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• 95th Annual Conference Recap

The official publication of The North Carolina Section of the American Water Works Association (NC AWWA) & The North Carolina Member Association of the Water Environment Federation (NC WEA)
Merry Christmas and a Happy New Year!

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A

s I write this article, my first as Chair of NC AWWA-WEA, nothing is more evident than our critical importance in protecting your water. Even though this article will be published in January, I am writing this during the historic flooding in South Carolina in October 2015. This is still a very active situation, so the outcome is yet to be determined. But one thing is evident: our highly trained water expertise is critical to protecting public health. We are banding together as one-water community, helping our South Carolinian brothers and sisters during this disaster. We are protecting your water through our expertise, community relationships, and focused communication. As NC AWWA-WEA enters into the third year of Strategic Plan 2013 implementation, our focus will also be on expertise, community, and communication.

Expertise
Experts from all over the region will be helping South Carolinians survive and recover from the historical floods. Expertise is needed because disaster response is not the time for trial and error learning; rather this is the time for proven competence to expeditiously solve problems. Finding the right experts is a challenge. Experts may have degrees, licenses, certifications, specialized training, or experience, but demonstrated competence is the key. So how do we find these experts?

NC AWWA-WEA is committed to certifying competence to provide the most value to our members, their employers, and the general public. Two years ago, the Career Ladder Task Force was formed to fill training gaps and advance careers. The brainchild of this Task Force is The Academy for Water Professional Development, or The Academy for short. The Academy is a specialized training and certification program for current or prospective water industry employees seeking to advance their careers. Four certification levels have been established for most disciplines, requiring completion of courses and demonstrated competence through examination. The Academy certifications will be a valuable tool in proving your knowledge and competence, to advance your career and to identify you as the expert when duty calls. The Institute program will continue to bring relevant, tailored training to utilities throughout North Carolina. Formerly known as U-Pick Training, the Institute program delivers an on-demand program based on the host utility’s needs. This program provides six continuing education hours to assist participants in keeping their educational expertise up to date, and meet licensing renewal requirements. To help all operators maintain their certifications, all Institutes will reserve some seats for registrations for individuals outside of the host utility. Participation in the Institutes is not restricted to the host utility; all members of the industry in North Carolina are invited to register for every Institute.

Finally, the NC AWWA-WEA will continue with specialized seminars and workshops. These workshops will focus on hot topics to keep participants informed and educated, and provide educational opportunities for those water industry disciplines that may not be included in The Academy. The focus of these seminars and workshops will be to provide information to participants, or a platform to exchange information, as-needed to meet the needs of the changing times. For example, I could envision disaster preparedness and effective emergency response being an upcoming seminar or workshop, given the recent flooding in South Carolina.

Community
We are stronger when we work together. We are more effective when we learn from other’s successes and failures. We can accomplish heroic feats when we are supported by our community. NC AWWA-WEA is one big water community. We are friends, family, coworkers, and competitors, and we need each other to be successful.

I personally have this NC AWWA-WEA community to thank for the friendships I have today, and the career opportunities I have enjoyed. Immediately after I graduated and entered the workforce, my first boss encouraged me to join NC AWWA-WEA and become active in a committee. At the time I honestly didn’t understand why this was so important, but wow he was right! I can link each of my career changes and opportunities to friends,
mentors, and customer influences from NC AWWA-WEA.

NC AWWA-WEA will continue to embrace the culture of community through GROW events, socials, and other networking opportunities. We will also formally and publicly thank those in our community through our prestigious Awards program. Our community is strengthened as it grows, and as more people volunteer their time and talents. Often we get caught up in our daily routine and forget that not everyone is a member, or that not everyone is an active volunteer. Please take a minute to stop and talk with your friends and coworkers about your NC AWWA-WEA experience and encourage them to join our NC AWWA-WEA community. We are here for you.

Communication

When a disaster strikes, you realize the importance of communication. People want to know if their loved ones are safe, how they can protect themselves, and if the danger is over. Communicating the right message is critical. The message must be concise, direct, and consistent. During the recent flooding events, I kept hearing the “Turn Around, Don’t Drown, Your Car is Not a Boat” message. What if people didn’t know a car can be swept away in only two feet of moving water? And just six inches of moving water can knock a person over? NC AWWA-WEA is focusing on communicating a concise, consistent message this year. The educational changes we are implementing are exciting and will prove to be very valuable to our members, but only if people know about The Academy, the Institute program, and our seminars and workshops. These programs are new and not understood by most people. We are implementing a marketing campaign to ensure utilities, members, and water industry professionals understand the benefits and value that NC AWWA-WEA brings. The Academy is currently our ‘best kept secret.’ Other organizations are interested in the program, and it has the potential to be nationally recognized in the future. With hiring managers, recruiters, and emergency responders looking for your certification of demonstrated competence, NC AWWA-WEA is leading the way (Up) with The Academy.

To conclude, I am looking forward to an exciting 2016 leading the NC AWWA-WEA community. I am so thankful for all of your expertise and contributions to our water profession. When disaster strikes, the news coverage brings public attention to our water profession. However, most of the time, we are the silent warriors. We train and educate ourselves to be the best experts we can be. We operate as a community, learning and leaning on each other to be better. We communicate to make sure all of us are aware of our strategy and can successfully implement it. We don’t choose the water industry profession for praise or recognition; we choose it to provide Safe Water.
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As I sit at my son’s Pop Warner football practice, I go through my normal routine of reviewing and updating my ‘To Do’ list for work. I notice the item at the top of the list is my article for the ‘How We Protect Your Water’ issue of NC Currents and I have been unable to narrow down my focus for the subject. As I look up to observe the coach guide the offensive line through drills to protect the quarterback and the ball, it hits me that there is a correlation between the football team and a utility. Just as it is the job of an offensive line to protect the quarterback and the ball, the job of our utility professionals is to protect the public and water.

When players start at the Tiny Mite level they depend upon the coaches to teach them the basic fundamentals of the game. At that level, the coaches give the players more direct instruction and are very hands-on during games. As the season progressed, we could see the growth in our son as a player, and in his confidence level. When players move up to the Mitey Mite level, the coach builds their football knowledge as they continue to focus on the fundamentals. They begin to focus more on building their confidence and independence as they learn the plays. Along the way, coaches are watching for those players that not only have that natural talent but also have the desire to work hard and move to the top of the pack.

I know at this point you are probably wondering how a team of seven to nine-year-olds compares to groups of working adults. Let me connect all the dots and make connections between the football team and the utility.

- **Players:** In football, players come in different sizes and skill levels. They play different positions but are all needed to make the team. A team could have the best player in the league and still not have a winning season. This is because a team’s success does not depend on the skill level of one player but instead on how all of the players can work together to capitalize on each other strengths. In a utility, all individuals depend on another person to do their job. At the same time, you have operators with varying levels of education and skills.
- **Coach:** In football, a coach serves as a guide, as players learn the fundamentals of the game and improve their skills. Coaches observe the strengths and weaknesses of players. They use these strengths to build a winning team. They take their weaknesses and try to transform them into strengths. In a utility, the ‘coaches’ are the directors, supervisors, crew leaders or any other person that can...
oversee or mentor other employees. These people serve as mentors or teachers to those they work with.

- Equipment: In football, the basic fundamentals include equipment that is needed to play the game and safety equipment to protect players (i.e., pads, helmet, and mouth guard). In a utility, electronic devices, tools, and safety equipment are used daily by utility employees.
- Playbook: In football, a playbook is the guide for the players while they are on the field. It specifies where they should be positioned, where to run, and who to block. In a utility, the playbook is made of things such as Occupational Safety and Health Association (OSHA) regulations, state regulations, instructions on how to use equipment, and troubleshooting procedures.

You can play football just by having all of these elements, but what separates those teams that excel are their players’ talent and desire to work hard to improve. The support of a good coach and access to training beyond the fundamentals can make all the difference. Great teams are led by coaches that constantly push their players to do their best and continue to increase their skills. At the same time these teams must have players that appreciate this ‘coaching’ and seek out opportunities to grow.

This is where NC AWWA-WEA’s new education initiative comes into play. The Academy for Water Professional Development is the resource where ‘coaches’ can send their ‘players’ to get those things that are needed beyond the fundamentals and improve their skills. The Academy is designed to fill an industry training gap and advance the careers of industry professionals. It provides specialized training for water professionals that addresses skills they need in order to serve as effective leaders and demonstrate their competency. For employers, The Academy delivers a demonstrated return on investment as employees move through a certification track, and will increase the pool of qualified candidates available for supervisory-level positions. For employees, The Academy delivers training they need to set themselves apart as their skills and development become quantifiable as they progress through their career.

Although, those of us who work in the office at NC AWWA-WEA aren’t directly on the frontline when it comes to protecting our water we are still on the team. We take pride in supporting our industry professionals and being the leading resource where utilities can go to improve their players and add to their playbooks. After all, in football, only trophies and bragging rights are at stake. In a utility, there are much higher stakes – the safety and life condition of the public.

Visit our website or contact a staff member for more information on The Academy.

Executive Director’s Report

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I Salute You…

By Lindsay Roberts, CAE

What a great privilege and resounding pleasure it has been for me to serve you as Executive Director for the past six and a half years. I have so loved the chance to live and work in North Carolina. Indeed, Raleigh is the most beautiful place I’ve lived in all the 26 moves I have made in my life. As I go westward again, toward my family, I will miss this place so much and keep it forever in my mind’s eye.

And what extraordinary people you are – so dedicated and so passionate in your work. Your accomplishments reflect that attention and excellence. Over a period of 95 years, you have built an organization that intertwines education about water in all its forms, without regard to artificial divisions or political rivalries.

It is your work that is responsible for keeping North Carolina the beautiful place it is, and for ensuring that quality of life here is so high. Thanks to your work, your care, your excellence, streams, rivers, dams, sounds, beaches, and the water that we rely on to drink, fish, swim in and live beside are as healthy as you can possibly make them. I have so loved the chance to support you in that work.

I so admire you for going forward in the work that needs to be done, not minding that the public you serve is largely unaware of your quiet, loyal dedication, or that other competing demands for budget funds leave you without the resources truly needed for repair, renewal, replacement and expansion to keep pace with time and growth. You always manage to give your best and do so much with so little… because you love what you do. I love your passion for your work.

How exceedingly fortunate I feel to have had the opportunity – really, the GIFT – to have worked in support of your work, in one way or another, for two thirds of my working life as a non-profit management professional.

In 1984, I was elected to the Union City Planning Commission in California, and learned first-hand, how vital sewer capacity is to economic development. That new awareness and the desire to make a difference in my community, led me to serve 12 years as an elected member of the Union Sanitary District Board during a time of enormous growth and expansion. There I had my first chance to climb a surge tower; to go out with a collections crew and see a camera go down a reach of pipe; to watch as tree roots and grease build-up were detected; to see the pigging of a line. There I had my first chance to engage with a community in a heated debate about odors from a genuine mountain of biosolids; to participate in budgeting for increasing treatment capacity and replacement of rotating biological contact units; and to weigh risks, benefits and rewards of eliminating chlorine gas in favor of liquid chlorine. Those opportunities also gave me the first chance to grasp the importance of the work you devote to the quality of life and the health of all living things, and the passion you bring to your work every day of every year.

I’ve had the privilege of working with water professionals in three states: California, Florida and North Carolina. The passion is the same, no matter the state, no matter the aspect of work or task at hand. Your passion is contagious. It has motivated me to seek out professional opportunities in my non-profit management world of work, where I could be passionate about my own life’s work and make a difference too.

I am grateful and proud to have helped – in the face of political opposition – to secure a marshy wetland where treated effluent mingles with briny bay water in what were once salt harvesting ponds, where a million birds on the Pacific Flyway can rest and feed, and where expanded wastewater treatment capacity has allowed for needed economic development.

It pleases me greatly to have played a part in getting the California Water Environment Association’s certification...
programs through a first validation process and onto a path that has taken them to premier status in the industry.

Even when I’ve had work outside the water industry, the need to ‘make a difference’ made a difference! Nothing I’ve ever done, before or since, was as compelling as the need to build a shelter for homeless families. The knowledge, skills and abilities gained fighting for wastewater treatment expansion served me well in fighting for use permits to build a shelter and raise the millions of dollars necessary for homeless services.

The children’s story Stone Soup is a favorite of mine, one I’ve talked of before. It’s a great metaphor for the work of non-profit organizations, where each volunteer brings something to put in the pot. With each person’s offering, the water becomes nourishment for all. A successful water industry is like that too – stormwater, conservation, laboratory, backflow, electrical and instrumentation, maintenance technologists, distribution, collections, operators, engineers, regulators, meter readers, pre-treatment, purchasing, human resources, suppliers… a mighty web of professionals – each contributing his and her best to the work at hand.

I’ve brought my best too. Now, I’m going off to the arid West, appreciating water profoundly, and I’ll take with me a bounty of memories and gratitude – thank you so much for giving me the chance to help you in some way, in doing your vital work.

Ave atque vale. I salute you.

“It is your work that is responsible for keeping North Carolina the beautiful place it is, and for ensuring that quality of life here is so high.”

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The following actions were taken:

1. **Strategic Governance:**
   - The Board reviewed the strategic planning and governance process.
   - The Board discussed AWWA utility membership dues and the reduction in membership revenue from utilities that join AWWA and the challenge the organization faces in fulfilling AWWA's requirement to deliver services to all employees of utility members without commensurate member dues to offset costs of those services.

