

SUMMER 2016

NC Currents

NC AWWA-WEA

American Water Works Association | wwf Member Association
North Carolina Section

Green Issues

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 Committee, Membership Support, GROW Event Coordination

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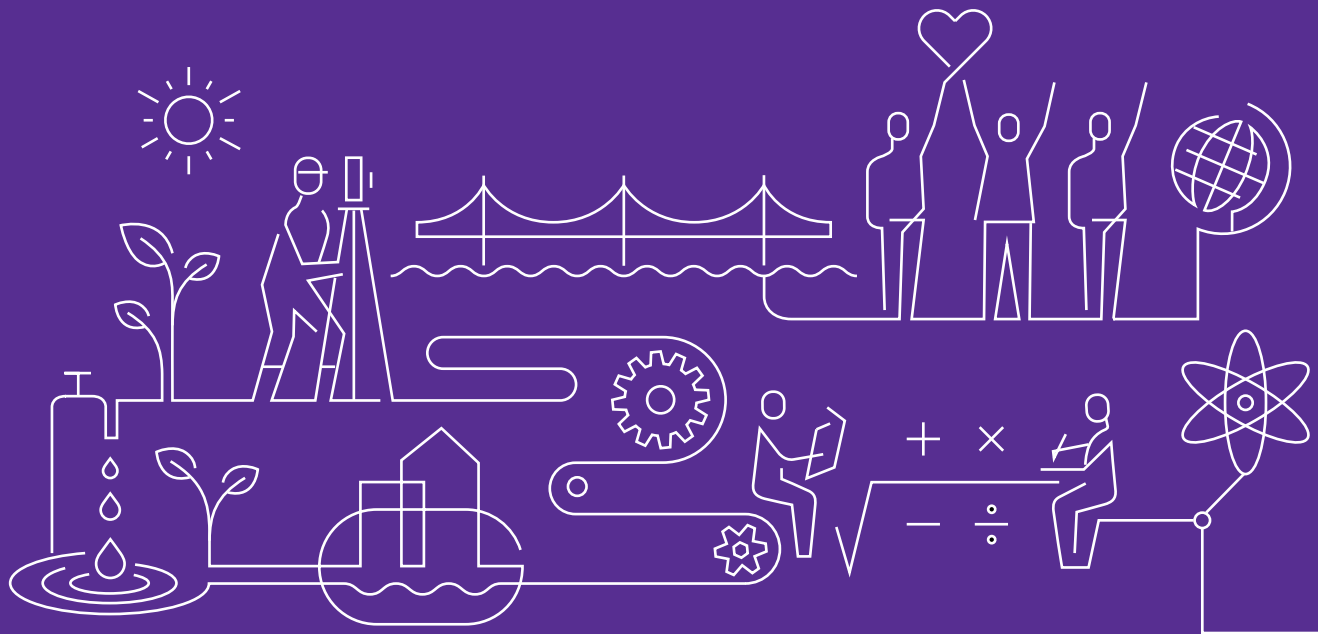
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Our Green Contribution

Julie A Hellmann, PE, Sales Engineer, Heyward Incorporated

This issue of *NC Currents* is focused on “Green Issues” in the water and wastewater industry. There are many different ways in which our industry has become ‘green,’ which by my definition means actions that leave the environment in a better place than you found it. But what about NC AWWA-WEA as an organization? How do we fit into the green movement? Well by my measure, NC AWWA-WEA provides the foundation for implementing green initiatives, because we support the people behind the green ideas.

At its core, NC AWWA-WEA provides training and educational opportunities to water and wastewater professionals. While many may view these trainings as mere necessities for certifications or continuing education units, the real benefit of our organization is the creativity that is fostered through both educational opportunities in class and peer collaboration. Our North Carolina water professionals are constantly coming up with new ways to reduce chemical and power usage, improve water quality, and inform the public of the value of water. We are constantly making the water community better than the decade, or even the year, before. It’s amazing to reflect on all the green processes we now employ in our industry, such as taking advantage of the fertilizer value in biosolids or converting digester gas to fuel. What is truly impressive, is that people like you and me helped come up with these ideas and make them a reality. Promoting education,


The real benefit of our organization is the creativity that is fostered through both educational opportunities in class and peer collaboration.

fostering teamwork, and focusing on constant improvement is NC AWWA-WEA’s green contribution.

One of the many benefits of NC AWWA-WEA is that we are part of two parent organizations: the American Water Works Association, and the Water Environment Federation. Both of these parent organizations advance our green footprint by working directly with federal agencies to ensure the development of effective and affordable regulations that affect the water community. Many critical decisions affecting our water and wastewater industry are made on the federal level, and our parents provide scientifically sound input and advocate on behalf of our members. While this may not seem like a green initiative, it is an essential component of our green contribution as we strive to continually improve our water environment and protect public health.

Another key in going green is to transfer our expertise to the next generation of future leaders, and to ensure we recruit and retain the best talent in our industry. NC AWWA-WEA participates in many public education efforts, aimed at promoting the water profession in grade

school and higher education. We provide resources to teachers, scholarships to students and teachers, and also support student chapters of NC AWWA-WEA. In an effort to reach the broader public, we have formed a relationship (known as the NC Joint Water Associations) with North Carolina Rural Water Association (NCRWA) and the North Carolina Waterworks Operators Association (NCWOA). Together we maintain a website intended to be a one-stop shop for public information to raise awareness among the citizens of North Carolina of the value of water (www.mywatermatters.org). These public education efforts increase the visibility of our great water profession, and NC AWWA-WEA educational programs (i.e., The Academy) will prepare future leaders for a career in our water industry.

So as we read about all the innovative green programs and technologies in this issue of *NC Currents*, keep in mind the people that made these innovative ideas a reality, support the people that advocate on a federal level for the technology acceptance, and let’s recruit our replacements who are going to come up with the next great ideas. This is NC AWWA-WEA’s green contribution. 

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New Logo Announcement

NC AWWA-WEA is excited to reveal their updated logo.



Keeping in step with our goal to increase promotion of the NC AWWA-WEA brand along with our membership benefits and training opportunities, and our parent organizations' efforts to strengthen their overall national brands, we have updated the NC AWWA-WEA logo! The updated logo retains the heart of who we are with our familiar acronym – NC AWWA-WEA – augmented by the

recognizable AWWA and WEF symbols, clarifying our valuable connections to our important parent organizations. In North Carolina, we are unique in that we operate jointly as a Section of the American Water Works Association (NC AWWA), and a Member Association of the Water Environment Federation (NC WEA).

The initial launch of the updated logo will take place in conjunction with the 2016

Annual Conference. Look for it to start appearing on conference and other materials during the summer of 2016.

As always, our members and volunteers are the driving force of NC AWWA-WEA. Their support and dedication are essential as we work to fulfill our mission to provide water education, training, and leadership to protect public health and the environment. [x](#)



Remembering the Past for a Brighter Future

Catrice R. Jones, CAE, Executive Director

“You have to know where you come from to know where you are going.” – Terry Pratchett

“Those who don’t remember the past are condemned to repeat it.”

– George Santayana

“Remembering the past gives power to the present.” – Fae Myenne Ng

If you do an internet search for quotes about remembering the past, these are just three of the hundreds of results that will come up. These quotes summarize things that I heard growing up as my elders told stories about the ‘good old days.’ As a child, I tended to roll my eyes each time I heard this. Like most kids I felt the ‘good old days’ had no relevance on the present and my life. Little did I know that one day I would be telling my kids the same things (funny how that happens). Now that I’m older and a little bit wiser, I understand that examining the past is important to the present and future.

In my personal life, I find myself telling my kids about the ‘simpler’ times – when people knew their neighbors, when your every move was not captured on social media, or when parents didn’t have to learn new technology everyday just to ensure the safety of their children. Although these are the new things that I have to deal with as a parent, I can now better understand and appreciate the things my mom tried to tell me growing up. My ability to recognize this better prepares me for the challenges that come with raising children that will grow to be happy and productive adults.

In my professional life, I find myself looking back over my career with NC AWWA-WEA and all the changes that have occurred. Although I have been with NC AWWA-WEA for about 16 years, that is minuscule in comparison to the actual lifespan of the organization. During my tenure, I have had an opportunity to see the organization grow in all aspects – members, programs, staffing, etc. Now that I am the Executive Director, I find this reflection valuable in helping the organization move towards the future.

