board of trustees liaison for NC AWWA-WEA. Mark served as the program administrator for the creation, development, and execution of the statewide Maintenance Technologist Certification Program. This program entails operating two, 4-day schools with four levels of certification annually in North Carolina. This first-of-its-kind program in the state certifies industry maintenance staff through education and examinations with ABC Plant Maintenance technologist recognition. Hundreds of maintenance professionals have received certification. It's a pleasure to honor Mark with this very deserving award. 

Congratulations to all the award recipients!

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News and Notes

Membership Shirts On Sale Online May - July

The NC AWWA-WEA Membership Engagement Committee wants to help you show your NC AWWA-WEA pride! Navy blue, performance fabric polo shirts with the NC AWWA-WEA logo over the left pocket-area are available for \$35. They will be sold at events throughout 2017, with online sales available in May, June, and July 2017. There is an additional \$7 fee for shipping & handling per shirts for online purchases. Limited quantities are available, so act fast to get your NC AWWA-WEA gear!



STV Hires Andrew Vane, P.E.



STV Incorporated is excited to announce the hiring of Andrew Vane, P.E., a highly experienced project manager, designer and construction administrator of

water, sewer, and force mains for nearly 25 years. Andrew is a senior project manager based in our Charlotte office. He is responsible for managing water and sewer utility design projects, while also providing quality assurance to these initiatives in North and South Carolina.

Andrew has been an active participant and contributor to a number of annual conferences and industry publications relating to water and sewer utility design and construction. He has authored articles appearing in *NC Currents* magazine

and *Trenchless World* magazine, and recently presented at the 2016 Water Environment Federation's Technical Exhibition and Conference, the largest event of its kind in North America. He is also scheduled to speak at the North American Society for Trenchless Technology's No Dig Show in April 2017, in Washington, DC.

Founded more than 100 years ago, STV is a leader in providing engineering, planning, architectural, environmental, and construction management services for transportation systems, infrastructure, buildings, energy, and other facilities. The firm is ranked 40th in Engineering News-Record's Top 500 Design Firms survey and 9th in its transportation category. STV is 100% employee-owned. For more information, visit our website at www.stvinc.com or follow @STVGroup on Twitter.

Dewberry Hires Amanda Murphy



Dewberry, a privately held professional services firm, has hired Amanda Murphy as a marketing manager in the firm's Raleigh,

North Carolina, office. Her responsibilities will include managing proposals for a diverse client and market base, developing and implementing capture strategies to meet sales goals, and coordinating and supporting business development activities.

Murphy has more than 15 years of experience in the marketing field, with a background in business development, opportunity research, proposal creation, and project management collaboration.

Prior to joining Dewberry, Murphy

worked in a number of industries including engineering, food and beverage, law, and software development.

“Amanda has already proven to be a great asset to our team,” says Dewberry Vice President Joe Skinner, PE. “She undoubtedly comes equipped with the necessary skills to market our division successfully.”

Murphy earned her bachelor’s degree in business administration from the University of North Carolina at Chapel Hill and her master’s degree in international studies from North Carolina State University. She is a member of the communications and website committees for the NC AWWA-WEA.

Dewberry is a leading, market-facing firm with a proven history of providing professional services to a wide variety of public and private sector clients. Recognized for combining unsurpassed commitment to client service with deep subject matter expertise, Dewberry

is dedicated to solving clients’ most complex challenges and transforming their communities. Established in 1956, Dewberry is headquartered in Fairfax, Virginia, with more than 50 locations and 2,000+ professionals nationwide. To learn more, visit www.dewberry.com.

Sanexen Appoints Ron Glive as Representative for North Carolina



Sanexen Water, a specialty contractor based in Emmaus, PA, is pleased to announce the appointment of Ron Glive as Director of Business Development for Sanexen Water’s east coast office, serving North Carolina.

Ron has more than 25 years of practical experience in both the utilities and industrial manufacturing sectors, throughout the Europe, Asia, and the Americas. His expertise focuses on assisting utilities in need

of smarter rehab solutions and providing clients with information to move their projects forward.

In 2016, he represented Sanexen at the NC AWWA-WEA annual conference, meeting with dozens of water utilities from all regions of North Carolina. He is currently providing support for several utilities in the design stages of CIPP projects for 2017.

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NC Currents Future Themes & Submission Deadlines

NC Currents is the official publication of NC AWWA-WEA. Members, individuals, and committees are encouraged to submit content for the magazine. If you would like to submit an article to be considered for publication in NC Currents, please complete the Submission Form & Publication Agreement (available at www.ncsafewater.org/page/NCC) and email both the completed form and your article to Nicole Banks at nbanks@ncsafewater.org. Articles must be received by 5:00pm EST on the listed submission deadline.

The editors of NC Currents welcome the submission of all articles related to the water and wastewater industry. Themes serve as general guidance for each issue, but articles are not limited to an issue's specific theme. Submission of an article does not guarantee publication. The editorial committee will review and select all articles, and authors will be notified of the status of their submission.