2. **Action Items:**
   a) Approved retaining the Leadership Mentoring Task Force for an additional year to allow for further consideration of whether Leadership should be a stand-alone committee or should become part of the program of work of Student and YP Committee or another committee.
   b) Authorized an official presentation to be made on behalf of NC AWWA-WEA at the Carolinas Association of Governmental Purchasing Conference in February 2016 by Wendy Banks and/or TJ Lynch.
   c) Approved appointment of Bill Shookman and Thurman Green to the WBOEE.
   d) Approved nomination of Joe Stowe, Jr. to the AWWA Water Industry Hall of Fame.
   e) Approved nomination of High Point Dam for the AWWA Landmark Award.
   f) Ratified the e-vote authorizing the Sponsorship Committee to conduct a survey of annual corporate sponsors.
   g) Approved appointment of Elijah Williams to the Endowment Committee to fill the unexpired portion of Charlie Willis’ term.

3. **Guest Presentation:**
   Sandy Smith, Vice President for AWWA, provided an overview of the Water Buffaloes, a separately incorporated entity whose purpose is to raise funds for Water For People and support the Community Engineering Corps. Projects sponsored by AWWA.

4. **Chair's Report:**
   - Report on issues surrounding the 2016 Annual Conference contracts with Winston-Salem, where we now know major construction will take place during the dates of the conference. The 2016 Annual Conference has been moved to Raleigh, and a Stipulated Release has been negotiated with Winston-Salem.
   - A total of 25 were registered for the first Academy classes. Tyler Highfill, Chair of the Career Ladder Task Force and David Saunders, Chair of the Curriculum Development Task Force were thanked.

5. **Executive Director's Report:**
   - The 2015 endowment scholarship winners have all been notified and funds will be disbursed to school accounts at the start of the school year.
   - The Endowment Committee will seek changes to the Endowment Policy to increase the size of the committee at the November Board meeting.

6. **Consent Calendar – Approved:**
   a) Minutes of the Board meeting of May 21, 2015 were approved.
   b) Treasurer's Report for May and June 2015, with total assets as of June 30, 2015 of $1,200,218.75 with $1,163,471.91 in checking/savings, of which $387,341.79 is endowment funds. The balance of unrestricted net assets (Checking minus Endowment) is $776,130.12. Water For People Balance sheet as of June 30, 2015 reflects total current assets of $10,636.68.
   c) Committee Reports received through July 8, 2015.

7. **Adjourn** – next meeting Thursday, September 17, 2015, at Charlotte Water, 4222 Westmont Drive.
## 2016 Committee Chairs and Board Liaisons

For more committee information visit individual committee web pages on www.ncsafeewater.org.

### Board Committees

<table>
<thead>
<tr>
<th>Committee</th>
<th>Chair</th>
<th>Phone</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Nominating</td>
<td>Mike Osborne</td>
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### Annual Conference Coordinating Council

| COUNCIL CHAIR:             | Paul Jackson     | (704) 618-5777 | pjackson@iusinc.com |
| Exhibits                   | Wendy Banks      | (336) 431-7708 | Wendy@CMTcoatings.com |
| Annual Conference Local Arrangements | Bill Brewer  | (336) 945-1179 | bplib@cityofws.org |
| Annual Conference Program  | Tina Whittfield  | (919) 232-6629 | tina.whittfield@hdrinc.com |
| 2016 Spring Conference     | Mary Knosby      | (704) 338-6857 | mary.knosby@hdrinc.com |
| Sponsorship                | Julie Taylor     | (336) 292-2271 | julie.taylor@arcadis-us.com |
| Awards Committee           | Mary Knosby      | (704) 338-6857 | mary.knosby@hdrinc.com |

### External Affairs Council

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| Constitution & Bylaws      | Chuck Willis     | (704) 337-9844 | chuck@willisengineers.com |
| Endowment                  | Frank Stephenson | (704) 996-7660 | fstephenson@carolina.rr.com |
| Membership                 | Jana Stewart     | (336) 392-4051 | jana.stewart@stantec.com |
| Public Education           | Maggie Pierce    | (919) 863-9259 | mpierce@hazenandsawyer.com |
| Water For People           | Nick Dierkes (2014-2016) | (704) 451-4591 | ndierkes@brwnald.com |
| Students & Young Professionals | Keller Schnier (Charlotte) | (704) 342-4546 | schnierkw@cdmsmith.com |
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<td>2016 Spring Conference Program</td>
<td>Mary Knooby (704) 338-6857</td>
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<tr>
<td>Annual Conference Program</td>
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<tr>
<td>Automation</td>
<td>Devin Carroll</td>
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<tr>
<td>Wastewater Collection &amp; Water Distribution Systems</td>
<td>Barbara Moranta (919) 325-3500</td>
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<tr>
<td>Regulatory Affairs</td>
<td>Jaime Robinson (704) 543-3279</td>
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<td>Residuals &amp; Reuse</td>
<td>Jean Creech (704) 301-4042</td>
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<td>Water Resources</td>
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<tr>
<td>Sustainability</td>
<td>Barry Parsons (336) 373-7643</td>
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## Schools Coordinating Council

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<thead>
<tr>
<th>COUNCIL CHAIR:</th>
<th>Contact Information</th>
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<tbody>
<tr>
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<td>Collection/Distribution Schools</td>
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<td>Steve Hamilton (919) 731-2310</td>
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Growing Relationships and Opportunities through Water Resources – GROW

In order to proactively engage new, existing, and future members of NC AWWA-WEA, the Membership Committee has created GROW. An acronym for Growing Relationships and Opportunities through Water Resources, the initiative features events hosted at a variety of facilities around the state. Activities have included guest speakers, tours, and structured activities as well as unstructured gatherings to allow casual networking. Both members and non-members are invited to attend GROW events, and are encouraged to bring others they think would benefit from learning more about NC AWWA-WEA.

Membership Committee vice-president, Sila Vlachou, has had the opportunity to attend several GROW events. One that stands out was a lunch featuring Joe Stowe, an industry legend with more than four decades of experience. “I thought it was very well organized,” says Vlachou. “It offered professional development hours (PDHs). You got to listen to a knowledgeable and engaging speaker and do some networking as well.” There were 30 to 40 people in attendance.

She adds that GROW is an important way for the Membership Committee to further the goals set out in its retention and recruitment plan. These include attracting new and diverse members, retaining current members, and increasing member involvement.

“Anyone interested in an AWWA, WEA or SLAM membership can find instructions for joining on the Membership page at www.ncsafewater.org,” says Vlachou. “We also have membership tables at many events, including our collection & distribution schools, and our two annual conferences.”

NC Currents and eNews emails are two other avenues for promoting opportunities to get involved, including GROW events.

Recognizing member involvement is also important. NC AWWA-WEA champions members to national awards and ensures its members know how that they can nominate their fellow members for awards given out by NC AWWA-WEA. “We are exploring meaningful forms of recognition for volunteer engagement,” adds Vlachou.

For new members, the committee maintains a welcome program. “We want to encourage the participation of people from different ages and sections of the industry,” notes Vlachou, “while expanding volunteer opportunities for different industry segments.”

The goal of every event organized by the Membership Committee is to improve networking opportunities, promote relevant information exchange, and encourage peer collaboration in order to enhance participation in professional activity within the water industry. GROW activities have been a very successful part of this effort. “One of our main efforts is to encourage our members to grow by connecting the volunteer activities that they do with the NC AWWA-WEA mission and vision statements,” says Vlachou, “instead of having them do something just because they have decided they are going to volunteer.”

A GROW event has been held every few months for the past two years. Events are held across the state, and cost $10-$25 depending on sponsorship and the cost of the event.

To organize a GROW event, the Membership Committee, starts by coordinating the site selection. Activities are planned and then off and on-site tasks are delegated. As many Membership Committee members as possible are present at the event. “There are plenty of opportunities to help,” notes Vlachou. “If you want to volunteer as an organizer, we want you! You can do anything from selecting a site, setting the time, planning the activity, participating in the event, handling registration and onsite check-in, and facilitating the onsite activity. Whatever you would like to do, we have room for you!”

At the end of every GROW event, a survey is distributed to evaluate everything from the content, the food, the location, and the activities. “We try to receive feedback on all our events,” says Vlachou. “So far we have received very positive feedback.”

Along with helping to increase participation of members in all NC AWWA-WEA activities and committees, the GROW events have helped the Membership Committee meet one of its other important goals: attracting new members. The NC AWWA-WEA averages between 100 to 200 new AWWA individual members each year; and 40-60 new WEF individual members. Currently, there are approximately 1200 individual AWWA members, more than 700 individual WEF members and more than 900 SLAM members for a total of more than 2500.

NC AWWA-WEA is quite diverse. “However, we do lag in the terms of operator participation,” says Vlachou. To help encourage more operators to become members, the Membership Committee has considered organizing a series of operator tailgate events. The hope is it that holding the event at their workplace will make it easier for operators to participate.

Ironically, another challenge that still has to be addressed is encouraging more people to join the Membership Committee. Currently, there are only ten members on the committee, including the chair and the vice-chair.

Anyone interested in joining the Membership Committee can contact Sila Vlachou at avlachou@ci.charlotte.nc.us or Chair Jana Stewart at jana.stewart@stantec.com.
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The new Chair of the Board of Trustees, Julie Hellmann, brings a wealth of experience in the water and wastewater industry, and the NC AWWA-WEA. She became involved at the very beginning of her career, thanks to a mentor at Malcolm Pirnie, where she worked at the time. “I was right out of school,” she recalls. “I did not fully understand what an amazing gift he gave me.”

In 1998, she joined the Public Education and NC Water For People committees, both a good fit with her passion for giving back and her interest in teaching. “From that time, I have always been actively involved,” says Hellmann. “It has been a tremendous benefit in helping me grow both personally and professionally.”

Her friends and mentors have all come from the water and wastewater community. In addition, she can trace each job change she has ever made back to someone in the NC AWWA-WEA, who either made it happen or suggested that she put her name forward for a position or opportunity. It was thanks to this support that, in 2001, Hellmann had the chance to travel for two weeks in some of the more remote areas of Bolivia to work on a non-electric chlorinator project with Water For People. “It makes you a life-long supporter very quickly when you can see first hand the fruits of your labor,” she says.

She also had the opportunity, early in her career, to sit on the National Water For People Board of Directors. “Again, that only came about thanks to an endorsement from the NC AWWA-WEA Board of Trustees,” explains Hellmann. “I learned so much by understanding the inner workings of an organization and the way boards are composed and run in order to add value.”

Over the years, Hellmann has served on various committees, including Water For People, Public Education, Local Arrangements, the Annual Conference Program Committee, NC AWWA-WEA Strategic Planning, and the SONAR Task Force that led to the recent strategic plan. She currently sits on the Career Ladders Task Force.

“From my perspective, we as the NC AWWA-WEA now have three great offerings to help people continue their education and build their expertise,” she says. “The Academy – in a way that has never been done before – is certifying people’s competence so that when opportunities arise or disaster strikes, like it recently has in South Carolina, people won’t be scrambling to look for experts. They will know who to turn to for help.”

She notes that the NC AWWA-WEA now also offers Institutes, bringing continuing education directly to the utilities, thereby ensuring all members of the industry keep abreast of the latest developments in water and wastewater. At the same time, the NC AWWA-WEA will continue its Seminars & Workshops program, offering specialized topics, such as human resources, finance, and purchasing, that may not be covered by the Academy. “I embrace these changes in our education offerings,” says Hellmann. “I think we are proceeding in a very worthwhile direction and we’ll be stronger as a water community for it.”

She adds that in order to make these changes, the NC AWWA-WEA needs a strong marketing and communications plan so that all the human resources managers at the various utilities and companies understand the value of certification, and all the participants see the value in enhancing their career. She also knows that implementation will only be possible by continuing to build a community of members and active volunteers.

“We all band together as one family,” says Hellmann. “Clearly, it’s important to keep everyone engaged and to ensure we have the right people and the right resources to build all these programs.” As the new Board of Trustees chair, she sees her role in this process as a continuation of what previous leaders have developed, in other words, taking the next logical steps.

“Her new position is also a natural next step in her own evolution as a volunteer. In many ways, everything Hellmann has done in her personal, professional and association life has led up to this point. A self-described “tree-hugger,” Hellmann became passionate about the environment while still in college, after reading Silent Spring by Rachel Carson.”
Technological University in 1996. It was one of her professors at Michigan Tech who turned her on to the possibility of a career in the water and wastewater industry. “Sometimes it just takes the right professor, the right field trip,” reflect Hellmann, recalling her first visit to a wastewater treatment plant. “I realized it fit in really well with my tree-hugging nature.”

She went on to pursue a Master’s of Science in Civil Engineering at North Carolina State University, graduating in 1998. Over the next dozen years, she worked as a consulting engineer, doing everything from project engineering, to project management and business development.

If she knows the value of programs like career ladders, it is because she has experienced this approach first-hand. As a consultant at HDR, Hellmann participated in an extensive ‘career skills’ program designed to develop leadership skills within the organization. She eventually rose to the rank of vice-president in the consulting world.

Then in 2012, after more than a dozen years, Hellmann left the world of consulting engineering behind for a position in the field of instrumentation sales. “It gave me the opportunity to work more closely at the plant level with operations, maintenance, and the instrumentation and control folks,” says NC AWWA-WEA’s new Board of Trustees Chair.

Three years later, she left Hach to work at Heyward Incorporated, a manufacturer representative company. “It’s similar to what I did at Hach, but now it’s broadened,” explains Hellmann. “Instead of working with one subset or one category of equipment, I now represent a variety of manufacturers that benefit the treatment plant from the beginning to the end.” She also appreciates the opportunity to learn so much more about the process and to work again with engineers, many who were former colleagues and are now customers.

“When I started the path to my career, my intent was to be a professor,” says Hellmann, noting that she once planned to pursue a PhD. “But with what I do now, I get to teach every day. It’s part of my job. Plus I get to learn every day. So I’m a forever student and a forever teacher.”