Our annual Strategic Plan Review allows time to examine goals and operational plans to ensure NC AWWA-WEA’s continued success and growth. This reflection involves:

- **Building upon our strengths**
As an organization, perhaps our greatest strength is our people. This includes our members and nonmembers that attend our programs, and our volunteers that willingly give their time and expertise to support the industry.
- **Examining our weaknesses**
While no one wants to admit they have weaknesses, it is arrogant to say that we don’t have any. Taking time to recognize our weaknesses gives us the ability to discover their source, investigate what is required to overcome them, and learn so that we can turn our weaknesses into our future successes.

- **Erasing the fear**
Examining the past also puts current setbacks into perspective. While we may like to romanticize the past, the truth is that not everything was better. Once we realize that, we can remove the fear of failure of trying something new.
- **Engaging Others**
Over the years the composition of our community has changed, and as an organization we need to be prepared to follow suit. In order to address the problems of the future, we need to engage all groups that will be affected by the decisions we make. This means engaging groups from diverse generations, ethnicities, education levels, and socioeconomic classifications.
- **Plotting a new course**
Knowing the past allows us to set our path for the future. This could take the shape of applying an old solution and tweaking it to address a new problem. On the flip side, it could mean a new solution for an old problem. Either way it means moving forward on an uncharted course.

The next time someone tells you about how things used to be, don’t dismiss them. Take the time to listen and realize that the purpose of remembering the past is not to be paralyzed by it, but to learn and grow from it. [x2](#)



Training Report

By Kelton Chapman, NC AWWA-WEA Educational Services Manager

As I pondered what to write, the word leadership came to mind. NC AWWA-WEA strives to take the lead in offering timely, relevant, and power-packed training opportunities.

Continuing education is key for our industry professionals, as it leads to professional growth. They develop the skills that the contemporary job market requires, and they become informed and engaged

in the professional arena. With that in mind, NC AWWA-WEA works with many people to create remarkable training opportunities.

As the progress wheels turn, and technology and our members' needs evolve, we continue to work to stay connected to monitor the pulse of the industry and provide training opportunities to meet developing needs. With our finger on the pulse, here's a brief summary of what to expect in the coming months.

What's New?

To keep in step with the ever-changing world of technology, we are tentatively scheduled to launch our first mobile app during the 2016 Annual Conference. Our objective is to have an application that will provide a technological portal to link attendees to the conference. It is also our intent to produce an application that will allow attendees to view the meeting program and receive important conference announcements. Another focal point of the application will be to showcase our sponsors and exhibitors.

We are also researching options to streamline the way continuing education units are processed following the Spring and Annual Conferences.


We are excited to take on these endeavors and will keep you posted as we progress.

On the Horizon

Under the Academy for Water Professional Development umbrella, we are scheduled to launch the maintenance technologist ladder either later this year or in early 2017. We are also gearing up to unveil future ladders, which will include water treatment, wastewater treatment, and customer service.

Holding Steadfast

NC AWWA-WEA remains dedicated to providing pertinent and relevant continuing education opportunities for industry professionals because it is at the forefront of our minds at all times.

In closing, thank you ALL for giving back and protecting our water! 

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Summary of the NC Section AWWA and NC WEA Board of Trustees Meeting Sunday, November 15, 2015 at the Raleigh Convention Center, Raleigh, NC.

The following actions were taken:

1. Welcomed Visiting National Officers:

AWWA President John Donahue, WEF Vice President Jenny Hartfelder, and other visitors: Christopher McGinness, Senior Section Services Manager; Dianne Crilley, WEF Member Association Services; and Vicky Anderson, Water For People National.

2. Introduced Catrice Jones, new executive director, effective December 1, 2015.

3. Strategic Governance:

Reviewed Data Dashboard and Strategic Plan Update. 1200 pre-registrants for the Annual Conference.

4. Action Items

- a) Accepted the 2015 election results as presented by Nominating Committee Chair Jackie Jarrell: Vice Chair – Ray Cox; Treasurer – David Saunders; Secretary – Jeff Coggins; Trustees – Carolyn Ross and Chuck Shue; Professional Water Operations – Chris Hill; Nominating Committee Chair – Mike Osborne.
- b) Adopted the 2016 Fiscal Year Budget as presented, which requires a transfer of \$24,656 from reserve funds to create a line item of \$50,000 for a contract program manager to fast-track the development of Career Ladder curriculum materials. Also, authorized staff and Conference council chair to increase conference fees as necessary to allow for development of a conference app and still provide a net income minimum of \$208,175.
- c) Authorized the hiring of Steve Shoaf as the contract program manager under a 12-month contract.
- d) Approved an amendment to Section VII of the Endowment Policy, increasing the number of members of the Endowment Committee from 12 to 15.
- e) Ratified the e-Vote, establishing a student chapter at NC Agricultural and Technical State University, and received the Student Chapter Charter

from WEF, for presentation at the Opening General Session.

- f) Authorized staff to create or delete social media accounts, as necessary.

5. Chair's Report

- a) Chair Belk summarized the challenges and successes of the 2015 year.
- b) Reported on the efforts of the Joint Water Association Subcommittee on Public Education.

6. Executive Director's Report

- a) Endowment Committee is planning a gourmet dinner fundraiser, with Jason Stanhope, James Beard award winner as chef.
- b) Lindsay Roberts thanked the board for the joy and privilege of serving as Executive Director for the past six and a half years.

7. Consent Calendar

- a) **Approved Minutes** of the board meeting of September 17, 2015.
- b) **Accepted Treasurer's Report for September and October 2015**, with total assets as of October 31, 2015 of \$1,285,403.98 with \$1,246,144.91 in checking/savings,

of which \$389,941.60 is endowment funds. The balance of unrestricted net assets (checking minus endowment) is \$856,203.31. The Water For People balance sheet as of October 31, 2015 reflects total current assets of \$1,456.94 following transfer of \$17,000 to WFP National.

- c) **WEF Report** – NC WEA will host WEFMAX 2018. Call for Papers for WEFTEC 2016 has been posted. WEFMAX locations for 2016 are Florida, Pennsylvania, Illinois and Colorado.
- d) **AWWA Report** – AWWA Past President Donahue advised that JD Powers is conducting a rating survey of utilities serving populations greater than 250,000 people, and plans to post the top 130 before year-end. AWWA has had input on the survey questions, but will not participate in the ranking. AWWA is also conducting a member satisfaction survey
- e) **Committee Reports** – received through November 3, 2015 were included in the board packet.

8. Adjourn

next meeting is at 11:30 a.m. Wednesday, November 18, 2015 at the Raleigh Convention Center. [☑](#)



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Summary of the NC Section AWWA and NC WEA Board of Trustees Meeting

Wednesday, November 18, 2015 at the Raleigh Convention Center, Raleigh, North Carolina.

The following actions were taken:

1. Received thanks and appreciation of visiting national officers.

2. Welcomed new officers and trustees, and new Executive Director Catrice Jones.

3. Chair's Report – Chair Julie Hellman presented:

- a) **Priorities for 2016**
 - Academy success
 - Membership engagement – board to assist with recruitment and retention and Membership Committee to focus on engagement of members.
 - Branding and marketing to be a high focus.
- b) **Liaison Appointments**
 - Paul Jackson as conference council chair, with Chuck Shue as board liaison
 - George Simon, Jr. as external affairs council chair, with Ryan LeBlanc as board liaison

- Jonathan Lapsley as Schools Council chair, with Carolyn Ross as board liaison
- Betsy Drake as Technical and Education chair, with Ron Hargrove as board liaison
- c) **2016 Board Meeting Calendar**
 - January 21, 2016 – Charlotte
 - March 17, 2016 – Raleigh
 - May 19, 2016 – Greensboro, with board/committee workshop to follow the board meeting
 - July 21 – 22, 2015 to be in Wilmington, with a GROW event on Thursday evening and the board to meet on Friday.
 - September 15, 2016 – Charlotte
 - November – Raleigh
- d) **Board List** to be revised and redistributed
- e) **RMSO 2017** Committee to be chaired by Leslie Jones

4. Executive Director's Report – Catrice Jones

- a) Bank account schedule was distributed. Checking accounts to be moved from Wells Fargo to Regions Bank.
- b) Insurance schedule was distributed. Cyber Insurance policy increased to cover extortion threats.
- c) Audit preparations will start following the Conference.
- d) Policies are posted to the web site. Review to be performed at future meeting.