SUMMER 2017

Reuse (Submission Deadline April 10, 2017)

Water is life...and with the world population increasing at about 80 million per year, with time, it will be increasingly difficult to manage our water resources effectively to sustain life and our quality of life. Fortunately, water is a renewable resource, and there are many cases in which reused water is being utilized as a substantial water resource in many parts of the United States, including North Carolina. It is critical for the water and wastewater industry to continue to explore water reuse options and look for innovative solutions to overcome the obstacles that the brightest minds in water resources engineering continue to face. In this issue, we will take a deeper look into these obstacles, and reveal the many aspects of water reuse including topics such as potable reuse, grey water, rainwater harvesting, and regulations.

Theme Leaders: Marco Menendez, Amanda Murphy, Lauren Marion

FALL 2017

Condition Assessment (Submission Deadline July 10, 2017)

As America's infrastructure continues to age and deteriorate, we must decide how to invest time and money to assess an asset's condition and then repair or replace it. Many utilities have programs that regularly inspect a buried pipe and/or structure's condition. Buildings, tanks, and equipment at our treatment facilities are also aging and require reinvestment as well. This issue of NC Currents will explore the options available for assessing the condition and management of your infrastructure, how to prioritize renewal and replacement programs, and the best way to maximize limited funds for important projects that are too often "out of sight, out of mind." Articles can include those that focus on methods or technologies to visually or otherwise determine an asset's condition, programs or technology that establishes an asset's life expectancy, and the means to repair/replace those assets.

WINTER 2018

Geomatic Assessment (Submission Deadline September 11, 2017)

Geospatial information systems (GIS) has become an important tool for water and wastewater utilities, providing valuable insight into how we use, manage, and optimize our limited water resources. GIS is a geomatics-based user interface that enables the water industry to analyze large data sets, and can be greatly improved with the use of other geomatics technologies. Unmanned aerial systems (aka drones), aerial and mobile LiDAR, robotics, bathymetry, and laser scanning are survey methods that can accurately collect large amounts of data quickly and safely. This geospatial data can then be classified to serve as the foundation for modeling, capital improvement plans, asset management programs, etc. In this issue of NC Currents, we will explore how these technologies are currently being used by utilities and their potential for future use.



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October 2-3, 2017 in Raleigh, NC

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To reach North Carolina's water industry professionals through the *NC Currents* magazine and its targeted readership, contact Al at your earliest convenience to discuss your company's promotional plans.

Al Whalen, Marketing Manager
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2017 Schedule of Events

The following schedule is current as of March 24, 2017. For updates or more information, please contact the organization listed with each event. If a listed event does not reference a specific organization, the item listed is a NC AWWA-WEA event. For further details concerning all NC AWWA-WEA events, visit the NC AWWA-WEA website at www.ncsafewater.org or contact the NC AWWA-WEA office directly at (919) 784-9030.

April 2017

- 24-27** **Maintenance Technologist School**
Raleigh, NC
- 24-28** **Eastern Biological Wastewater School**
Raleigh, NC
- 25-28** **Physical/Chemical Wastewater Operators School**
Raleigh, NC

May 2017

- 4** **Aging Workforce Panel Discussion**
Chapel Hill, NC
- 9** **Durham Institute**
Durham, NC

June 2017

- 1** **Wastewater Regulatory Trends and Emerging Issues Seminar**
Raleigh, NC
- 11-14** **AWWA Annual Conference & Exposition (ACE)**
Philadelphia, PA
AWWA 800-926-7337
- 12-15** **Western Maintenance Technologist School**
Morganton, NC
- 12-16** **Western Biological Wastewater Operators School**
Morganton, NC
- 22** **Membership Engagement Committee G.R.O.W. Event**
Greensboro, NC

July 2017

- 10-14** **Western Collection & Distribution School**
Morganton, NC
- 20** **Membership Engagement Committee G.R.O.W. Event**
Asheville, NC
- 27** **Drinking Water Rules & Regulations Seminar**
Raleigh, NC
- 31-Aug. 2** **Utility Management Institute, Phase III Management and Supervisory Training Program**
Carrboro, NC

August 2017

- 9** **Risk Management Seminar**
Greensboro, NC
- 24** **Automation Committee Seminar**
Greensboro, NC
- 29** **Rural Community Assistance Program (RCAP) Small System Seminar**
Fayetteville, NC

September 2017

- 5-7** **Raleigh Institute**
Raleigh, NC
- 14** **Charlotte Water Institute**
- 20** **Sustainability Seminar**
Cary, NC
- 21** **Membership Engagement Committee G.R.O.W. Event**
Charlotte, NC
- 25-27** **Utility Management Institute, Advanced Training**
Winston-Salem, NC
- 30-Oct. 4** **WEF Technical Exhibition & Conference (TEC)**
Chicago, IL
WEF 800-666-0206

October 2017

- 2-6** **Central Collection & Distribution School**
Raleigh, NC
- 10** **Wastewater Laboratory Analyst Exam**
Wilson, NC
- 12-15** **Annual Conference**
Raleigh, NC



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A young boy with dark hair, wearing a red shirt, is drinking water from a public fountain. The water is spraying upwards from the fountain's nozzle, creating a vertical stream that the boy is drinking from. The background is a blurred green, suggesting an outdoor park setting. The overall image is bright and clear, with a focus on the boy and the water.

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