She enjoys working with all different kinds of customers, at all levels of an organization, in all disciplines including operations and maintenance, instrumentation and controls, design and planning, management and administration, etc. Throughout her career, she has had experience with the engineering, consulting, and instrumentation sides of the business. Now she hopes to learn more about the operations side.

“I’ve been afforded some amazing opportunities,” says Hellmann. “And at the same time, I’ve been open to risk and change.” In fact, one day she hopes to become a fully licensed operator. That well-rounded perspective, she says, will help her contribute even more to the industry that has already given her so much. [www.ncsafewater.org]

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Growing up in West Columbia, South Carolina, Kelly Boone loved to collect anything she could find outside. Despite living in the city, she managed to bring home lightning bugs, cicada shells, etc. Her mother never knew quite what to expect! Playing in the small creek behind their house, visiting friends across the state and spending summers in the mountains of North Carolina, Kelly developed a love for nature that would define her life and her career. “One of my favorite TV shows as a child was *NatureScene*, hosted by my favorite SC naturalist, Rudy Mancke,” recalls the Water Resources Engineer with CDM Smith. “In each episode, Mr. Mancke visited a new place and just walked along finding the most intriguing plants and animals. I was enchanted by what was in nature!”

Then in 1989, when Boone was still in high school, the Exxon Valdez spilled 11 million gallons on the Alaskan coastline. “I became captivated with learning how micro-organisms can be used to treat wastewater, clean up contamination, and benefit humans and the environment,” she explains.

Eager to pursue her passion in math and science, especially biology, Boone enrolled at Presbyterian College, a small liberal arts institution located in Clinton, SC. A combination of small classes and outstanding professors fostered her love of all things related to ecology, microbiology, botany and environment science. In the summers while in college, Boone worked at a manufacturing plant near her hometown, where several engineers took her under their wing. It was there that she first learned about wastewater treatment and processes.

“I decided to attend graduate school at Clemson University to learn more about this fascinating field,” says Boone. After graduating with an MS in Environmental Systems Engineering in 1996, she was hired by CDM Smith, working in both the Raleigh and Charlotte offices over the past 18 years.

Her responsibilities involve permitting, regulatory and environmental assessments for everything from small wetland and stream concerns to large projects like the Western Wake Regional Wastewater Management Facilities EIS project. “My background has allowed me to combine my science/biology background with my engineering degree to fill the space that sometimes exists between engineers and scientists,” says Boone. “I have enjoyed working on a variety of planning, design, construction, water, wastewater, solid waste, and even a few transportation projects over the years.”

For the past seven years, she has also served as a group/team leader for the water/wastewater engineers in CDM Smith’s Raleigh office. “It is truly a privilege to be able to guide others in their career, help them set goals for the future, and access the opportunities they desire for themselves and for the firm. I love working with every single person in my group. They all have special gifts they bring to every project and situation. They are the smartest and most talented people I know!”

Boone is proud to work in an industry that protects the health of people and the world in which we live. She enjoys hearing different perspectives and figuring out how to address specific needs. So it did not take much convincing when, early in her career, a co-worker suggested that she become involved in the NC AWWA-WEA by joining a committee. “I’ve really enjoyed getting to know so many folks in our industry who are truly dedicated to safe water,” says Boone. “The importance of service has always been an undercurrent in my life. My family instilled this in me, my college reinforced it, and it continues to be a strong motivator for me.”

Her work both with CDM Smith and with the NC AWWA-WEA has brought her full circle, giving her the opportunity to give back to the industry she loves. Boone has served on the Students and Young Professionals Committee and was chair of the Membership Services Committee, on which she currently sits, along with the Communications Committee. “Serving on the Membership Committee has been very rewarding,” she says. “The committee touches all of our members and the other committees, so it has been a great way to understand the big picture of our state organizations and meet our members!”

Some day, one of those members might even be one or both of Kelly and Kelly Boone’s sons (yes, she and her husband have the same name!), Davis (six) and Trevor (four). Recently, Davis brought a couple of cicada shells home from school and deposited them, first in the car and, later, in his pocket, where they were crushed into a million pieces. “I couldn’t help but smile,” says Boone, “as I thought about how my mom must have felt when I collected those cicada shells all those years ago.”

Member Portrait

Kelly Boone
Full Circle
A nyone who knows Betsy Drake will not be surprised to learn that she has served on several different committees since joining the NC AWWA-WEA a dozen years ago. From the Seminars & Workshops Committee to the Wastewater Schools Committee and now the Academy Task Force, she has repeatedly demonstrated a commitment to serve. “I’m pretty passionate about education,” says the environmental engineer. “I don’t do much teaching but I enjoy the coordinating aspect and helping to get some of those programs off the ground.”

“I joined because I wanted to get involved with people in the profession,” she adds, “and since then, I found that I’ve grown a lot through my work with the NC AWWA-WEA.

A self-described people person, Drake sees herself as “not your stereotypical engineer.” Her path to the profession was anything but typical as well. After completing an undergraduate degree in biosystems engineering at Clemson University, the rural South Carolina native decided to pursue a PhD in microbiology at the University of Tennessee-Knoxville. Her research on nitrifying bacteria in wastewater was a joint project with the environmental engineering department. “The thing that is so great about wastewater is that it is a mix of microbiology and engineering. I got to work on two things I really like. I realized after a year, though, that I was really more interested in engineering than the academic lifestyle,” says Drake. As a joint project, it was easy for Betsy to transition to a master’s in environmental engineering.

Her first job after graduation was with a process equipment supplier for water and wastewater systems. For six and a half years, she worked entirely on the wastewater side, in everything from process to sales. She also had the opportunity to travel extensively, both nationally and internationally, to places such as Denmark, Sweden, and Germany. “It was a wonderful experience,” she recalls.

At the same time, she began to realize that the path forward with the company would be to pursue a career in sales and that wasn’t where her interests were. “I knew that it was better to make a move sooner than later,” she notes, “because the longer you are out of ‘true’ engineering, the harder it is to get back to it.”

So, for the next few years, she worked as a consulting engineer, developing good project management skills. However, most of the work was for private developers. “I began to realize that part of me really wanted to serve and do a job where I was helping other people,” explains Drake, adding that when a position opened with the Town of Cary, she immediately thought it would be a good fit. “It’s something I can feel good about every day. I am helping to provide good clean drinking water and safe sanitation to all of our citizens.”
Not long after joining the Town, she had the opportunity to work on the Western Wake Regional Wastewater Facility project, managing construction of over sixteen miles of pipelines. The project was a joint effort of several municipalities that would improve service for a large number of people. “It was really exciting working with people from different towns with different interests,” she adds.

Drake also enjoys working the diversity of connections she has made with the NC AWWA-WEA. “I’ve met some great people,” she confirms. “Through my work with the NC AWWA-WEA, I’ve grown so much, both personally and professionally.”

She notes that, recently, there have been substantial changes to the Seminars & Workshops, as the NC AWWA-WEA works to bring training directly to utilities through the Institute program. As challenging as it has been, Drake has enjoyed being involved in the Institute initiative from the ground up.

“We’re learning that we need a lot of tools in the toolbox to meet the training needs,” she explains. “For the last couple of years we’ve been working on all the things we can do to be the premiere training organization for our industry in North Carolina. It’s really exciting to be a part of it.”

Now Drake has joined the Academy Task Force. She explains that the Academy is intended to be a career ladder so people, especially operators, can get certified in their field of work. “Our plan is for employers to see this as something they want, and need their employees to have,” she notes. Working in conjunction with the state licensing program, the Academy focuses not only on technical skills but also on softer skills and leadership skills that people might need in order to advance in their career.

“We’re hoping to attract those who are ambitious and want to give themselves a leg up,” says Drake. To date the task force has rolled out the first level of Collection and Distribution ladders, with plans to add more levels and topics as the program unfolds. Drake adds that, although the Institutes and other seminars are more focused on continuing education than training, there may be synergies that overlap with the goals of the Academy. She has no illusions about the challenge involved in coordinating and building the education programs. But then, she has never been one to shy away from a challenge, neither professionally nor personally.

Recently, she embraced what may be her biggest challenge yet. She and her husband are in the process of adopting a six-year old girl. “I went from zero to mom in 10 days,” she says, explaining that they acted quickly when they heard the girl was in need of a home. Now in the process of getting to know one another, they are looking forward to building their future as a family.
General
The Neuse Regional Water and Sewer Authority (NRWASA) is a cooperative partnership of water and sewer service providers formed in 2000 to develop regional solutions for meeting future water supply needs. Current members include the Town of Ayden, Bell Arthur Water Corporation, Deep Run Water Corporation, Eastern Pines Water Corporation, Town of Giffton, City of Kinston, North Lenoir Water Corporation, and the Town of Pink Hill. Members joined together in 2000 to pursue a regional water supply solution in response to declining groundwater availability in the Cretaceous aquifers that previously comprised their entire water supply source. NRWASA serves approximately 100,000 customers in Lenoir County and southern Pitt County.

In developing the water supply solution, NRWASA and its engineers first established raw water use requirements, evaluated the raw water quality, and determined treated water quality goals. The Neuse River is moderately high in organic carbon content but low in alkalinity and hardness. Pilot testing of the Neuse River has shown it amenable to a variety of treatment processes, including conventional coagulation/clarification and high rate clarification.

“Members joined together in 2000 to pursue a regional water supply solution in response to declining groundwater availability in the Cretaceous aquifers that previously comprised their entire water supply source.”
Construction of the Neuse Regional Water Treatment Plant (WTP) began in 2006 and was completed in 2008.

**Treatment Processes**

The Neuse Regional WTP includes an intake on the Neuse River, raw water pump station, 30-MG earthen raw water impoundment that was permitted as a high-hazard dam (reclassified as intermediate-hazard) for cost-effective construction, 15 million gallons per day (mgd) of treatment capacity, administration and chemical storage buildings, and a high-service pump station. The project also included construction of two 2-million-gallon (MG) capacity circular prestressed concrete clearwells.

The 30-MG raw water reservoir is impounded by a 26-foot-high perimeter embankment. The impoundment is lined with a high-density polyethylene (HDPE) liner and the embankment design includes seepage control measures consisting of a chimney, a blanket, and toe drains to intercept seepage if the liner were to leak.

Treatment components for the conventional treatment facility consist of the following:

- **Rapid mix:** two parallel trains with dual sequential mixers for flexibility and reliability
- **Flocculation:** two trains with three basins per train, with 20+ minutes detention time
- **Sedimentation:** three trains, with four hours detention time
- **Filters:** six filters, with 4 gpm/sf filter rate
- **Disinfection:** free chlorine (changed to monochloramine) and ultraviolet (UV) light
- **Adsorption:** powdered activated carbon silo and granular activated carbon in the filters
- **Reclamation Ponds:** three 2-MG reclamation ponds for land application, with NPDES-permitted discharge
**Other Information**

**Awards**
The Neuse Regional WTP won the Best Tasting Water Competition at the NCAWWA-WEA Annual Conference in November 2014. The project was also awarded a Grand Award in the water and wastewater category of the American Council of Engineering Companies (ACEC) of North Carolina 2009 Engineering Excellence Awards. In 2008 USEPA awarded NRWASA the Drinking Water State Revolving Fund Award for sustainable public health protection for showing exceptional creativity in designing a project that promoted sustainability and for protecting public health. The approximately $146.4 million Neuse Regional WTP and distribution system was fully funded by grants, loans, and member contributions and was the largest USDA Rural Development-funded water project in the nation.

**Personnel**
NRWASA is administered by a board of directors consisting of representatives of all member entities and is managed by an executive director. Additional staff includes a WTP operator in responsible charge (ORC) and assistant ORC with eight additional operators, lab chemist, distribution superintendent and staff, and maintenance supervisor and staff.

**Unique or Difficult Problem Faced/Solved**
The project was undertaken in response to declining groundwater availability in the Cretaceous aquifers that previously comprised the member entities’ entire water supply source. The project is unique in that it combines the use of surface water from the Neuse River and the use of groundwater to cost-effectively optimize resources in the region. The system will meet strict new state water use guidelines, which called for reduction in groundwater consumption by 2008.

**Contact**
Neuse Regional Water and Sewer Authority
Neuse Regional WTP
2811 Barrus Road
LaGrange, NC 28551

Harold Herring, Executive Director
Email: harold.herring@nrwasa.org
Phone (252) 522-2567
Fax (252) 523-1639
NC AWWA-WEA

95th Annual Conference

RECAP
Annual Conference Summary

The 95th Annual Conference was a memorable success, with #### water and wastewater professionals and 156 exhibitors throughout North Carolina arriving at the Raleigh Convention Center in Raleigh, NC on November 15 to kick off this event.

Three days of educational and recreational activities provided the perfect backdrop for exchanging ideas. Attendees gained a national perspective from guests John Donahue, AWWA Immediate Past President, and Jenny Hartfelder, WEF Board Trustee.

Papers presented during technical sessions on Monday and Tuesday gave attendees the opportunity to learn from others’ experiences. Technical sessions running all day with no formal lunch break allowed attendees to attend even more sessions and stop for a buffet lunch when they were ready. The pre-conference workshop “Emerging Threats” presented information concerning climate change, emergency security and preparedness threats and some of the challenges facing water and wastewater systems, which included cyber security, illegal wastewater dumping, workplace violence, and other related topics. The Wednesday forum built on the Sunday pre-conference workshop with a panel discussion on emerging threats. If you were unable to attend, or would like to review a paper presented at the conference, most of the papers are available on the Annual Conference page of www.ncsafeater.org.