5. Action Items

- a) **Approved Banking Resolution** – established signatories for 2015 – 2016, and signatories completed all signature forms for all banking and financial institutions with a notary public present.
- b) **Affirmed Conflict of Interest Policy** – all board members executed the Conflict of Interest Form.
- c) **Ratified e-Vote approving a Resolution honoring Lindsay Roberts** upon her retirement as executive director.
- d) **Authorized bottled water at conference and training events** – as a last option, when tap water is unavailable.

6. Strategic Governance

- a) **Strategic Goals** to be developed to allow for additional focus for Data Dashboard report.
- b) **Strategic Plan Report** to be temporarily suspended to allow for revisiting of the initiatives and reporting following the next CEO Symposium in January, to allow for thought and consideration.

7. Adjourn - next meeting is at 10:30 a.m. on Thursday, January 21, 2016 in Charlotte. [M2](#)



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Summary of the NC SECTION AWWA and NC WEA Board of Trustees Meeting

Thursday, January 21, 2016 at Charlotte Water, 4222 Westmont Dr., Charlotte, NC.

The following actions were taken:

1. Action Items

- a) **Logo Review/Update** – approved version of logo to submit to AWWA and WEF.
- b) **Approval of WBOEE nominee** – approved appointment of Kenny Neal.
- c) **Approval of Committee Chair Appointments** – approved updated version of 2016 committee chair appointments.

2. Chair's Report – Julie Hellmann

- a) Reviewed job descriptions of board members and executive director.
- b) board charged executive director with finding process to promote and monitor award presentations.
- c) AWWA Fly In - Brian Tripp will attend and will reach out to two names suggested by board to fill the additional slot.

3. Executive Director's Report

- a) **Treasurer's Report** November and December 31, 2015 with total

assets as of December 31, 2015 of \$1,112,905.80 with \$1,071,269.69 in checking/savings, of which \$406,357.55 is endowment funds. The balance of unrestricted net assets (checking minus endowment) is \$664,912.14 and net income is -\$118,001.64, from which endowment donations and investment income (\$51,131.36) is deducted for a net income YTD of -\$169,133.00.

- b) **Water For People** profit and loss as of December 31, 2015 is \$30,054.50 of income and expenses of \$19,500.00, transferred to Water For People National in 2015 and event expenses of \$10,510.10 for net income YTD of \$44.40. Balance sheet as of December 31, 2015 reflects total current assets of \$244.40.
- c) The organization chart was updated to reflect committee and leadership changes.
- d) Audit preparations are under way.

- e) Section met AWWA's 2015 membership challenge goals.

4. Strategic Governance

- a) Jackie Jarrell will be contacted lead a strategic governance discussion for March board meeting.

5. Consent Calendar – Approved

- a) **Minutes** of the board meeting of November 15, 2015, November 18, 2015, and Annual Business Meeting.
- b) **Committee Reports** received through January 10, 2016.
- c) **AWWA Report** –
 - Over 50,000 members – the most since 2012.
 - AWWA India office is open.
 - The Water Equation (scholarship).
 - WIFIA – Fixed and is now law.

6. **Adjournment** - next meeting is at 10:00 a.m. Thursday, March 17, 2016 and will take place at the City of Raleigh Operations Center. [W](#)

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2016 Committee Chairs and Board Liaisons

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

Board Committees

Nominating	Mike Osborne	(704) 548-8540	osbornejm@bv.com
Leadership Task Force	John McLaughlin	(704) 545-0060	john.mclaughlin@merrick.com
Career Ladder	Mike Osborne	(704) 548-8540	osbornejm@bv.com

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	billb@cityofws.org
Annual Conference Program	Tina Whitfield	(919) 232-6629	tina.whitfield@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

COUNCIL CHAIR:	George Simon	(704) 342-4546	simonga@cdsmith.com
Communication	Mike Shelton	(704) 409-1815	mike.shelton@kimley-horn.com
Constitution & Bylaws	Chuck Willis	(704) 337-9844	chuck@willisengineers.com
Endowment	Frank Stephenson	(704) 996-7660	fstephenson@carolina.rr.com
Membership	Jana Stewart		jana.chaney@gmail.com
Public Education	Maggie Pierce	(919) 863-9259	mpierce@hazenandsawyer.com
Water For People	Nick Dierkes	(704) 451-4591	ndierkes@brwncald.com
Students & Young Professionals (co-chairs)	Keller Schnier	(704) 358-7204	kschnier@brwncald.com
	Allison Reinert	(919) 863-9269	areinert@hazenandsawyer.com



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Technical Program Council

COUNCIL CHAIR:

e-Learning Task Force	Betsy Drake	(919) 481-5093	betsy.drake@townofcary.org
2016 Spring Conference Program	Betsy Drake	(919) 481-5093	betsy.drake@townofcary.org
Annual Conference Program	Mary Knosby	(704) 338-6857	mary.knosby@hdrinc.com
Seminars and Workshops	Tina Whitfield	(919) 232-6629	tina.whitfield@hdrinc.com
Automation	Reed Barton	(919) 325-3550	bartonr@cdmsmith.com
Wastewater Collection & Water Distribution Systems	Devin Carroll		devin.carroll@ccuinc.com
Regulatory Affairs	Barbara Moranta	(919) 325-3500	morantaba@cdmsmith.com
Biosolids	Jaime Robinson	(704) 543-3279	jaime.robinson@ch2m.com
Water Resources	Jean Creech	(704) 301-4042	jgcreech@ci.charlotte.nc.us
Risk Management	Leila Goodwin	(919) 552-5430	goodwinwater@gmail.com
Utility Management	Barry Parsons	(336) 373-7643	barry.parsons@greensboro-nc.gov
	Brian Houston	(704) 941-2110	bhouston@labellapc.com

Schools Coordinating Council

COUNCIL CHAIR:

Wastewater Schools	Jonathan Lapsley	(704) 342-4546	lapsleyjs@cdmsmith.com
Collection/Distribution Schools	Chris White	(919) 833-7152	cwhite@hazenandsawyer.com
Lab Analyst	Troy Perkins	(252) 551-3301	perkinm@guc.com
Plant Ops and Maintenance	Debra Collins	(252) 399-2494	dhcollins@wilsonnc.org
Professional WW Operators	Brandon Garner	(336) 596-4500	bgarner@davidsonwater.com
Wastewater Board of Education & Examiners	Michael Wiseman	(336) 672-0892	mwiseman@ci.asheboro.nc.us
Water Board of Education & Examiners	John Gibson	(919) 996-3684	john.gibson@raleighnc.gov
	Steve Hamilton	(919) 731-2310	stevh@waynewaterdistricts.com

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Leadership Development Program

If you ask John McLaughlin how he first became involved with NC AWWA-WEA, he will tell you that it was the proverbial “tap on the shoulder.” One day, a colleague he highly respected asked John to accompany him to a meeting for the NC Water For People Committee. There were 20 or so people at the meeting, and the discussion revolved around a new project to be launched in Bolivia. Before he knew what was happening, someone was volunteering McLaughlin to head up the project.

“It was the first time I had ever even heard of the committee,” recalls McLaughlin. “I was scared to death. I had just come to see what it was all about.” In the end, the prankster, a longtime committee member named John Burmeister, in league with Lin O’Neal and a couple of others, became instrumental in helping McLaughlin learn about NC AWWA-WEA.

“I wanted to be involved, but I had no clue how,” says McLaughlin, adding that he owes a debt of gratitude to people like Burmeister who showed him the ropes.

Recently, McLaughlin was given the opportunity to repay that debt when he was asked to lead a task force responsible for putting together the new NC AWWA-WEA Leadership Development Program. Following an initial draft outline developed by Barry Gullet, the organizing committee designed the program to facilitate member development for leadership roles within NC AWWA-WEA. The program uses structured mentoring to prepare eligible members within NC AWWA-WEA for various leadership roles. Other members of the initial task force include Robert Walters and Crystal Broadbent.

Mentors are selected from recent NC AWWA-WEA board members. “We’re very interested in trying to be a sustainable organization to ensure we’re preparing future leaders,” says McLaughlin, “so it seemed to make perfect sense.”

Up to 10 mentors and mentees are paired for a 1-year period, starting with a face-to-face orientation for the entire group, facilitated by the Student and Young Professionals at the annual conference. Within the first month of the program, the mentee and the mentor determine and document the mentee’s specific goals along with how and how often they will communicate. About halfway through the year, a second face-to-face meeting of all mentors and mentees, held in conjunction with an existing NC AWWA-WEA event, provides an opportunity for the pairings to review their progress and share lessons learned with the entire group. These group meetings also give mentees a chance to interact with the current NC AWWA-WEA leadership and benefit from presentations on a variety of topics including the governance structure of NC AWWA-WEA, the relationship between state associations and national parent organizations, and the job descriptions of various board member positions.

“The goal is to better inform prospective leaders about what NC AWWA-WEA does, how it functions, what a board meeting is like and what current issues are being considered,” says McLaughlin. “It is important that they have this first-hand experience.”

Mentors should include mentees in a wide variety of association activities including board of trustees meetings, schools, workshops, seminars, and other activities as they arise. In total, the pairs are expected to commit to a minimum of 24 hours of direct contact time.

“There are certain things that are expected to happen over the year,” notes McLaughlin, “but flexibility is also important.”

Throughout the year, prospects are actively encouraged to apply as mentors and mentees to apply for the program, with the goal of creating a large pool of both mentors and mentees. Applications must be submitted by September 1 of each year. Selection criteria for mentors

include previous, recent participation in NC AWWA-WEA, AWWA, WEF or AWWA Sections or WEF Member Associations. Experience as a committee member, chair, instructor, speaker or attendee at conferences, seminars or other events is also taken into consideration for both mentors and mentees. “You also have to show that your employer will support your participation in the program, because it involves some travel, attendance at conference events, and additional time,” adds McLaughlin.

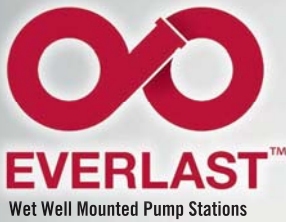
An ad hoc organizing committee was in charge of the pairings, with most of the members also serving as mentors. Next year, the mentors will not be drawn from the group managing the program, so the latter will no longer have to do double duty. Mentor-mentee pairs will be announced on October 1 of each year.

“It’s an evolving program,” explains McLaughlin. “It’s very much in its infancy right now.” This year’s organizing committee is planning to solicit formal feedback at the end of the year in order to further fine-tune NC AWWA-WEA Leadership Development program.

In the coming years, McLaughlin plans to continue being involved as a mentor. Like many new leaders, he recalls spending his first year just “figuring out what was going on.” However, by the end of his mandate, he had accumulated plenty of knowledge and experience about the functioning of NC AWWA-WEA. “I wanted to make sure I passed that along,” he says. The NC AWWA-WEA Leadership Development program is poised to help him and other mentors do just that.

Inaugural Leadership Development Class

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- Derek Dussek (Mentor, Crystal Broadbent)
- Tom Bach (Mentor, Leslie Jones)
- Courtney Driver (Mentor, Robert Walters)
- Nick Dierkes (Mentor, John McLaughlin) [✕](#)



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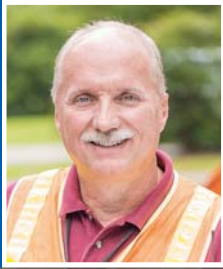
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Portrait of



Troy Perkins An Unexpected Career

Growing up, Troy Perkins spent some time working alongside his uncle in the utility business, never really thinking that this might be the industry where he would build his career. Then, after graduating from college with a degree in political science, he did a short stint at a photography studio before accepting a position as the closed circuit television (CCTV) inspection crew leader with the City of Greenville. "I convinced them that TV inspection and photography were sort of related," laughs Perkins. "As they say, the rest has been history."

Over the past 26 years, he has held various positions throughout the Utility.

After working the CCTV position for a year and a half, he worked as a construction site inspector with the City for four or five years. "That taught me a whole lot," recalls Perkins. The position exposed him to the installation of a variety of processes and technologies that he might not have otherwise had the opportunity to learn about.

After that, Perkins worked as an engineering assistant for two to three years. "I got to learn the paperwork side of the industry," he explains, "including some of the reasons behind what we do."

Then in 1997, North Carolina changed some of its sewer regulations, increasing the

workload of the sewer department, which responded by opening a new management position. Equipped with his CCTV sewer inspection experience, he successfully applied for the position of sewer supervisor. The new regulations required utilities to inspect the entire system once a year and parts of it twice, while cleaning a certain amount of line. New mandatory procedures around sanitary sewer overflows resulted in even more work. "We created some forms, policies and procedures that helped keep us in very good standing with the state," recalls Perkins, adding that he worked closely with the superintendent at the time, Wayne Bryant, who was instrumental in developing these new initiatives.

Then in October 2003, Perkins succeeded Bryant as superintendent of both the sewer and the water systems field maintenance division, a position he has held ever since. As superintendent, he oversees some of the capital improvement projects and maintenance activities for both the water and sewer systems, in accordance with regulations. "That makes our life easier," Perkins says. "Newer stuff works better than older stuff."

He adds that Greenville Utilities is unique, in that it also encompasses the gas and the electrical departments. On the water side, the Utility has about 35,000+ connections and 630 miles of water main while sewer consists of 29,000+ connections and 480 miles of line. "Both have different rules to go by," notes Perkins. "That's what makes it challenging." Greenville sells water to three towns and treats sewer from two.

Perkins points out that the Utility has been fortunate to attract some very good people to staff all aspects of its operations. "Having those really good people enables me to participate in activities with NC AWWA-WEA and other associations,"

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he says, adding that, when he's away, he knows everything is under control. "That's been very beneficial."

Back in college, Perkins had always imagined he would become a teacher. But after a disappointing class with a condescending professor he changed paths. Since getting involved in NC AWWA-WEA, he has had the opportunity to teach at the schools and present at the conferences. "I really enjoy that," says Perkins.

Back in 2001, Tony DuBois – now the training coordinator for South Carolina Rural Water – asked Perkins if he would teach at the Collection/Distribution Schools in the Sewer Collection I section. He picked up a few more classes to teach after that, eventually becoming the coordinator for the Grade IV of the Collection/Distribution Schools in 2005.

Perkins explains that one of the things he enjoys about teaching is the ability to exercise his creativity. "Sometimes here at work, we have to be creative because we get a challenge we haven't seen before," he explains, adding that, nonetheless, those situations are rare. "Getting to turn loose my creative side is enjoyable from time to time." He also enjoys being able to meet face-to-face with industry colleagues from across the state.

Over the years, Perkins has been happy to help NC AWWA-WEA in any way he can. He notes how amazed he is by the amount of work NC AWWA-WEA is able to accomplish with such a small staff. "The thing that makes their life easier is having people who volunteer to chair a committee or be in charge of an initiative," he adds. "There's a lot of opportunity for people to be involved."

In 2015, Perkins started a two-year term as chair of the Collection/Distribution Schools Committee, part of NC AWWA-WEA's Schools Coordinating Council. "I will be stepping down from that position in the fall, but I hope to continue teaching right up to the day I retire from here," says Perkins. He is eligible for retirement in three years. After that he hopes to explore other options for public speaking and teaching adults. Perkins adds that he enjoys putting presentations together and delivering them.

He knows, however, that it can take a while for people to become comfortable with the idea of presenting to a group.

For this reason, he is making a concerted effort to recruit new members to the Collection/Distribution Schools Committee so they can "get their feet wet" before they start teaching and, eventually, take on leadership roles. "The old guard is shipping out and some of the new guard is not sure they want to jump in yet," says Perkins.

This reality makes the succession process – in NC AWWA-WEA and in the industry as a whole – that much more important. It is not unusual for

people to come on board after changing careers, having only recently discovered the opportunities available in water and wastewater. To them, Perkins extends a hearty welcome. After all, if anyone knows what it feels like to have an unexpected career, it's the teacher-photographer-CCTV inspector who eventually became the superintendent of Greenville Utilities.

Perkins is past a recipient of the Golden Manhole, Raymond E. "Red" Ebert, WW Collections Operator of the Year awards.

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Portrait of



Brian Tripp

A Passion for Water & Wastewater

"As officers of NC AWWA-WEA, we're always interested to see how people get involved or how we can involve them," says Brian Tripp, Principal and Vice President at W.K. Dickson & Co., Inc, and the AWWA Director on the NC AWWA-WEA Board of Trustees.