There were plenty of activities for attendees with a competitive spirit. Refer to the following pages for winners of the golf tournament, pipe tapping contest, operations challenge, and best tasting water contest.

Many people and organizations were recognized for their achievements throughout the conference. (Refer to the following pages for a list of award winners.) Among those recognized were the 5-S inductees who continued the tradition of collection money for the NC Safe Water Endowment. Their efforts earned $2,198.20 to add to the annual scholarship fund.

Thank you to everyone who worked to coordinate the conference and to everyone who attended, including the exhibitors and sponsors. Working together, we created a great conference! Mark your calendars now and plan to join us for 96th Annual Conference November 13–16, 2016 in Raleigh, NC!
New 5S members: Jean Creech, Charlotte Water; Betsy Drake, Town of Cary; Greg Morgan, Union County; Pete Schuler, Brown and Caldwell; and Brian Tripp, WK Dickson.

Operational Hazards from Charlotte Water, competing in the Operations Challenge.

Sewer Rats hat.

Union County Public Works Sewer Rats – Josh Carpenter, Brett Fisher, Jody Harvey, Matt Hargett.


Raleigh’s Pretty Tough Tappers – Charley Lovelace, Diane Cooper, Kori Garrett, Jessica Newman.

Mountain X-Stream competing.
Awards Ceremony

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SCHOLARSHIP RECIPIENTS
• The Environmental Manufacturer’s Representative Scholarship Fund: Eric Polli, NCSU
• The Carol Bond Fund/Safewater Fund Community College: Teal Sadler, Pamlico Community College
• NC SafeWater Fund Scholarship: Allen Lee Dowler, UNC-Wilmington
• NC SafeWater Fund/GHD Clean Water Fund Scholarship: Zachary Hopkins, NCSU; Lindsay Matthy, UNC-Charlotte
• The Frank and Susan Stephenson Water Environmental Scholarship Fund: Meredith Grace Bullard, NCSU
• The Les and Elaine Hall Water Environmental Stewardship Scholarship: Caleb Bynum, NCSU
• Raftelis Financial Consultants Environmental Finance & Management Scholarship Fund: Maria Tchamkina, Duke University
• Raftelis Foundation Elementary Education Scholarship: Keisha Lipe, City of Asheville; Shonna Garrell, Tabor City Elementary School

STOCKHOLM JUNIOR WATER PRIZE WINNER
Vibha Puri,
NC School of Science & Math

WEF LIFE MEMBERS
• Alvin Derr
• Ernest Earn, Jr.
• Randall Foulke
• Edward Goscicki
• Robert Stein

AWWA LIFE MEMBERS
• Alvin Derr
• Mack Edminsten
• Edward Goscicki
• William Gray
• Amos Moore, Jr.

SILVER WATER DROP
• Charles Brooks, IV
• William Dowbiggin
• Daniel Edwards
• Edward Goscicki
• William Gray
• Thomas Hartye
• Jacqueline Jarrell
• Dennis Kachmarsky
• Ed Kerwin
• David Reitmiller
• Brent Reuss
• Linwood Stroud
• Robert Vinay

AWWA MERITORIOUS OPERATOR OF THE YEAR
Jeremy Godfrey, City of Asheville

GOLDEN MANHOLE AWARD
Barbara Moranta, CDM Smith

WASTEWATER COLLECTIONS OPERATOR OF THE YEAR AWARD
Robert Daughtry, Sr., Cape Fear Public Utility Authority

WATER DISTRIBUTION OPERATOR OF THE YEAR AWARD
Jim Tayson,
Cape Fear Public Utility Authority

WASTEWATER COLLECTION SYSTEM OF THE YEAR AWARDS
• Large System: Fayetteville PWC
• Medium System: Brunswick County Public Utilities
• Small System: City of Conover

WATER DISTRIBUTION SYSTEM OF THE YEAR AWARDS
• Large System: Brunswick County Public Utilities
• Medium System: Town of Mooresville
• Small System: City of Conover

DISASTER PREPAREDNESS AWARD, LARGE UTILITY
City of Greensboro Water Resources Department

DISASTER PREPAREDNESS AWARD, INDIVIDUAL
Mike Richardson,
Cape Fear Public Utility Authority

WWTP OPERATIONS & MAINTENANCE EXCELLENCE AWARD
• Eastern Region: Cape Fear Public Utility Authority’s M’Kean Maffitt (Southside) WWTP
• Central Region: Orange Water and Sewer Authority Mason Farm WWTP
• Western Region: MSD of Buncombe County Broad River WRF

GAVEL GALA

STUDENT POSTER CONTEST
1. Jonathan Moreno, NCSU
2. Catalina Lopez, NCSU
3. Amanda Karam, NCSU

PIPE TAPPING CONTEST
1. City of Concord
2. Union County Shockers
3. Raleigh Tapping 101

Visiting Team: Greenwood, SC
Women’s Team: Raleigh’s Pretty Tough Tappers
OPERATIONS CHALLENGE CONTEST
- Collections Systems Event, 1st Place: Operational Hazards
- Maintenance Event, 1st Place: Operational Hazards
- Lab Event, 1st Place: Operational Hazards
- Process Control Event, 1st Place: Flow Motion
- Safety Event, 1st Place: Flow Motion

Overall Results
1. Operational Hazards
2. Flow Motion
3. Sewer Rats

2015 BEST TASTING WATER CONTEST
1. City of Raleigh/City of Kinston (tie)
2. Town of Cary
3. City of High Point

COMMUNICATION COMMITTEE PHOTO CONTEST WINNERS
- Our Members At Work: Chris McCorquodale, Town of Siler City
- Environment: Maggie Ramey, City of Asheville
- Structures: Bountham Vannavong, City of High Point
- Critters Around Us: Hannah Headrick, NC DENR

LEADERSHIP DEVELOPMENT PROGRAM RECOGNITION
2015 Mentee/Mentor Pairs
- Tom Bach, City of Concord/Leslie Jones, Brown and Caldwell
- Nick Dierkes, Brown and Caldwell/John McLaughlin, Merrick Industries
- Courtney Driver, City of Winston-Salem/ Robert Walters, Davidson Water
- Derek Dussek, HDR/Crystal Broadbent, Hazen and Sawyer
- Tony Martin, Black and Veatch/ Barry Gullet, Charlotte Water
- Tony Mencome, Heyward Incorporated/TJ Lynch, City of Raleigh
- Sherri Moore, City of Concord/Ryan LeBlanc, HDR

AWARDS BANQUET
KASEY MONROE OUTSTANDING SERVICE AWARD
David Saunders, HDR

SPECIAL RECOGNITION AWARD
- Billy Allen, Charlotte Water
- Mary Knoesby, HDR

2014-2015 LEADERSHIP APPRECIATION AWARDS
Board Chair 2014-2015:
Chris Belk, Hazen and Sawyer

WASTEWATER LABORATORY ANALYST EXCELLENCE AWARD
Kelly Spainhour, Town of Cary

GEORGE W. BURKE, JR. SAFETY AWARD
Public Works Commission of Fayetteville, NC – Rockfish Creek & Cross Creek Water Reclamation Facilities

WILLIAM D. HATFIELD AWARD
Darrell DeWitt, Charlotte Water

ARTHUR SIDNEY BEDELL AWARD
Tyler Highfill, Highfill Infrastructure

WEF SERVICE
Barry Gullet, Charlotte Water

WEF FAIR DISTINGUISHED ENGINEERING EDUCATOR AWARD
Francis de los Reyes, III, NCSU

WEF GASCOIGNE WWTP OPERATIONAL IMPROVEMENT MEDAL
- Darrell DeWitt, Charlotte Water
- Jacqueline Jarrell, Charlotte Water
- David Wagoner, CDM Smith

NATIONAL MUNICIPAL STORMWATER AND GREEN INFRASTRUCTURE AWARDS
Phase I Overall Highest Score: Charlotte Stormwater Services

WALTER J. COURMON SAFETY AWARD
Public Works Commission of Fayetteville, NC – P.O. Hoffer & Glenville Lake Water Treatment Facilities

GEORGE WARREN FULLER AWARD
Jeff Cruickshank

AWWA SERVICE
Steve Shoaf, Retired

KENNETH J. MILLER WATER FOR PEOPLE AWARD
Keller Schnier, CDM Smith

RAYMOND E. “RED” EBERT AWARD
Ken Stines, MSD Buncombe County

SAFEWATER MAINTENANCE TECHNOLOGIST OF THE YEAR EXCELLENCE AWARD
Eric Oldham, Orange Water and Sewer Authority

DONALD E. FRANCISCO EDUCATOR OF THE YEAR AWARD
John Hodges, City of High Point

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### Exhibitors

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Conference at a Glance

DESSERT RECEPTION


STUDENT POSTERS

Overview of student poster section.

Ling Wang, NCSU – Anaerobic Digester Microbiome Assembly and Functional Dynamics during Grease Waste Co-digestion.

Zack Hopkins sharing poster with Derek Dussek (HDR).

EXHIBIT HALL

Exhibit hall overview.

Gavin & Tim Dotson from Southern Corrosion Engineered Tank Care.

Nuterra Management booth, Sharon Patterson and Finn Nielsen.

Kathleen Bass at the registration desk.

Chris Bays, Travis LaFever, Neal Chamberlain – PC Construction booth.
• Land Application
• Permitting
• Lagoon Dredging
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47
Quality for a Body of Water is Like Fitness for a Human Body

52
Proactive Protection of Source Water

54
Manganese Control In-Situ by Lake Aeration – A Case Study

Theme Leaders: Wade Shaw, City of Raleigh; Mike Shelton, Kimley-Horn; Nathan Howell, City of Raleigh; Thomas Hahn, CH2M Hill
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- Hydraulic/manual installation of filter materials
- Underdrain cleaning/evaluation/repair
- Evaluation of existing filter materials/systems
- Equipment rentals and technical support
Watersheds are dynamic living systems. The science of how we manage watersheds is analogous to how we, as humans, manage our own health. Just as healthcare has changed, our watershed management practice has changed from a reactive treatment approach to a focus on prevention. Just as disease prevention comes from how we manage ourselves, pollution prevention results from how we manage our watershed. Just as preventative healthcare is a combination of self-management (e.g., diet, exercise, sleep habits) to prevent disease, watershed management is a combination of efforts (e.g., policy, planning, education, best management practice (BMP) retrofits, natural system restoration, greenspace preservation) to prevent pollution. While there are no one-size-fits-all approaches to either watershed management or healthcare, a tailored plan can produce measurable changes.

Communities create Watershed Management Plans (WMPs) to identify sources of water quality impairments and create road maps of how to strategically address issues. Watershed management plans may change policy (e.g., land-use, stormwater controls, buffer rules, industrial effluent limitations), provide public education and outreach, and implement projects. Implementation projects can address both point and nonpoint sources. The projects address point discharges from industrial and wastewater treatment plants by installing improved treatment and reducing nonpoint sources pollution through installation of BMPs like restoration or green infrastructure preservation.

This article highlights one WMP in North Carolina and the implementation projects that resulted in source water improvement.

Charlotte Water and the McDowell Creek Watershed Management Plan

Background and WMP

The McDowell Creek Watershed in Mecklenburg County, North Carolina drains a basin area that is approximately 30 square miles and includes portions of the Towns of Huntersville and Cornelius. McDowell Creek empties just upstream of the Charlotte Water intake structure at Mountain Island Lake. Charlotte Water withdraws an average of 80 million gallons per day (MGD) of raw drinking water from this intake providing drinking water for the majority of customers in the City of Charlotte and Mecklenburg County. In the early 2000s, this cove of Mountain Island Lake had some of the worst water quality of the three Catawba River reservoirs that comprise the western boundary of Mecklenburg County: Norman, Wylie, and Mountain Island.

In 2001, the US Geological Survey (USGS) undertook a detailed study of Mountain Island Lake and McDowell Creek Cove as a critical water supply source. The study characterized the hydrologic and water quality condition of the lake. It concluded that although McDowell Creek was only contributing 1% of the flow into the lake, it was contributing a disproportional amount of pollution – approximately 55% of the total suspended solids (TSS) and 60% of the total phosphorous. Photo 1 and Photo 2 show this high sediment concentration in McDowell Creek Cove.

Additionally, in the early 2000s, McDowell Creek was listed in the state’s draft 303(d) list as biologically impaired. Based on this data, Charlotte-Mecklenburg Storm Water Services (CMSWS) realized that to improve water quality in Mountain Island Lake, they first needed a plan to improve the McDowell Creek Watershed. CMSWS created the McDowell Creek Watershed Management Plan (WMP) with a goal to improve water quality in McDowell Creek and its tributaries to ensure safe and secure water supply downstream, and a fully functioning and supporting stream ecosystem for
The plan was adopted in 2006. This WMP was the first of its kind in Charlotte-Mecklenburg and in North Carolina. It provides a comprehensive and strategic plan for managing and restoring surface waters in the watershed. The McDowell Creek WMP also served as a Category 4b Plan that allowed the County to avoid a total maximum daily load (TMDL) imposed by Environmental Protection Agency (EPA) regulations as a result of the 303(d) listing. The McDowell Creek WMP allows Mecklenburg County to drive its own bus instead of riding as a passenger on the EPA’s.