Tripp first became involved with NC AWWA-WEA thanks to the encouragement of his supervisor at his first job as a regulator. He joined the Young Professionals Committee of the South Carolina Section of the American Water Works Association, and shortly thereafter, the NC AWWA-WEA YP Committee, ultimately serving as chair for each.

Then in November 2010, he joined the NC AWWA-WEA board. "I would call the trustee role a learning position by which you learn about what the board does and, in greater detail, what the NC AWWA-WEA does," says Tripp. "If you see the value in it, hopefully you take the next step and get more involved."

Aspects of his involvement that he has enjoyed include the many opportunities for leadership, public speaking, education, and networking. "Getting to know the people in the industry provides a value that's hard to measure," says Tripp. "To be able to give back in a profession that you enjoy is highly gratifying."

Long before becoming a civil and environmental engineer, he knew that his life's work would involve preserving the environment. Growing up in Philadelphia, he naturally gravitated to the outdoors, spending many hours hiking and camping. So when his first three semesters of the co-op program at Clemson University had him cooped up in a chemical process plant, he knew he had to make a change. Tripp transferred from chemical to bio-systems engineering and never turned back.

After completing his undergraduate degree, he went to work for the South Carolina Department of Health and Environmental Control (SC DHEC). In the evenings, he started working on a masters in civil and environmental engineering from the University of South Carolina – Columbia. "When I started the distance learning program, I had to pick up VHS tapes at the local library," recalls Tripp. "By the last year, I was downloading content on my home computer."

During the years he was pursuing his masters degree, technology in environmental management was also evolving, along with the laws and regulations governing the industry. As a district engineer at SC DHEC, Tripp handled the permitting for water and wastewater systems as well as drinking and wastewater compliance issues. Other areas within his purview included stormwater, earthen dam safety, and the Savannah River Site, which consisted of five decommissioned nuclear reactors.

"I really enjoyed what I did as a regulator," says Tripp, noting that working at SC DHEC provided exposure to a wide variety of areas he might not have otherwise experienced. "But I got into engineering because I really wanted to design things." So three years after starting with the regulatory agency, he made the transition to consulting engineering. Then in 2004, he accepted a position as project manager with W.K. Dickson.

A few years later, the company's leaders asked Tripp to run their Hickory operation but, when the economy contracted in 2008, they tapped him to reboot the water and sewer group in Charlotte. Today, he runs both the Charlotte and the Hickory offices, managing diverse groups involved in site development, aviation, natural gas, and watershed sciences (stream

restoration and high-end stormwater work for municipal clients).

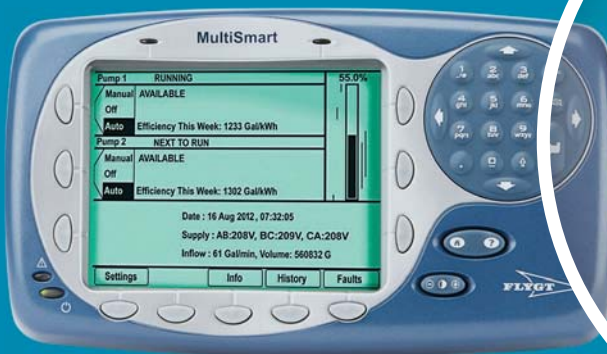
Along with his managerial duties, he is still involved in assisting clients with problem-solving around water and wastewater issues. "My love and passion is still in water and wastewater," explains Tripp, who continues to work as a senior project manager in W. K. Dickson's water and sewer practice.

One of the most rewarding projects he has tackled lately involved a feasibility study with Rutherford County, evaluating the impact of consolidating sewer service for the towns and communities within its boundaries (see "Making the Case for Consolidation" in *NC Currents*, Spring 2016, pages 50-52). "It's gratifying to see that the County is taking the incremental steps and the roadmap that we planned out, in the best interest of the County, the constituents, the citizens, and the environment," says Tripp.

He is pleased to be able to share this information with other members of NC AWWA-WEA. Over the past few years he has also been heavily involved with the NC Safewater Endowment Committee as the scholarship selection coordinator. He recently started a 3-year term on the national AWWA Finance Committee and is looking forward to serving in that capacity.

Despite a busy schedule – and three children under the age of six – Tripp will continue volunteering with NC AWWA-WEA, including serving on the Endowment Committee. "We need to continue drawing people to our industry, particularly on the operations side," he says. "We seem to have fewer and fewer people entering the ranks, so it's important that we fund education for those who want to do this important work."

Brian Tripp is a member of the Select Society of Sanitary Sludge Shovelers (5S). He was also awarded the WEASC Engineer of the Year Award in 2008. [x2](#)



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Administrative building

Plant Spotlight: Greenville Utilities WWTP

By Jason Manning, Greenville Utilities Superintendent and
Chris Hill, Operations Coordinator.

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

General

Located in eastern North Carolina, the City of Greenville is the largest city in Pitt County and has a current population of approximately 91,000. In addition to 15 major manufacturing facilities, Greenville is home to East Carolina University and a well-respected medical community.

Greenville Utilities, established in 1905, is owned by the citizens of Greenville but operates under a separate charter issued by the NC General Assembly. Greenville Utilities Commission (GUC) is a public municipal agency. In addition to water and wastewater services, GUC provides electric and natural gas services to the City of Greenville and 75% of Pitt County. GUC serves a combined total of nearly 150,000 customer connections.

Greenville Utilities currently operates one wastewater treatment plant (WWTP) that services a population of over 91,000, which includes Greenville, and neighboring Bethel, and Grimesland, North Carolina. It was originally put into operation in 1985 with a rating of 10.5 mgd. In 1995, it underwent an upgrade that increased the plant rating to 17.5 mgd. The WWTP currently employs a total of 29 plant and pump station staff, including 20 operations and maintenance, four laboratory and five administrative personnel. The plant has an annual operating cost of approximately \$8 million.

The plant treats both domestic and industrial wastewater from the city and the surrounding community, with the influent consisting of approximately 90% domestic and 10% industrial wastewater.

The plant's effluent discharges into the Tar River, a Class C-NSW water in the

Tar-Pamlico River Basin. The WWTP has a design flow of 17.5 mgd and operates with an average daily flow of 10.6 mgd. Peak flow is 30 mgd.

The key treatment processes include:

- two bar screens
- two grit removal systems
- one odor control system
- five aeration basins with diffused air
- two biological phosphorous removal basins
- five secondary clarifiers
- seven tertiary treatment deep bed sand filters
- one UV disinfection system – 2 channel
- three aerobic digesters
- two belt filter presses
- one receiving station

The WWTP operates two liquid treatment processes. Constructed in 1985, the North Plant is composed of three treatment trains, and utilizes nitrified recycle to reduce nutrients in the final effluent. The South Plant was constructed in 1995 and employs two oxy-ditches and biological phosphorous removal cells to attain enhanced biological nutrient removal. The effluent from both plants receives secondary clarification and tertiary treatment with sand filters. The final effluent is UV disinfected prior to discharge to the Tar River.

Both the North and South plants are in 'good' overall operating condition due to an active inspection and maintenance program. Current 2-year average daily flow (ADF) (May 2013-2015) is 10.60 mgd and consumes 61% of available permitted capacity. Biosolids are dewatered on site and trucked to a contracted vendor for composting. Class A compost is the final disposition of all biosolids produced at this facility.

Current and Future Expansion

UV Disinfection Upgrade Project – began construction in late 2015 and, at the time this was written, was scheduled for completion in the spring of 2016. The goal of this project is to install a more reliable and energy efficient disinfection system sized to handle peak flows. The current horizontal UV system is being replaced by a two-channel UV system that uses modules consisting of vertical UV lamps. Energy efficiency is achieved by the ability to turn on and off modules of UV lamps to meet the lowest diurnal flows. Reliable disinfection will be increased by this effort.

Air Piping Upgrade Project – is currently in the engineering phase. The GUC staff identified issues with compressed air delivery to the South Plant aeration basins. An energy efficiency study quantified energy losses in the air piping of over \$172,000/year. This future project will increase energy efficiency, reduce operational risks, and allow staff increased operational control of aeration.

Biosolids/Dewatering Upgrade Project – is currently in the engineering phase. The GUC board approved a biosolids project budget to increase the sustainability and operational effectiveness of the biosolids management. The project will also be scoped to include nutrient management of dewatering process side streams.