Mecklenburg County had experienced explosive (300%) growth in the 1990s. The WMP was built on multiple previous policies including the following regulations:

- **1992** – The State of North Carolina designated most of the McDowell Creek watershed was designated as a Water Supply Watershed. This designation restricts land use and requires more restrictive stormwater management on new development. Local zoning ordinances capped wastewater pollutant loads at the 1992 levels.
- **1999** – The Town of Huntersville adopted the Surface Water Improvement Management (SWIM) Program. SWIM requires buffers on creeks to reduce flood risks, act as natural filters for pollution, and provide greenspace.
- **2001** – Watershed-based water quality modeling data was compiled, showing large increases in sediment and nutrient loading as well as peak flows in volume as development continues. These increases are shown to further degrade water quality conditions in the watershed and the lake as development continues.
- **2002** – The Town of Huntersville adopts its water quality ordinance, commonly referred to as low impact development (LID) ordinance, based on the 2001 water quality study. This ordinance is still considered to be one of the most restrictive stormwater ordinances in North Carolina. These regulations helped attenuate future sources of pollution so that the WMP could focus on addressing existing sources of impairment.

The WMP discovered that the primary source of sediment, and thus, nutrients, was mostly coming from stream erosion (over 85% of sediment). This may seem high, but most published reports by EPA estimate that bank erosion typically contributes the largest percentage of sediment to surface waters. In addition, minimal upland sediment sources are expected given the strict construction (sediment and erosion) and post construction (stormwater) control ordinances are in place.

As a result, the prioritized projects from the plan included a large percentage of stream restoration projects complemented by buffer reforestation and select preservation. There also were some prioritized stormwater BMP retrofits in focused ‘hot spots’ of pollution. The goal of these projects is to reduce the total sediment by approximately 45,000 tons per year in the watershed for an 89% load reduction – an aggressive goal.

**Implementation Phase**

Mecklenburg County began implementing restoration and retrofit projects following the plan’s adoption in 2006. The Watershed Management Plan and CMSWS vision has allowed CMSWS to leverage funding sources, including state and federal grants, zero interest loans, mitigation credits/payments, and public and private partnerships. The plan also has allowed Mecklenburg County to link restoration efforts to other projects like floodplain buy-outs, park and greenway projects, and private development.

CMSWS completed pilot projects and monitored these early projects to validate that the actual pollutant load reductions matched the WMP estimates. These early projects exceeded expectations. Since 2008, over 12 miles of stream...
restoration, thousands of acres of forest buffer restoration and dozens of BMP retrofits have been successfully completed. Kimley-Horn has had the privilege of working on many of these projects as the lead design firm. As the McDowell Creek WMP has evolved, so have its design and implementation techniques. Each project implemented in the watershed has built upon lessons learned from the past. Notable evolution in design and implementation techniques include the following:

**Technique 1 Blended Design:**
Stream restoration design approaches that blend analog (i.e., reference reach templates), empirical (i.e., regional curves and hydraulic geometry equations), and analytical (i.e., hydraulic and sediment computer modeling) analysis to find answers to design issues in these highly dynamic stream systems.

**Technique 2 Multistage Channels:**
Stream restoration using multistage channels, including low-flow/aquatic habitat considerations, inner-berms for sediment transport and vegetation along the channel toe, a bankfull bench for sediment flow and improved floodplain functions, and floodplain for larger storm events (including regulated/FEMA flows).

**Technique 3 Natural-Channel Structures:**
Innovative instream habitat and hydraulic structures designed to directly improve hydraulic and geomorphic functions, indirectly improving water quality and biological functions. These natural-system structures included:
- Toe wood/brush to protect the outer meander from high shear stress, create depth diversity, and provide a source of detritus (food) for the system;
- Log/rock riffles to provide oxygenation, create depth diversity, stabilize the bed, and provide grade control (i.e., prevent vertical erosion);
- Log vane structures to provide bed and bank stability and create deep pools for fish; and
- Rock structures to protect the bed and banks in areas with high-flow velocities or critical infrastructure (e.g., water, sewer, or bridge crossings).

**Technique 4 Regenerative Stormwater Conveyance:**
Using more innovative stormwater BMPs like regenerative stormwater conveyance (RSC) at the end of outfalls. While RSCs are popular in the Chesapeake Bay, they are new to North Carolina and currently are being considered by NC Department of Environmental Quality (NCDEQ) and

“The goal of these projects is to reduce the total sediment by approximately 45,000 tons per year in the watershed for an 89% load reduction – an aggressive goal.”
North Carolina State University (NCSU) for addition into the state's BMP Design Manual. These RSCs were some of the first constructed in the North Carolina and were placed at outfalls and combined treatment mechanisms found in sand filters and step-pool, boulder-rock outfalls. The RSC promotes sand media infiltration for water quality design storms (i.e., smaller storms) and provides stability for larger storm events so the outfall does not erode and create pollutants. These SCMs are designed to be no-maintenance BMPs.

Results of the WMP
Although implementation projects continue and post-construction monitoring is ongoing, combined, these focused efforts are removing thousands of tons of sediment per year from creeks and, ultimately, Charlotte Water's primary source of drinking water, Mountain Island Lake. Additionally, these projects restore stream hydraulic and geomorphic functions creating a foundation for improvements in water quality and aquatic biology, including reductions in TSS and nutrient levels and more observed fish populations in McDowell Creek and its tributaries. The results have shown that, with a focused plan, you can make impacts on a catchment scale.

Much like our own health, this watershed needs continuous management. There will always be room for improvement and a need for treatment. However, thanks to the efforts of CMSWS, the McDowell Creek Watershed has lost a few unhealthy pounds; actually, thousands of tons of sediment, and is looking a lot healthier these days.

References

Special Thanks
The authors would like to thank Rusty Rozelle, Crystal Taylor, and David Woodie with Mecklenburg County for their efforts in developing and implementing the McDowell Creek Watershed Management Plan.

About the Authors
Will Wilhelm, P.E., CFM, CPESC is a water resource professional at Kimley-Horn who manages watershed projects involving natural channel designs and BMPs for water quality and quantity. He has led all aspects of watershed management projects, including master planning, site feasibility, permitting, public involvement, modeling, design, construction management, and monitoring.

David Kroening is a Lead Project Manager with Charlotte Mecklenburg Storm Water Services. His areas of focus are watershed and project planning, TMDL implementation, flood mitigation planning and implementation and flood preparedness and project funding. In particular, David works to continue implementation of Mecklenburg County’s multi-objective CIP project identification and planning protocols that ensure public participation as well as partnerships with other programs and jurisdictions.

Brian G. Sikes is a CIP Project Manager and scientist with Charlotte Mecklenburg Storm Water Services. Brian manages the design, construction, and monitoring of stream restoration and BMP projects. Brian has conducted numerous reach and watershed scale assessments throughout Mecklenburg County.
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Proactive Protection of Source Water

By Ed Buchan, City of Raleigh

When most people think of drinking water protection, they tend to focus on water treatment facilities and the associated water distribution system – and for good reason. As we well know, modern water treatment technology and water distribution management provides an unprecedented level of public health protection. Our industry has been so effective in this endeavor that clean and safe drinking water, which is usually taken for granted, is now monitored for various contaminants in units as small as parts per trillion. However, protecting drinking water can also extend beyond the infrastructure elements of our respective utilities, and include a holistic approach that includes protecting our raw water sources.

With this holistic concept in mind, the City of Raleigh Public Utilities Department (CORPUD) has developed several programs that not only protect raw water quality, but quantity as well. Starting with the watersheds that drain into CORPUD drinking water reservoirs (Falls Lake and Lake Benson), they established a land preservation effort in 2005. This program, now referred to as the Upper Neuse Clean Water Initiative, is a partnership between CORPUD and six local land trusts that works to acquire undeveloped properties and permanent easements in our drinking water basins. The program is currently funded through a volumetric-based fee assessed to all water customers in CORPUD’s service area ($0.15/1,000 gallons consumed), which generates approximately $2.2 million per year. These funds are often combined with other state and federal grant funds in order to protect the most critical areas in the watersheds and, to date, the program has helped permanently preserve over 7,000 acres and 70 miles of stream (see Figure 1). Not only have these areas in the watershed been protected from future development, CORPUD is now able to estimate the long-term value of future nutrient and sediment avoidance.

Beyond this watershed protection program, CORPUD has also partnered with the Center for Applied Aquatic Ecology to operate and maintain three real time water quality monitoring platforms in Falls Lake. These monitoring platforms (see Figure 2) allow CORPUD’s water treatment plant staff to evaluate various physical water quality parameters (e.g., pH, temperature, dissolved oxygen) and algae concentrations in real time. Using this information, operators can monitor for the presence of substantial algae blooms or upsets in the water column, and adjust gate withdrawal heights and/or plant treatment processes. This program has been ongoing since 2005, and has been a valuable resource in developing long term water quality trends, especially within the framework of the state-promulgated nutrient management rules for Falls Lake.
In addition to these efforts to protect source water quality, CORPUD has implemented a seasonal drought trigger system, based on the OASIS hydrologic model. Previously, CORPUD staff used a drought trigger system that was based solely on remaining volume at their reservoirs, regardless of time of year. In this scenario, a non-seasonal trigger system can not only lead to the unnecessary implementation of water use restrictions (e.g., normally low water levels in late fall), but also conversely delay the adoption of water use restrictions when truly needed (e.g., unusually low water levels in early spring). CORPUD’s seasonal drought triggers change each month (see Figure 3) to reflect the natural drawdown and refill cycles of our reservoirs, and the same is true for the corresponding rescission triggers. Using this seasonal drought trigger system, CORPUD can better manage their invaluable drinking water resources and maximize the storage volume.

Through these proactive measures, CORPUD is not only committed to delivering safe drinking water to their customers, but also to ensuring their drinking water sources are protected for the future. 

Figure 3

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As a former winner of the prestigious All-America City Award, the City of Reidsville (City) lives up to its ‘Live Simply. Think Big’ motto. The City Public Works Department oversees drinking water treatment and distribution to the City’s nearly 15,000 residents and industries. The City owns and operates the City of Reidsville Water Treatment Plant (WTP), a conventional facility that obtains its raw water from Lake Reidsville (Figure 1). To prevent thermal stratification near the intake and lessen soluble iron and manganese concentrations by maintaining oxygenated conditions in the water entering the WTP, the City is installing an aeration system in the lake near the raw water intake. This will improve raw water quality at the source, lower required treatment expenses, and enable the City to continue providing high-quality water to its customers.

**Background**

The WTP uses alum as the coagulant, chlorine gas as the primary disinfectant, and chloramines in the distribution system. The process is supplemented with potassium permanganate that is added at the raw water intake to control iron and manganese. Other chemicals added at the WTP include fluoride, corrosion inhibitor, polymer, and sodium hydroxide.

The City can withdraw raw water from multiple elevations: the upper intake, lower intake, and the snorkel elevation. The upper intake is 6 feet and the lower intake is 21 feet below the normal pool elevation of the lake (691 feet). The snorkel elevation, installed after the 2011 drought, is midway between the two intake openings.

The City has experienced periodic episodes of water quality complaints from its customers regarding the appearance of discolored water in the distribution system. The 2011 drought conditions lowered the lake water level and forced the City to open the lower intake for the first time in its history, which exacerbated the issue. The maximum manganese concentration of 7.7 mg/L, compared to the historical average concentration of 0.19 mg/L, was observed after the lower intake was opened. CDM Smith’s WTP operations assessment attributed the discolored water issues to filters and pre-oxidation failing to precipitate and consistently remove adequate amounts of iron and manganese. Residuals were also present in both the clearwell and distribution system. Recommendations to mitigate the water quality episodes included both operational practices and designing capital improvements:

- installing a lake aeration system to improve the raw water quality in-situ,
- adding an in-ground concrete tank between the raw water pump station and the flash mix basins to assist in oxidation of iron and manganese. This provides more time prior to coagulant addition for the oxidation, as well as for operational response to changing conditions, and furnishes more locations for sampling to improve key process parameter monitoring.

**Effect of Manganese on Water Quality**

Trace amounts of dissolved manganese are invisible to the naked eye, and even low concentrations of this metal can create a...
variety of issues for residential, commercial, and industrial potable water consumers. Manganese can be present in drinking water in particulate, colloidal, and dissolved form, and not all treatment methods remove all three. Removing particulate manganese is generally successful using conventional coagulation/sedimentation/filtration process. If not bound by a coagulant or polymer filter aid, colloidal manganese typically passes through filters. The dissolved form must be oxidized to an insoluble precipitate either on or separate from the filter media to be removed by filtration.

Manganese differences occur based on source environments. Dissolved oxygen levels affect manganese partitioning between dissolved and solid species. The degree of stratification within the impounded water supply is another influential factor. Thermal stratification occurs in lakes and reservoirs due to differences between the density of warm and cold waters. Following summer stratification, the bottom, dense layer in the reservoir (hypolimnion) can become anoxic, releasing excessive soluble iron and manganese levels into the water from anoxic bottom lake sediments.

Diffused aeration can be used to provide vertical mixing to overcome thermal stratification in the reservoirs. However, aeration alone cannot completely oxidize all dissolved manganese and, thus, can only be used as a preliminary treatment to oxidize manganese. For further oxidation, an oxidizing agent must be used to reduce the levels.

Several different alternative destratification systems are available, including mechanical mixing or hypolimnetic oxygenation. However, due to the constraints of limited available data, proven success of aeration at other water supplies in the area, and the potential for interference of mechanical mixing equipment with boaters, the best approach for managing elevated manganese levels in Lake Reidsville was installing an artificial aeration circulation system. Furthermore, since the City’s raw water intakes are located at various elevations throughout the water column, the objective was to achieve improved water quality throughout the entire water column and not limited to only the hypolimnion.

Proposed Lake Aeration System – City of Reidsville WTP

An artificial circulation system that will use compressed air to destratify the lake around the raw water intake is proposed at Lake Reidsville. Compressed air will be injected using diffusers (Figure 2) installed at the lake bottom. The rising column of bubbles from the diffusers will mix the upper oxygen rich layer with the bottom anoxic layer to eliminate temperature differences between the top and bottom water layers, and to help maintain oxidized conditions to limit soluble iron and manganese reaching the intake from release by the sediments at the bottom of the lake.

The system (Figure 3) includes a 165 cubic feet per minute (cfm) compressor with a variable frequency drive, air manifold assembly for air distribution, approximately 45,000 feet of air delivery piping/tubing for submerged service, 28 diffusers to adequately distribute the air over the area of impact, and flowmeters and pressure gages to monitor air flow rate and pressure on each diffuser line.

Designed to operate year-round, the system has the flexibility to reduce the air flow rates during winter. The lake aeration system will be most successful if stratification is prevented by either starting the system before stratification sets in or operating the system year-round. During winter, the system can be run at lower

“In Manganese can be present in drinking water in particulate, colloidal, and dissolved form, and not all treatment methods remove all three.”
flow rates since less energy is required for mixing. If the system is not started until after stratification occurs, there may be a delay before water quality conditions improve.

The system design is based on the following parameters:

- Air flow rate of 1.32 cfm per acre of surface area as generally recommended (Lorenzen and Fast, 1977).
- An area of impact of 120 acres around the raw water intake to ensure all water entering the intake passes through the curtain of aerated water. Considering the area around the City’s raw water intake is relatively long and narrow, it is not desirable to artificially aerate all, or even the majority of, the lake, but rather to focus on an appropriately sized portion near the intake.
- Length and configuration of diffuser system to cover the deepest part of the lake where anaerobic conditions prevail and the potential for finding elevated soluble manganese concentrations is the highest. In addition, injecting compressed air at maximum depth will ensure the greatest rate of mixing, since induced mixing normally occurs only above the level of air release.

The lake aeration system performance will be evaluated based on the temperature/pH/dissolved oxygen profiles at the surface, mid-depth, and 3 feet above the lake bottom at multiple locations within a radius of 500 feet to 1,000 feet around the raw water intake. Considering that the lake typically stratifies during October, sampling will be conducted between July and October so that most data will be collected during the most heavily stratified period. Samples will be collected no earlier than three months following system start-up and commissioning to ensure destratification of the area of impact.

Summary
Available data indicates very high concentrations of manganese at the lower depths of Lake Reidsville that impact water treatment at the City of Reidsville WTP. The primary problem is low oxygen in deep water, which releases manganese from sediments. An artificial circulation system using compressed air is proposed for year-round operation to mix 120 acres of the lake. The system will supply 1.32 cfm/acre at the downstream end of the lake where the intake is located. Artificial circulation will prevent stratification, maintain adequate oxygen levels throughout the water column, and improve overall water quality in the area of impact. Improved raw water quality will reduce treatment costs, allow the City to maintain its high level of service in providing reliable and safe drinking water to customers, and provide more flexibility to treat water during droughts.

The operational improvements have already been implemented, as the City has taken over operations of its WTP after several years of contracted operation. The improved infrastructure design was completed in 2013 and improvements are currently under construction.

References

About the Authors
Neerja Rastogi, P.E. is an environmental engineer and project manager with CDM Smith. She has 16 years of experience in design-phase and construction-phase project delivery for treatment, pumping, and conveyance facilities for various water systems.

Kevin Eason, P.E. is the director of public works with the City of Reidsville, North Carolina. He has 26 years of experience in the design, construction, and management of water resources projects in the areas of distribution, collections, water treatment, and water reclamation.
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Golf Tournament Raises Funds and Awareness

By Ruth Borgmann, Hazen and Sawyer

Each year, the Water For People Committee of North Carolina AWWA-WEA organizes a Golf Tournament to raise funds and awareness to support Water For People’s cause to bring clean water and sanitation infrastructure to four million people across nine countries. The 2015 tournament was the Water For People’s 19th Golf Tournament event!

While the mission of the NC AWWA-WEA Water For People Committee has remained the same throughout our long history – to educate the local public about the international drinking water and sanitation crisis, to provide an avenue to help those in developing countries, to expand and support the national Water For People organization, and to raise funds for drinking water and sanitation improvement projects – the approaches to carry out our mission has varied over the years.

Since 2014, the committee has focused our efforts on increasing our fundraising initiatives and expanding the reach of our public education efforts. This all started with the revamping of our 5K fundraiser that had previously been held only in Charlotte, NC. As a committee, we decided to make changes to the 5K event and add an additional 5K in Raleigh, NC. We reached outside of the water/wastewater industry and teamed with fitness apparel shops and running clubs to help spread the word about our new event in Raleigh and the revamped event in Charlotte. Timing services were added to the 5K events to attract competitive runners and people were encouraged to register as a team in order to foster team spirit. Finally, we took advantage of today’s pervasive connectivity and put our event registration and sponsorship opportunities online.

The result of all of these upgrades and additional efforts in planning our 5K events was an increase in fundraising, meeting our mission to raise funds for drinking water and sanitation improvements projects, and an increase in participation. Participation from local running clubs and community members allows the reach of Water For People’s message to expand beyond our industry.

This year, 2015, was another successful year for both of the 5Ks. The Water For People Committee was able to raise the largest amount to date of over $10,000 at these two events. Following this year’s 5K events, participants were given a survey so that our committee could gather feedback and understand our participant’s perspectives. Questions about time of year, location, and the registration process were all included in our questionnaire. Additionally, we spent time on our committee call discussing lessons learned from 2015 so we can continue to improve and grow our 5K event.

Following the increased success of the two 5K events, our committee decided it was time to look and see where improvements could be made to our other
major annual fundraising event – the golf tournament. While making changes to a well-established event is not always easy, it often can have a very positive effect. After 17 years, we decided to move our player and sponsorship registration process online, like the 5K event. While this required increased communication with our many loyal participants and sponsors, it allowed for a faster and easier method of registration.

The online registration process allows teams to register together or individually and is managed by NC AWWA-WEA staff. Online registrations also allow for player information to be compiled much more easily, which helps us plan more effectively in the final weeks leading up to the tournament. Additionally, in an effort to standardize across our fundraising events, we changed the sponsorship levels of the golf tournament to match the levels of the two 5K events. Now, when a sponsor donates at the ‘Tank of Water’ level for a Water For People event, it holds the same weight at all of our events. During our committee conference call following the 19th Annual Golf Tournament we once again discussed lessons learned and areas for improvements. Next year, we hope to continue to improve and simplify the online registration process and start our outreach to potential players at an earlier date.

It is important to continually evaluate and ensure that your committee’s approach to carrying out its mission is still effective. We found that there was potential for improvement in organizing our 5K event as well as our golf tournament. While making changes does require more work, the benefits far exceed the additional work required as shown by our increased levels of participation and fundraising. We expect our approach to meeting our goals to continue to evolve as we receive more feedback from participants and sponsors of our events.

We would like to thank all of this year’s supporters of our Water For People committee. With your generous contributions we were once again able to exceed our fundraising goals and promoted awareness of Water For People’s mission to bring access to safe water and sanitation to four million people across nine countries for generations to come.

For more information on our committee or the Golf Tournament or to provide any feedback to our committee, please contact Nick Dierkes (ndierkes@brwncald.com), Ruth Borgmann (rborgmann@hazenandsawyer.com) or Heather Miller (hmiller@labellapc.com).

About the Author
Ruth Small Borgmann was a co-chair on the 2015 planning committee for the NC Water For People Golf Tournament. She is a graduate of NC State University and an Environmental Engineer at Hazen and Sawyer.
BECOMING A NAMED FUND DONOR

Clean water has become one of our most precious resources in the 21st century; in fact, one in nine people live without access to clean and drinkable water. As available, quality drinking water becomes scarce and as we pollute our water resources with the wastewater we produce, there will be a significant impact to the cost and availability of this resource that we all have taken for granted. The threat of a water crisis is very real, yet most Americans remain unaware.

In September 2009, NC AWWA-WEA established the NC Safewater Endowment Program. Committed individuals and firms joined together with a goal to establish a sustainable fund through the creation of one general and several ‘Named Funds.’ The program is intended to increase water environment education in schools by expanding the NC AWWA-WEA’s support of scholarships for students and educators committed to our industry. The Endowment Program would not exist without its donors. These donors and those who have contributed to their funds are helping to ensure the future of safe water.

The NC Safewater Fund Scholarship
$2,000 awarded to a student who is pursuing a degree in a curriculum that emphasizes the protection of public health by providing healthful drinking water and/or protecting the water environment at an institution of higher education located in North Carolina.

The Carol Bond Fund Community College Scholarship
$1,000 awarded annually for one year only to a community college student pursuing a degree in environmental sciences or environmental education at a community college in North Carolina.

Carlos Norris, President of Crowder Construction Company, is the current Chair of the Endowment Committee. Crowder became a ‘Named Fund’ donor because of his desire to attract intelligent, technically minded individuals to construct critical, complex infrastructure projects.

The average person does not appreciate the value of water and what it takes to provide and maintain this resource that is so critical to life. Crowder has a passion for our industry and a desire to give back in a way that will educate and support those who share our commitment to our water environment. Building an endowment program that will allow this critical industry to flourish is a legacy that Crowder looks forward to leaving through the establishment of the Crowder Construction Company Scholarship Fund. As with any Endowment, the lifeblood comes from those who are passionate and willing to give toward a common cause or a common interest. When one ponders the subject of water and the challenges that face our industry, we can all agree that we need to attract the best in class of professionals to meet these needs.

“It is imperative that we each embrace the challenges ahead. Through our individual gifts of funding, time, and resources, we can ensure that the next generation of industry professionals will be ready to face the complexities of our water future.”

Carrol Bond Fund Scholarship for Middle and High School Environmental Educators
The scholarship program focuses on funding competitive financial awards to middle school or high school educators that have, as a major objective, educating middle school or high school students on clean water and environmental preservation.

The Crowder Construction Company Scholarship Fund
$1,000 awarded annually to the recipient through their senior year. Student must be a full time student who has completed one full year of course work at an accredited college with a career goal of working in the field of Water and Wastewater Construction.

The Carol Bond Fund/The Lynn and Lars Balck Water Environmental Stewardship Fund/The Rivers & Associates, Inc. Clean Water Education Fund Scholarship
$2,000 awarded annually through two years of post-graduate school degree study to a rising junior who is majoring in engineering with a concentration in the water environment in an ABET accredited curriculum at one of the UNC campuses.

The Environmental Manufacturer’s Representative Scholarship Fund Scholarship
$1,000 multi-year scholarship awarded to a student studying engineering with a concentration in the water environment in an ABET accredited engineering curriculum at one of the UNC campuses.

The Frank and Susan Stephenson Water Environment Scholarship Fund Scholarship
$1,000 awarded annually to a first year freshman who is studying engineering or science with a concentration in the water environment in an ABET...
accredited engineering curriculum or a science curriculum at one of the UNC campuses.

The Les and Elaine Hall Water Environment Stewardship Fund Scholarship
$1,000 awarded annually to a student through their junior and senior years and for up to two years of postgraduate studies in the water environment. Student must be a rising junior and studying engineering with a concentration in the water environment in an ABET accredited engineering curriculum at one of the UNC Campuses.

The NC Safewater Fund/GHD Clean Water Fund Scholarship
$2,000 awarded annually to a first year graduate student who is studying engineering with a concentration in the water environment in an ABET accredited engineering curriculum at a North Carolina University.

Raftelis Financial Consultants Environmental Finance and Management Fund Scholarship
$1,000 awarded annually to a student through completion of their undergraduate degree and/or graduate degree who is pursuing a degree with a concentration in environmental finance, environmental management, or related disciplines, in an accredited institution of higher education.

Raftelis Foundation Elementary Education Scholarship
The scholarship program focuses on funding competitive financial awards to elementary educators that have a major objective, educating elementary students on clean water and environmental preservation. The full amount of the scholarship will depend on the cost of the project(s) selected.

Frank and Susan Stephenson watched as water professionals were retiring. With the hard work and financial resources required, fewer young people were entering the industry. They wanted to make a difference.

Frank was raised in an environment where he was taught that giving back to society was an expectation rather than an option. As he began to establish himself in the corporate world, the only question was, “How and where can I make a difference?” Frank recognized that a profession in the water environment industry could be considered a noble cause. Impact on the protection and preservation of our water sources is critical to human existence. As he and Susan, his wife, pondered their opportunities to ‘give back,’ they agreed that starting the Frank and Susan Stephenson Water Environmental Scholarship Fund would be a way to provide support to an industry that they are passionate about. The idea that this gift would be perpetual simply created further enthusiasm. Frank has dedicated his career to the protection of public health and protection and preservation of the environment through his commitment to his clients.

“The Endowment Program not only provides financial assistance to those pursuing careers in our industry, but it also raises awareness of this important profession attracting the brightest minds to an industry where a shortage had developed.”

Since the inception of the Endowment Program, the Endowment Committee and other volunteers have worked diligently to solicit donations to fund it. There are currently eleven funds. While each has its own unique requirements to qualify, collectively they promote increased knowledge and understanding for the provision and protection of safe water and the preservation and enhancement of our water environment. The Program has already awarded over $50,000 in scholarships and grants and intends to award an additional $13,000 in 2016.
Welcome New Members!