Electric/SCADA Upgrade – was completed in early 2016. The WWTP was recently upgraded with redundant electrical support for all critical equipment. A self-healing fiber ring was installed to support a comprehensive SCADA upgrade for the plant and pump station.

Master Plan – for the WWTP was recently completed. This master plan projects future demand and the required infrastructure improvements needed to meet forecasted customer demand and predicted asset condition due to age, use, and environment. The master plan also takes into account regulatory constraints and plots current plant performance against those predicted limits. Where performance gaps are identified, projects are proposed and supported. All aforementioned projects were accurately predicted in the master plan. Future projects (within 5-year window), such as additional clarification on the South Plant, will be focused on increasing treatment and permitted capacity.

SCADA System

The facility is fully automated using the latest SCADA technology and equipment but is easily operated by hand if the need arises. The recently updated servers and software were installed to improve operation and efficiency. In addition, operations, maintenance, and lab tasks are scheduled and logged using an Oracle-based work order management system. This system is easily accessible by desktop and by iPad.

Solids Treatment

Waste activated sludge (WAS) is stored in three aerobic digesters. Discharge from the digesters is sent to two Andritz belt filter presses for dewatering. Currently, these units produce approximately 2,000 dry tons per year at an average of 17.5%.

Biosolids Management

All dewatered biosolids are sent to McGill Environmental for treatment and final disposal as a raw product for compost. The WWTP staff samples the biosolids quarterly and provides analysis results to McGill Environmental, which is responsible for all Class A Biosolids regulatory reporting.



New UV System Retrofit

Disinfection

Construction began in late 2015 to remove an energy intensive UV system and install a higher efficiency Ozonia (Suez) UV system. All vertical UV modules have been replaced and the new equipment is meeting all expectations.

Treatment Limits

The wastewater effluent is permitted for the following limits:

- BOD limit 8.0 mg/l (summer):
15.0 mg/l (winter)
- NH3 limit 4.1 mg/l (summer):
8.2 mg/l (winter)
- Annually allocated 249,576 lbs of Total Nitrogen and 45,103 lbs of Total Phosphorus through the Tar Pamlico Basin Association

Laboratory & Pretreatment

The laboratory is staffed by three laboratory technicians who have several years of experience. They are certified for 27 parameters with the State. The lab performs sampling at various locations on the plant for analysis and is involved with many projects at the plant. GUC currently regulates six significant industrial users and four non-significant industrial users as part of the pretreatment program. The pretreatment program is staffed by one industrial pretreatment specialist who samples all industrial locations and judges compliance once lab staff has completed the analysis. For the most part, the pretreatment/lab section of GUC's WWTP is a paperless function. The staff is seeking certification in wastewater operations and in pretreatment. As regulations evolve, the staff adjusts accordingly.

Personnel Development Programs

Greenville Utilities offers many internal training and development opportunities for all of its employees. These include customer

service, self-leadership, situational frontline leadership, career advancement, safety, diversity, interviewing, and many more.

Certifications

The WWTP is a Grade 4 facility. Operations, maintenance, lab, and administrative staff are encouraged to achieve the highest level of certification in wastewater, collections, maintenance, lab analysis, leadership, and other related areas.

Among the WWTP operations and laboratory staff, there are certified wastewater treatment operators, certified land application operators, certified spray irrigation operators, certified wastewater collection system operators, certified lab analysts, a certified pretreatment specialist, a licensed public pesticide operator, a certified maintenance technologist, and a licensed plumbing, heating and fire sprinkler contractor.

Among the WWTP maintenance staff, there are certified maintenance technologists, ISA-certified control systems technicians, a licensed public pesticide operator, a State Board of Refrigeration Examiners universal technician, an EPA r410a certified technician, certified collection systems operators, and certified wastewater operators.

Personnel Management

Greenville Utilities offer flexible scheduling for both laboratory and maintenance personnel, which has allowed individuals to choose a schedule that is best for their family. For example, lab staff may individually choose to work four 10-hour days, providing a benefit for the employee, the employee's family, and Greenville Utilities, with increased hours of laboratory support. The managerial approach to personnel is to ensure all individuals know their worth to the plant and are provided opportunities to add value to the operation.



GUC Staff: JoEllen Gay, Environmental Compliance Coordinator; Jason Manning, Plant Superintendent; Bryan Bland, Chief of Maintenance; Chris Hill, Operations Coordinator



Safety and Health Program

Highlights of the program include Lighthouse Observation; American Heart Association First Aid, CPR and AED training; and Smith Driving System. Lighthouse is a peer observation program that reinforces positive work habits instead of punishing bad work habits. Smith Driving System is the leading provider of collision avoidance driver training, and all GUC employees must complete this program every three years.

Awards

- NC Department of Labor Certificate of Safety Achievement
- 2008 WEF George W. Burke, Jr. Facility Safety Award
- 2001 EPA Operations & Maintenance Excellence Award
- 1999 EPA Beneficial Use of Biosolids Award
- 1998 EPA Biosolids Beneficial Use (Large Operating Projects) – Honorable Mention

Challenges

One of the challenges that operations staff members have faced is implementation

of Oracle work and asset management that fully integrates with GUC's financial accounting system – Oracle's EBS, Esri GIS, and SCADA.


Historically, the WWTP and pump station staff members have struggled with planning, executing, and documenting work performed. Operation and maintenance of critical assets relied on word of mouth or handwritten notes. GUC staff did not have an enterprise system in place to know what assets they had, the value of those assets, and how the assets were used and maintained. In the span of less than a year, operations and maintenance staff successfully transitioned to a digital – mobile mode of performing and documenting work. Plant and pump station staff utilize iPads to issue work requests, record operational readings, record work effort, inspection information, and access SCADA information remotely.

GUC is evolving into an asset management mindset; this is a cultural shift for employees and management alike. GUC has been blessed with visionary leadership that empowers the employees with technology and tools to be more efficient and effective for the ratepayers.

Summary

The plant is an exceptionally well-performing facility that is 100% biological. The staff has eliminated chemical additions in the process. The final effluent flows to the Tar River via a channel that is teeming with aquatic life. This supports wildlife – such as deer, turkey, and eagles – living on acreage behind the facility, which belongs to GUC. The facility is a visually beautiful treatment plant with various trees and vegetation throughout the property. The reclaimed water from the plant is used for irrigation to enhance this landscape. The plant staff takes much pride in the operation, maintenance, and appearance of the facility.

For additional information:

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Chris Hill, Operations Coordinator
240 Aqua Lane
Greenville, NC 27834
Phone: (252) 551-3304
manningmj@guc.com or
chill@guc.com 



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Green Issues

THEME LEADERS:

Marco Menendez (McAdams), Steve Hilderhoff (GHD), Kelly Boone (CDM Smith), Sherri Moore (City of Concord).

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Making the Soil and Water Connection

By Lynn McCracken Lucas, Project Developer, McGill Environmental Systems



Introduction

Goals for the removal of organic material from modern water treatment systems typically focus on the quality of the discharge. As a result, water flowing from pipes into rivers and oceans can be near drinking water standard, a far cry from the raw effluent discharges of decades past.

But, for the most part, the organic residuals from those same treatment systems are still viewed as waste products with little value. They might be burned, buried or otherwise 'disposed' without consideration to their role in restoring natural systems for water retention and purification; or true economic worth.

However, when evaluating waste management strategies from the broader perspective of watershed protection, the need to place equal value on the dual functions of 'treatment' facilities – water reclamation and organic matter recovery – becomes more apparent. It also points to highest and best use of reclaimed organics as something other than burial, destruction or giveaway.

Fixing a Broken Soil System

Across the globe, topsoil is being depleted at a faster rate than replenishment. Historic depths of 12 in. can now be less than four, and the US is losing topsoil 10 times faster than nature's replenishment rate.

A century's effort of natural soil production can be wiped out by one rainstorm.

Many issues related to climate change, water pollution, and water shortages are really symptoms of depleted, non-functioning soils. The culprit is human development and its impact on the natural soil replenishment cycle. Agriculture exposes soil to the mechanisms of erosion while construction strips away topsoil and does not put it back. This sets up an inhospitable environment for organisms critical to soil function and robs soils of their ability to hold water and filter/degrade pollutants.

In some areas of the US, that which is referred to as 'topsoil' is really a near-barren subsoil, incapable of supporting life. While it may be possible to grow food without soil, the same cannot be said for protecting the more critical resource – water.

Chronic water shortages plague many parts of the US. Consider the use of harvested organic matter in the City of Denver, Colorado. Denver Water will not set a new meter until the property owner shows proof of approved soil amendment, and that amendment must be compost. What benefits might a similar requirement offer to easing water shortages, mitigating stormwater impacts and creating more lucrative markets for wastewater treatment residuals in North Carolina?

Thinking in Circles

Organic matter plays a central role to life on earth, critical to growing food and a key to reducing water use and improving water quality. A 10-year study by representatives of the University of Florida found that adding compost increased organic matter content by 3% and reduced fertilizer use by 50%. For municipalities that maintain large recreation areas and athletic complexes, this could represent a significant dollar savings.

However, the benefits of soil improvement are not limited to the reduction of chemical fertilizers. A healthy soil acts as a sponge to retain water. In fact, for a typical 1-in. rainfall, studies indicate there may be no runoff when soil organic matter levels are at the recommended 5%. No runoff means no sediment and pollutant discharge to receiving waters.

Every stormwater manager in each community can encourage soil restoration as an easy, inexpensive mechanism for reducing runoff volumes and improving runoff quality. For the money, soil improvement and revegetation out-perform every other stormwater mitigation strategy per gallon retained, including rain gardens. But to make this happen, organic waste must revert to organic matter, becoming a substance that is readily available, safe and easy to handle. It must be suitable for use in areas with high public exposure.

Promoting Highest and Best Use for Biosolids

Water treatment and reclamation plants already capture organics. These solids, once treated, may be pulled from lagoons, removed from drying beds, or shuttled to value-added systems for energy extraction and composting before recycling back to the soil.

Historically, residuals fresh from the water treatment plant had but one market – agriculture. It is a high-volume market, but with low-to-no dollar value. However, across the country are examples of biosolids management facilities that succeed commercially by producing a high-quality product for high-volume, high-dollar markets. This demonstrates today's reality of residuals management. With the right systems and management strategies, both private and publicly-owned reclamation operations can adopt an approach that makes highest and best use of organic matter a design and operations priority.

Quality products can diversify high-volume markets to include not only agriculture, but also erosion control contractors, sports turf managers and landscape contractors. Such products can be used anywhere by anyone and will return organic matter to the soils region-wide, not just rural areas. These markets are not restricted, but expanded by urban sprawl. Because markets tend to be local and distances traveled to connect to

end-users shorter, fuel prices have less impact as well.

Seeing the Forest

Specialization carries many benefits, but that does not preclude the need to occasionally look up and out to view the forest instead of individual trees. Organic waste, including water treatment residuals, is the only source of organic matter for topsoil replenishment. As receivers of waste products from a very long food chain, municipalities and water authorities are in a unique position to harvest organic matter to help restore a broken soil system.

Typical reductions in stormwater flow range from 30-50% when soil organic matter goals are met, and can be much higher when the soil amendment is combined with the use of compost berms, blankets and socks. Thus, more water retained equals more water percolated. The biological activity in healthy soil also binds and degrades water-borne pollutants.

While residuals are not an exclusive source for organic matter, when compared to food waste and other mixed MSW sources, they represent an existing stream that is 'clean' and without physical contaminants. Residuals quickly and economically convert to a high-quality soil amendment. When a high-rate composting system is used, this conversion can take place in a very small footprint as well.

Per capita biosolids generation is about 64 dry pounds per year – 100%

compostable. If processed to a high standard, 100% biosolids can have high-market value too, suitable for unrestricted end use in the areas that need that organic matter the most.

Assets can be leveraged, partnerships can be formed and services can be contracted to improve soil quality in every region. Water shortages do not have to be a chronic headache, and raising soil organic matter levels to recommended averages can boost water-holding capacity by five times that of average soils. In addition, sound stormwater management is more than pipes and detention systems. Long-term control and efficacy is built, quite literally, from the ground up with healthy, functioning soil systems throughout the region.

As disciplines, both stormwater management and wastewater management are necessary if modern societies are to be ecologically responsible. The residual stream of one can significantly reduce the management volume of the other if organic matter is harvested and composted in a manner that results in a performance product that can be used in populated areas to replenish soils. In addition, harvesting organic matter for the highest and best use rebuilds soils and restores the natural soil system. A robust, healthy soil both filters and retains water to mitigate the impacts of stormwater; this is the soil and water connection. [x2](#)

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A Toolbox for Sustainable Investments

By Emily Darr and Todd Buckingham, Freese and Nichols, Inc.

As water utilities and agencies seek to invest in infrastructure that is cost-effective, efficient, and resilient – both during construction and throughout its life cycle – many are turning to a new set of resources to guide them. The Envision® Sustainable Infrastructure Rating System is a comprehensive framework for evaluating the environmental, economic, and social impacts of infrastructure projects, often referred to as the triple bottom line. Envision may be used on all kinds of water and wastewater projects, including pipelines, levees, and treatment systems, as well as other civil infrastructure such as bridges and landfills.

The system measures sustainability through five categories, breaking them down into manageable pieces for which goals and metrics are well defined. Going beyond individual project performance, Envision also assesses the project's contributions to the sustainability of the community as a whole – environmentally, economically, and socially. This holistic approach is crucial because of the way different infrastructure elements interact to serve multiple stakeholders. Envision enables public organizations to take a step back; instead of asking, “Are we doing the project right?” they start with, “Are we doing the right project?” A frequently cited example is a highway project: The most important sustainability consideration is not whether the construction materials are recycled, but whether a highway is the mode of transportation that would best meet the community's mobility needs.

The credibility of Envision is evidenced by the stature of its founders: the American Council of Engineering Companies, the American Society of Civil Engineers and the American Public Works Association.



The world's first Envision-rated pipeline is the Line J, Section 1 Pipeline, a 2-mile segment of the Tarrant Regional Water District raw water delivery system in Texas. It received an Envision Silver Award in 2014.

Seeing the critical need for sustainability in public infrastructure, those three organizations in 2011 founded the Institute for Sustainable Infrastructure (ISI), which in turn developed Envision in partnership with the Zofnass Program for Sustainable Infrastructure at Harvard University.

Why Use Envision?

Envision provides a number of benefits for public entities and their infrastructure investments:

Cost savings and long-term viability: Envision can provide savings on initial project costs as well as savings through operational efficiency over the project's life cycle. In some instances, additional funding is available for projects that meet sustainability goals.

Reduces negative impacts: Envision enables owners to account for and minimize project impacts to natural resources and to the community.

Social benefits: Envision encourages public engagement in decision-making. It also provides the credibility of a third-

party rating system, giving the public more confidence in the value of the project.

Application toward all types of projects: Envision is accessible across project types, sizes, and complexities; it can be used on any type of infrastructure. Envision can also be used in conjunction with other ratings systems.

Low initial investment: Some Envision resources can be downloaded at no cost for project planning and self-assessments. One tool, the Envision checklist, enables owners to quickly compare project alternatives, which is helpful in the early planning stages, and familiarizes them with the sustainability criteria. Later steps such as membership, project registration, and verification do involve fees.

Developing In-House Expertise

By completing the Envision training course – seven one-hour online modules or a full-day workshop – and passing an exam, individuals receive the Envision Sustainability Professional designation, or ENV SP.

- Sustainability professionals are trained to:
- Lead change in an organization by rethinking approaches to infrastructure projects
 - Promote sustainable practices and consider how they can be implemented
 - Identify current internal sustainable practices and determine improvement opportunities
 - Actively participate in project planning and help project teams make informed decisions



Line J is made up of 108-inch-diameter steel pipe. Two processes that were evaluated for triple-bottom-line impact were the manufacturing of the pipe, and its transportation to the project site from four different plants across the United States.



A key sustainable component was the use of native controlled low-strength material (CLSM), rather than gravel, for pipeline embedment. Field testing was used to evaluate the feasibility of CLSM; numerous sample pits, pictured, were filled with mixes of different soil types and different proportions of cement content.

- Speak a uniform language when working on interdisciplinary projects to improve project collaboration
- Take on a leadership role in promoting the long-term welfare of the public and the environment

The increasing number of professionals earning credentials demonstrates the momentum behind Envision and the growing awareness of infrastructure sustainability. As of March 2016, there are 4,200 certified Envision Sustainability Professionals worldwide.