The following people became members of NC AWWA-WEA in July, August, and September of 2015 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 a 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)
Thomas Barr
Josh Batchelor, Carolina Turkeys
Larry Bridges, Chatham County
Lauren Brown, Metersys
Geoffrey Burdick, Underground Solutions
Carolina Cely, Sensus
Brent Detwiler, City of Hendersonville
Ran Ding
Trevor Edwards, Charlotte Water
Gena Fiegel, Sensus
Alvin Fuller, Hendersonville Water & Sewer
David Gustafson, AECOM
Kiel Harms
Noyes Harrigan, UNC-Charlotte
Linda Hickok
Darrell Hill, Greenville Utilities Commission
David Hux, City of Shelby
Brian Johnson, The Wooten Company
Steven Kaufman, City of Raleigh
Joel Keller, City of Raleigh
Robert King, Armc Foster Wheeler
Eric Marsh, City of Durham
Matt Noesen, CH2M HILL
Crystal Panico, Union County Public Works
David Rankin, City of Monroe
Richard Riser, City of Monroe
Rodger Sauls Jr., Metersys
Francis Scarpinato, City Of Monroe
Timothy Sexton, City of Hendersonville
Kelly Spainhour, Town of Cary
Dale Tiska, City of Raleigh
David Walker, University of North Carolina At Charlotte
Thomas Warren Jr, City Of Roxboro
Matthew Wilson, NCDENR
J. Kevin Yates, Town of Madsion

Water Environment Federation (WEF)
Malory Alman
Hannah Banks
Rachel Cohn
Jeremy Dunne
Travis G’Leary
Jonathan Gerdes
William Grant, Union County
Ansh Gulati
Scott Haberstroh, CH2M Hill
Matthew Klein, Utilities Inc.
Morgan Klenke
Gwyn Phelps
Kristen Pierce, AECOM
Joshua Powell, Dewberry
Vibha Puri
Jackie Reese III, Charlotte Water
John Solomon, CH2M Hill
Kelly Spainhour, Town of Cary
Clay Sykes, ESG Operations Inc.
Tyler Watts, Bio-Nomic Services Inc.

NC SLAM
Adam Belcher, Water Guard Inc.
Austin Blackmon, City of Greensboro
William Bone, City of Rocky Mount
Michael Bray, City of Raleigh
Russell Byrd, City of Clinton
Jeffrey Craver, City of Winston-Salem
Corey Davis, Town of Boone
Michelle Dodson, City of Durham
Irvin Dudley, City of Goldsboro
Mario Edouard, City of Winston-Salem
Robert Ellis, City of Laurinburg
Juan Escobar, City of Asheboro
Preston Faison, City of Goldsboro
Jennifer Farquhar, City of Mount Holly
Brett Fisher, Union County Public Works
Danny Fowler, City of Raleigh
John Giachino, P &c Construction Company
Jared Glaspie, City of Durham
Marty Hall, City of Raleigh
Ricardo Hernandez, City of Raleigh
Joshua Huffman, City of Washington
Travis Hunt, City of Shelby
James Hyatt, Town of Bakersville
Tommy Ingle
Jordan Jackson, City of Shelby
Dameon Johnson, Town of Spring Lake
Tony Johnson, City of Raleigh
Scott La Sala, Duke Energy
Eddie Lewis
Bobbi Liles, City of Raleigh
Phyllis Lovelace, City of Raleigh
Leslie Lovers, City of Greensboro
Rice Lund, WK Dickson & Co. Inc.
Tommy Mann, Bible Wesleyan
Christian School
Joseph Martin, City of Raleigh
Andrew McGrane, Town of Pittsboro
Anthony McGregor, City of Roxboro
Michael Moretz, City of Mount Holly
Jeremy Nance, Charlotte Water
James Ndon, City of Raleigh
John Nelson, Town of Bethel
Ymiel Neville, City of Durham
Finn Nielsen, Vand Solutions
Gregory Poole, City of Raleigh
Luc Rameau, City of Raleigh
Jeffrey Ray, HIGHFILL
Infrastructure Engineering P.C.
Paul Rodock, Weyerhaeuser
Stacy Rogers, City of Raleigh
Ruth Rouse, OWASA
Doug Shout, City of Mount Holly
John Smith, Neuse Regional WASA
Daniel Snipes, Town of Elon
Cameron Starnes
Frank Stephenson, Stephenson Consulting & Engineering
John Tallent, City of Raleigh
Billy Tant, City of Raleigh
Ricky Thomas, Town of Cary
Saqwon Torain, City of Durham
Matthew Tuttle, City of Eden
Joshua Uhland, City of Raleigh
Anthony Utt, City of Mount Airy
Jerry Walls, City of Thomasville
William Ward, Winston-Salem
Forsyth City/County Utilities
Ethan Waters, City of Mt. Holly
Tracy Weaver, City of Shelby
Jonathan Yancey, SGWASA
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### WASTEWATER CERTIFICATION QUESTIONS

Questions provided by the NC AWWA-WEA Wastewater Board of Education and Examiners

1. With regards to control panels, H-O-A means which of the following:
   - a) Heat- Oscillate-Activate
   - b) Highlight-Observe-Act
   - c) Heed-Observe-Archive
   - d) Hand-Off-Automatic

2. “Refractory cyanides” are compounds of cyanide that:
   - a) are amenable to chlorine oxidation/destruction
   - b) resist chlorine oxidation/destruction
   - c) are susceptible to uv degradation
   - d) are not susceptible to uv degradation

3. An amphoteric metal is one that:
   - a) will react chemically with either an acid or a base
   - b) will only react with an acid
   - c) will only react with a base
   - d) will not react with either an acid or a base

4. The following are allowed to exist in spill containment diking:
   - a) valves
   - b) manual discharge gates
   - c) electrical discharge gates
   - d) no openings of any kind

5. Using a centrifuge in which of the following applications may be limited and expensive:
   - a) sludges containing oils and greases
   - b) sludges containing metal bearing wastes
   - c) sludges which would blind a filter press
   - d) sludges which would clog a filter press

6. Some manufacturers of pH electrodes produce electrodes that are refillable with:
   - a) solvents
   - b) electrolytes
   - c) slightly acid solution
   - d) slightly alkaline solutions

**Answers:**
2. b) Industrial Waste Treatment, 2nd Ed., Vol. I, pg. 565
5. b) Industrial Waste Treatment, 2nd Ed., Vol. I, pg. 582
6. b) Industrial Waste Treatment, 2nd Ed., Vol. I, pg. 574

### WATER CERTIFICATION QUESTIONS

Questions provided by the NC AWWA-WEA Water Board of Education and Examiners

1. Emergency Response Plans should be revised and updated _________________.
   - a) annually
   - b) every five years
   - c) at least every two years
   - d) every three years

2. Which pump is often referred to as a propeller pump?
   - a) radial flow
   - b) axial flow
   - c) mixed flow
   - d) centrifugal flow

3. A cross-connection exists if a connection leads from a __________ line to anything other than a __________ connection.
   - a) potable, non-potable
   - b) non-potable, potable
   - c) potable, potable
   - d) non-potable, non-potable

4. Air-and-vacuum relief valves are required at high points and __________ are required at low points.
   - a) pressure reducing valves
   - b) globe valves
   - c) gate valves
   - d) blow off valves

**Answers:**
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 Date: **October 30, 2015**  
Responsible for Professional Engineers and Professional Surveyors

**NC Water Treatment Facility Operators Certification Board**
919-707-9040  
http://www.ncwater.org/pws/
Exam Dates: 2/25/16, 5/26/16, 8/25/16, 10/7/16
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: 3/10/16, 6/9/16, 9/8/16, 12/8/16
Responsible for Wastewater Certifications (Animal Waste, Biological WW, Physical/Chemical, Land Application, Spray Irrigation, Collections, Subsurface, and OIT)

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NC AWWA-WEA AWWA Director Brian Tripp and his wife Julie welcomed their third daughter, Alaina Grace, on September 29, 2015. Alaina was 8 pounds 12 ounces, 20 3/4 inches at birth.

Stockholm Junior Water Prize
Coming to Charlotte!

We are proud to announce that the University of North Carolina at Charlotte has been named as the host site for the national Stockholm Junior Water Prize (SJWP) competition in 2016.

The purpose of the SJWP is to increase students’ interest in water-related issues and research, and to sensitize them – as future leaders – to global water challenges. The competition is open to projects aimed at improving quality of life through improvement of water quality, water resources management, water protection, and water and wastewater treatment.

In the United States, the Water Environment Federation (WEF) and its Member Associations organize the national, state, and regional SJWP competitions with support from Xylem Inc. (also the international sponsor).

The national winner receives $10,000 (USD) and an all-expense-paid trip to Stockholm, Sweden for the international SJWP competition to represent the United States during World Water Week. The international winner will receive $10,000 (USD) presented during a royal ceremony by the prize’s Patron HRH Crown Princess Victoria of Sweden.

NC AWWA-WEA
Recognition at WEFTEC

Due to the outstanding work of our members, NC AWWA-WEA was recognized several times at WEFTEC this past September in Chicago. Jacqueline Jarrell, Darrell Dewitt, and David Wagoner received the Gascoigne WWTP Operational Improvement award for their paper “Finding the Right System Balance” published in Water Environment & Technology, February 2014, v. 26, no. 2, p. 32. The Gascoigne Medal was established in recognition of George Bradley Gascoigne, a prominent consultant who exhibited a great deal of interest in the operation of wastewater treatment plants. The medal is awarded to the author(s) of an article that presents the solution of an important and complicated operational problem within a full-scale, operating wastewater treatment plant that is appropriately staffed.

The article describes a potential solution to a problem experienced at many operating wastewater facilities, minimizing nocardia growth while maintaining nitrification. Although the specific solution may not be universally applicable, the problem solving procedure used would be cost effective and appropriate for application at most Water Resource Recovery Facilities (WRRF). The article details how the staff of the Charlotte (North Carolina) Mallard Creek WRRF used a hands-on operations approach to evaluate the issues of foaming and nitrification performance using existing plant data and installed instrumentation.

Congratulations to Charlotte Stormwater Services for receiving the Overall Highest Scores for Phase I in the new Municipal Separate Stormwater Sewer Programs (MS4s) & Green Infrastructure Award. The National Municipal Stormwater and Green Infrastructure Awards program, led by the Water Environment Federation (WEF) through a cooperative agreement with the US Environmental Protection Agency (EPA), was established to recognize high-performing regulated Municipal Separate Stormwater Sewer Programs (MS4s). The objective of the program was to inspire MS4 program leaders to seek new and innovative ways to meet and exceed regulatory requirements in a manner that is both technically effective as well as financially efficient. Recognition of innovative approaches was also a highlight of this program.

All participants received a certificate in gold, silver, or bronze levels with three winners from each category selected for program management, innovation, and overall winner with the highest score.

Dr. Francis de los Reyes received the WEF Fair Distinguished Engineering Educator award. This award “…recognizes accomplishments in the education and development of future engineers [and] honors Gordon Maskew Fair, a professor of sanitary engineering at Harvard University, [who] achieved exceptional results in preparing students for the water environment profession. Beyond the purely technical information, he imparted to his students a desire for environmental harmony and taught them to use their engineering skills toward the realization...
of that end. Dr. Fair’s insight into the capabilities and limitations of the field of sanitary engineering inspired research and investigation into emerging areas of concern. This medal commemorates Dr. Fair’s contributions and likewise the contributions of his fellow educators.”

Dr. de los Reyes is a Professor of Civil, Construction, and Environmental Engineering, Associate Faculty of Microbiology, and Training Faculty of Biotechnology at North Carolina State University. Dr. de los Reyes has developed an outstanding and internationally recognized program of basic research, technology development, and training in wastewater treatment, microbial ecology, and sanitation in developing countries. He has been active in teaching, research, and extension service not only at the state and national level, but has done internationally recognized work in several countries.

Dr. de los Reyes is recognized as a wastewater treatment expert and has developed collaborative relationships with utilities and municipalities throughout North Carolina. He is an active member of NC AWWA-WEA, serving annually since 2005 as an instructor for the NC AWWA/WEA Biological Treatment Operators’ School, organizing several workshops on microscopy (in NC and in Ohio), serving as speaker for the Laboratory Technicians, and as an invited speaker for specialty seminars, and NC AWWA-WEA conferences.

In addition to these award winners, NC AWWA-WEA was represented in the Operations Challenge by ‘Operational Hazards’ from Charlotte Water, and in the Student Design team from NC State University (Hannah Banks, Zachary Kemak, and Jonathan Flehan).

The Operations Challenge team competed with 46 other teams including two teams from Germany in five different events. The events were collection system, pump maintenance, safety, process control and laboratory over an intense two days. Operational Hazards performed very well finishing third overall for the collections event and ninth for the safety event. The team consisted of: Andy Taylor - Captain/coach, Clifton Messer, Ben Silvers, Jack Reese, and Travis O’Leary. Much appreciation also goes to Hank Lewis from Charlotte Water who served as a national judge in the Operations Challenge competition.

Dewberry Welcomes Water/Wastewater Expertise of Hilderhoff

Dewberry has hired Steve Hilderhoff, PE, BCEE, as an associate and senior project manager in the firm’s Raleigh office. Hilderhoff will be responsible for enhancing Dewberry’s water/wastewater capabilities throughout North Carolina while providing design expertise for utility infrastructure projects. He specializes in water distribution, wastewater collection, and water/wastewater treatment. Hilderhoff has 24 years of experience in sewer system design, evaluation, rehabilitation, and replacement and has been heavily involved in designing pumping stations, and odor control strategies.

Hilderhoff received a bachelor’s degree in civil engineering from the University of Pittsburgh and a master’s degree in environmental pollution control from Pennsylvania State University. He is a registered professional engineer in North Carolina, a board certified environmental engineer, a member of the Water Environment Federation, and sits on the Communications Committee of the North Carolina American Water Works Association/Water Environment Association.

About Dewberry

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 40 locations and 2,000+ professionals nationwide. To learn more, visit www.dewberry.com.
Freese and Nichols Adds Two Experienced Engineers to Raleigh Office

Freese and Nichols, Inc. has enhanced the capabilities of its Raleigh, North Carolina office with the addition of two new engineers, Morgan McIlwain, PE, a construction services program manager, and Rick Rudin, PE, a water/waste water utilities engineer. The Raleigh office, which opened in 2013, now has 13 professionals with broad expertise in water, wastewater, stormwater and program management/construction services.

McIlwain has nine years of experience in program management, with specialized expertise in engineering design for municipal roadway projects, capital and municipal improvement projects, and large-scale project coordination and program management. She is skilled in the organization and administration of complex projects involving extensive communication and collaboration with planning, design and construction personnel. McIlwain is currently playing a key role in providing program management services for the City of Hickory’s $40 million Bond Program.

She has also led the firm’s implementation of the e-Builder® cloud-based construction program management software, which has enabled Freese and Nichols’ engineers to integrate and coordinate document control, budgets and schedules of multiple projects, as well as generate reports and forecasts. McIlwain has a Bachelor of Science degree in civil and is a registered professional engineer.

Rudin has seven years of civil engineering experience with municipalities, working on water and wastewater utilities planning and design projects that include water distribution and transmission lines, ground and elevated storage tanks and pump stations. In addition, his experience includes wastewater collection and conveyance pipelines, pump stations and treatment facilities.

Rudin also has a Bachelor of Science degree in civil engineering and is a registered professional engineer.

“We’ve expanded our Raleigh office significantly since opening in March 2013 and broadened the services we provide to this thriving market,” said Mike Wayts, Vice President/Principal at Freese and Nichols. “The addition of Morgan and Rick to the team, with their collective engineering talent, depth of experience and credentials, provides added value to our clients and enhances our ability to provide best-in-class engineering, design and project management services in North Carolina and beyond.”

About Freese and Nichols
Freese and Nichols, Inc. delivers innovative solutions to clients across the country, providing architecture, engineering, environmental science, planning, energy, program management and construction services. A full-service professional consulting firm, Freese and Nichols is the first engineering/architecture firm to receive the Malcolm Baldrige National Quality Award. For more information, visit www.freese.com.
News from McKim & Creed

McKim & Creed, Inc. announces that the following professionals have joined the company:

Christopher Nelson comes to McKim & Creed as chief financial officer. He has 20 years’ experience in the fields of finance, accounting, operations management, and mergers and acquisitions. He holds a bachelor’s degree from Valparaiso University and an MBA from the University of Illinois at Chicago. Previously he served as partner/divisional CFO of Environmental Resources Management, a 5,000-person London-based environmental sustainability consulting firm.

Kristin Beamer has joined McKim & Creed as corporate marketing director. In this role, she will oversee strategic marketing activities firm-wide. Beamer is a graduate of Pfeiffer University with a degree in political science. She brings more than 10 years’ experience in the architecture/engineering/construction industry.

Tara Schwenzfeier Murphy, RLA, ASLA, LEED AP, PMP joins McKim & Creed as a project manager specializing in land planning, land design and transportation planning. She is a graduate of the SUNY College of Environmental Science and Forestry with a degree in landscape architecture. She is a licensed Landscape Architect, and is a member of the North Carolina Chapter of the American Society of Landscape Architects. Murphy is a LEED Accredited Professional as well as a Project Management Professional. Prior to joining McKim & Creed, Murphy worked with AECOM as a senior land planner.

Kyle Crowe is a new project manager with McKim & Creed. He specializes in commercial development, and has a degree in civil engineering from UNC Charlotte. Previously, he worked as an assistant project manager with Bohler Engineering.

Beth Bailey comes to McKim & Creed as a senior landscape architect, responsible for land planning, site planning, project identity and landscape design. She is a graduate of UNC Charlotte with a degree in architecture and visual arts. Bailey is a member of the American Society of Landscape Architects, and previously served as principal of Oldham Planning & Design and as owner/principal of B. Bailey Design.

First-of-its-Kind Ecological Treatment System Recognized for Innovation

The WaterHub at Emory, an ecological water reclamation treatment facility that is the first system of its kind to be installed in the US, has been named the 2015 WateReuse Innovative Project of the Year by the WateReuse Association. The award was presented last month in Seattle at the 30th Annual WateReuse Symposium. Raleigh-based McKim & Creed, Inc. served as a member of the team that planned and designed the facility.

Located on the campus of Emory University near Atlanta, the WaterHub at Emory recycles approximately 400,000 gallons of water per day – about 40% of the university’s water needs – and reuses it as process make-up water in campus steam and chiller plants and for toilet flushing in selected residence halls. This reduces Emory’s draw of drinking-quality water from DeKalb County (within the Metropolitan North Georgia Water Planning District) by up to 146 million gallons of water annually.

“McKim & Creed is honored to have been the engineering partner in this unique and innovative design-build-own-operate venture,” said Tim Baldwin, PE, who served as McKim & Creed’s manager for this project. “The WaterHub at Emory not only supplies valuable reuse water and saves money for the university, it also serves as a versatile platform for educational and research opportunities – from process to policy.” Other partners on the DBOO team include Sustainable Water, a leading provider of water reclamation and reuse solutions, and Reeves Young, an Atlanta-based commercial contracting company.

About McKim & Creed

McKim & Creed is an employee-owned firm with more than 350 staff members in offices throughout the US, including North Carolina, Florida, Virginia, Georgia, Texas, and Pennsylvania. McKim & Creed specializes in mechanical, electrical, plumbing, civil and structural engineering, and industrial design-build services, as well as airborne and mobile LiDAR/scanning, unmanned aerial systems, subsurface utility engineering, hydrographic and conventional surveying services for the energy, transportation, federal, land development, water and building markets. For more information about McKim & Creed, visit www.mckimcreed.com.
WEF has taken one of the most respected peer-reviewed environmental journals available to another level. Water Environment Research (WER) is hosted online at IngentaConnect. Whether your topic of interest is biosolids and residuals management, drinking water, conservation and reuse, hazardous waste, ground and surface waters, source water protection, remediation and treatment systems, environmental risk and health, waste minimization or aquatic sciences, you will have complete and fully interpreted results of original research available via WER Online. Includes all issues of WER 1995 through the current issue including annual literature review.

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Thank you to everyone who responded with answers to the following questions. Responses have been summarized below.

**Question:** What issues should be considered when selecting the best chemical treatments for water? Thank you to Bill Dowbiggin, P.E., CDM Smith for providing an answer to this question.

**Answer:** Several items should be considered when selecting the right chemical treatments for your source water, including the following:

- **Optimization of coagulation:** Through appropriate chemical dosing, optimization of the coagulation process can lead to improved settled water quality.

- **Filtration optimization:** In addition to reducing turbidity, filtration optimization enhances the disinfection process by removing a greater amount of suspended particles.

- **Disinfection:** The effectiveness of chemical or UV disinfection can be affected by upstream processes as well as source water quality. Care should also be taken to reduce the formation of disinfection by-products.

- **Corrosion control:** In addition to increasing water treatment costs, corrosion in water distribution systems can lead to major health

Bench testing can help evaluate many of these items. However, since the benefits of these processes are often site-specific, pilot testing is sometimes needed to compare alternate options in order to select the best treatment approach.
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- Assist in developing alumni programs to keep students connected (and teachers too)
- Help establish a middle school competition to get students interested early
- Support outreach and marketing activities to encourage student participation
- Participate in the annual onsite competition as an organizer, coach, or judge

You can also get involved with your local Member Association to help promote the competition in your area and select your state winner.

To learn more about the program, visit: www.sjwp.org

Join Now! To learn how you can get involved, please contact Stevi Hunt-Cottrell at shunt-cottrell@wef.org or 703-684-2454.
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The Academy for Water Professional Development (The Academy) is an NC AWWA-WEA initiative designed to advance the careers of water professionals. Developed with input from North Carolina utility managers, The Academy includes multi-level technical and leadership development training courses, with emphasis on the most desired skill-set needed by upper-level employees. The Academy provides a structured and specialized training and certification program for water industry professionals to demonstrate competency at defined levels through the completion of courses and passing of comprehensive exams.

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- Meet future needs for a qualified and professional workforce

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- The Academy offers training in several segments of the water profession. Each segment is represented in The Academy as a separate Ladder.
- Each Ladder typically has four certification levels: Apprentice, Journeyman 1, Journeyman 2, and Master.

Learn more at www.ncsaferwater.org
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) 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.

**SPRING 2016**  
**Development Growth – Water and Sewer Under Pressure** (Submission Deadline: January 16, 2016)

For the last ten years, North Carolina’s population has been growing at an average rate of 1.5%. It is estimated that by 2020 there will be more than 10,500,000 people in our state, according to the North Carolina Office of State Budget and Management. Population growth usually leads to a better economy; however, it also challenges our state urban development and puts pressure on expanding and/or rehabilitating the existing water and sewer infrastructure or building new infrastructure. This issue of NC Currents will feature articles that explore different approaches, technologies, and tools that help identify the challenges associated with population growth and effectively respond to those changes.

**SUMMER 2016**  
**Green** (Submission Deadline: April 11, 2016)

While the catch word ‘Green’ has many connotations, in the water and wastewater industry it can equate to responsiveness to the environmental disasters, stewardship to the environment through LEED, Envision, or Green Globe projects, maintaining source water quality through sustainable treatment process, implementing energy conservation measures to ensure more efficient systems, and/or ways to reduce bio-solid land application through energy production. In this issue we’ll explore examples of the various ways that North Carolina’s water and wastewater industry has become ‘Green.’

**FALL 2016**  
**Funding the Value of Water** (Submission Deadline: October 3, 2016)

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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 for 2016.

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NC AWWA-WEA invites you to join us at the Crowne Plaza in Asheville for the 15th Annual Spring Conference. The conference will take place April 17-19, 2016 when the weather is sure to be gorgeous!

Originally titled ‘Spring Fling,’ the first Spring Conference was held in 2002 at the Wilmington Hilton Riverside. The Spring Conference Committee has made an exciting change this year – the same event located in the beautiful North Carolina mountains!

Monday and Tuesday will feature technical sessions on water, wastewater and special topics, running concurrently with the Operations & Maintenance track. Monday will also include equipment demonstrations, and Tuesday afternoon will feature two forums. All these informative sessions will give certified operators and professional engineers a chance to earn their continuing education credits while expanding their knowledge of the field. Six credit hours will be offered each day.

There is no better time to visit Asheville than in the springtime! Enjoy all the amenities that the Crowne Plaza has to offer. Or tour the historical city and all the exceptional shops. Hiking, biking and scenic tours are just a few miles away. There will be plenty to do and lots of folks to meet during this special event.

This year’s Spring Conference Committee started working early and hard to make this a worthwhile event for you. We hope you will join us in Asheville! To join the committee, please contact Mary Knosby, 704-338-6857, Mary.Knosby@hdrinc.com.
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2016 Schedule of Events

The following schedule is current as of ???. 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.ncsafeewater.org or contact the NC AWWA-WEA office directly at (919) 784-9030.

February
24-27 AWWA/WEF Utility Management Conference
AWWA (800) 926-7337
25 NCWTFOCB Exams (application deadline 30 days prior)
Kinston, Morganton, and Raleigh
NCWTFOCB (919) 707-9040
25 Growing Relationships & Opportunities through Water Resources (GROW)
Raleigh, NC

March
10 NCWPCSOCC Exams
Kenansville, Morganton, Raleigh, Salisbury, & Williamston
NCWPCSOCC (919) 807-6353
14-18 Coastal Collection/Distribution School
Carteret Community College

April
17 Growing Relationships & Opportunities through Water Resources (GROW)
Asheville, NC
17-19 NC AWWA-WEA Spring Conference
Crowne Plaza & Resort
Asheville
20-22 AWWA Design-Build for Water Wastewater
Charlotte, NC
AWWA (800) 926-7337
25-29 Eastern Biological School
NCSU McKimmon Ctr
25-28 Eastern Maintenance Tech School – Grades 1, 2, & 3
NCSU McKimmon Ctr
26-29 Physical/Chemical WW School
NCSU McKimmon Ctr

May
26 NCWTFOCB Exams (application deadline 30 days prior)
Kinston, Morganton, and Raleigh
NCWTFOCB (919) 707-9040

June
9 NCWPCSOCC Exams
Kenansville, Morganton, Raleigh, Salisbury, & Williamston
NCWPCSOCC (919) 807-6353
13-17 Western Biological Wastewater Operators School
Foothills Higher Education Center
13-16 Western Maintenance Tech School – Grades 1, 2, & 4
Foothills Higher Education Center

19-22 AWWA ACE
Chicago, IL
AWWA (800) 926-7337
23 Growing Relationships & Opportunities through Water Resources (GROW)
Greensboro, NC

July
11-15 Western Collection/Distribution School
Foothills Higher Education Center
14 Growing Relationships & Opportunities through Water Resources (GROW)
Wilmington, NC

August
1-3 Utility Management Institute
TBA
Chuck Christiansen
25 NCWTFOCB Exams (application deadline 30 days prior)
Kinston, Morganton, and Raleigh
NCWTFOCB (919) 707-9040

September
8 NCWPCSOCC Exams
Kenansville, Morganton, Raleigh, Salisbury, & Williamston
NCWPCSOCC (919) 807-6353
12-16 Eastern Collection/Distribution School
Durham Convention Center
24-28 WEFTEC
New Orleans, LA
WEF (800) 666-0206
26 Growing Relationships & Opportunities through Water Resources (GROW)
Charlotte, NC

October
27 NCWTFOCB Exams (application deadline 30 days prior)
Kinston, Morganton, and Raleigh
NCWTFOCB (919) 707-9040

November
13-16 NC AWWA-WEA Annual Conference
Raleigh, NC

December
8 NCWPCSOCC Exams
Kenansville, Morganton, Raleigh, Salisbury, & Williamston
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