Case Study: Line J, Section 1 Pipeline

Envision's first award-winning pipeline project was the Line J, Section 1 Pipeline. The Tarrant Regional Water District (TRWD) received an Envision Silver Award for Line J in 2014.

TRWD is one of the largest raw water suppliers in Texas, serving more than 1.7 million people. It operates more than 150 miles of water pipelines stretching from Fort Worth to its reservoirs in East Texas. Line J is a small but vital component of this delivery system. This 2-mile, 108-inch-diameter raw water pipeline connects existing earthen reservoirs directly to the District's new hydropower generation facility. Line J also alleviates a capacity bottleneck by removing an 80-mgd demand from the existing pipelines, which allows more water to be delivered to the City of Fort Worth.

Freese and Nichols, a charter member of ISI, designed the pipeline and provided sustainability guidance. During the preliminary design phase, the team began evaluating the triple-bottom-line impact of three key processes chosen by TRWD: the pipe manufacturing process (cradle to gate), the transportation of pipe to the jobsite (gate to site) from four different plants across the United States, and the selection of embedment materials. These processes were considered to have the highest impact in the design and material procurement options for the project.

The team assessed a wide range of impacts associated with each process such as fuel costs, traffic impacts, depletion of natural resources, employment in local communities, and carbon emissions from pipe production, delivery, and installation. Then, by laying out different design

Green Issues

combinations and comparing them to a baseline design option (existing standard practice), Freese and Nichols helped TRWD select the design alternative that best fit the priorities and goals for their water transmission system.

The project team also partnered with the University of Texas at Arlington. Geotechnical graduate students evaluated and tested on site native soils in the production of controlled low-strength material (CLSM) for pipe embedment. The use of CLSM, rather than gravel, on the project provided environmental benefits by reducing the carbon footprint associated with mining gravel and hauling it to the jobsite. It provided social benefits to the community by reducing truck traffic, as

well as by fostering collaboration and design integration between the students, TRWD, Freese and Nichols, and many national experts involved in the project.

A number of other sustainable aspects also contributed to the Envision award:

- The project improves the quality of life for the fast-growing population of TRWD's service area. Line J enhances the flexibility and reliability of the existing raw water transmission system and defers the need for new water supplies and infrastructure.
- Envision places a high value on collaboration, which for Line J resulted in innovative contractual practices that accommodated an aggressive construction schedule.

- Stream banks were designed to reduce erosion, and wetland and surface water functions were maintained at creek crossings.
- The project team met with city officials to minimize the impact of road closures and prepared traffic control plans to help residents traveling near the project site.

In perhaps the greatest testament to the benefits of Envision, TRWD followed the Line J project by implementing multiple sustainable initiatives on the much larger Integrated Pipeline Project, a \$2.5-billion transmission system. TRWD is pursuing an Envision rating for the project; Freese and Nichols prepared the rating application, which was submitted to ISI for verification in the fall of 2015. It is anticipated that a notice of award will be received this summer.

Next Steps for Your Organization

If you're interested in learning how Envision can benefit your community, the best place to start is the ISI website, www.sustainableinfrastructure.org. The website has a robust library of resources, including the complete Envision guidance manual, case studies, and webinars, all available with a free account. One-day Envision training courses are also available. Sustainability professionals can visit your organization, provide a detailed look at each Envision credit category, teach you how to apply the Envision checklist, and prepare the class to take the credentialing exam.

About the Authors

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Todd Buckingham, PE, ENV SP, is a transportation engineer and Envision Sustainability Professional at Freese and Nichols. A certified ISI trainer, he coordinates and facilitates training workshops for the ENV SP credentialing exam; he also serves on the ISI Accreditation Committee. [MS](#)



Stulls were installed inside the pipe to maintain its shape and protect its lining during delivery, storage and installation.



A construction crew installs a 108-by-108-by-84-in. tee to connect two pipelines.



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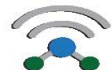
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The Road to Net-Zero

Research funded by WERF paves the way for wastewater utilities to travel toward energy neutrality

Some wastewater utilities are implementing process and equipment innovations that enable them to use less energy and generate their own power. Yet, many other utilities face tradeoffs, hurdles, or barriers to maximizing operations for energy efficiency and in creating a net environmental benefit from wastewater operations. Energy efficiency is a complex subject at Water Resource Recovery Facilities (WRRF) because it touches virtually all utility assets and cuts across all organizational functional groups. Energy efficiency can be a key component of strategic infrastructure planning, especially when it comes to utility initiatives to meet increasingly stringent regulations related to nutrient limits, odor control, air emission controls, and collection system overflow reduction. While providing environmental benefits, these increased standards often trigger additional aeration, pumping, or other energy inputs.

To better understand the potential for net-zero energy at WRRFs and facilitate informed decision-making to achieving that, the Water Environment Research Foundation (WERF), with the collaboration of the New York State Energy Research and Development Authority (NYSERDA) funded the comprehensive study and report, *A Guide to Net-Zero Energy Solutions for Water Resource Recovery Facilities* (WERF Report No. ENER1C12). The study examined the potential for net-zero energy performance through efficiency improvements and energy recovery across a broad spectrum of treatment configurations.

As reported in the October 2015 issue of the Water Environment Federation's *Water Environment & Technology (WE&T)*, researchers used energy balances generated under this study to develop national energy projections for a subsequent report, *Utility of the Future Energy Findings* (WERF Report No.

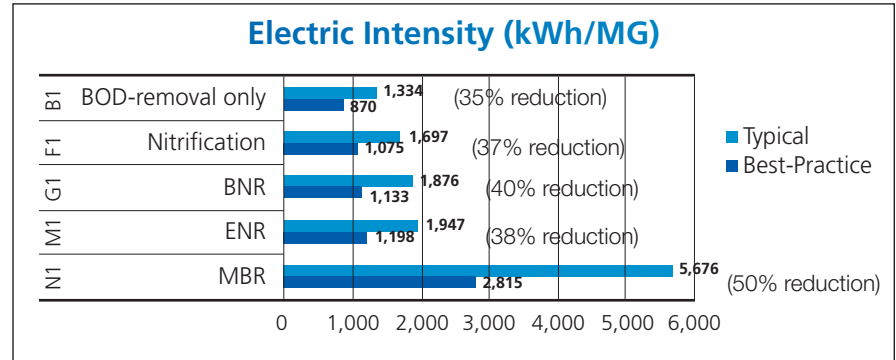


Figure 1. Typical and best practice electric power consumption for various levels of wastewater treatment

ENER6C13). The findings confirmed that the wastewater sector is currently a major electricity consumer, using an estimated 22 billion kilowatt-hours per year (kWh/yr). This amount equals approximately 0.6% of the electricity produced in the U.S., and places WRRFs near the top of all industrial sectors for electricity consumption. These two studies, combined with several others, (see related research table) enable new ways of thinking about energy efficiency and recovery, find new opportunities to save costs and enhance sustainability, as well as provide solutions to overcome obstacles common to energy projects.

Net-zero energy use for WRRFs can be achieved through a combination of energy efficiency improvements and recovery of wastewater chemical energy. The study demonstrated that conventional secondary treatment and nitrification facilities can become net-energy positive. Energy positive plants, or those nearly so, can reduce their energy consumption significantly. WRRF managers, engineers, operators, and the engineering consultants who design upgrades and new facilities can identify the type of facility they operate, examine its process configuration against the Sankey (energy balance) diagrams included in the report, and identify the design elements needed to become

more energy efficient. Federal and local policymakers may find this research useful to define assistance or incentives appropriate for accelerating achievement of net-zero wastewater treatment.

The Research

The research team identified 25 typical baseline process-flow schemes, ranging from basic secondary treatment using activated sludge to membrane bioreactors for nutrient removal and water reuse. For each baseline configuration, the team developed a model and generated energy outputs displayed as Sankey diagram. The team simulated typical performance and then re-ran the same process configurations with best-practice parameters to investigate potential improvements in energy performance. For consistency, the model runs used a process flow rate of 3,800 cubic meters per day (10 million gallons per day) and waste characteristics for U.S. medium-strength domestic wastewater as the basis for all simulations.

Best practices. Figure 1 shows the improvement that employing best practices can achieve at different levels of treatment. For example, WRRFs operated to achieve secondary treatment standards (only biochemical oxygen demand removal)

Green Issues

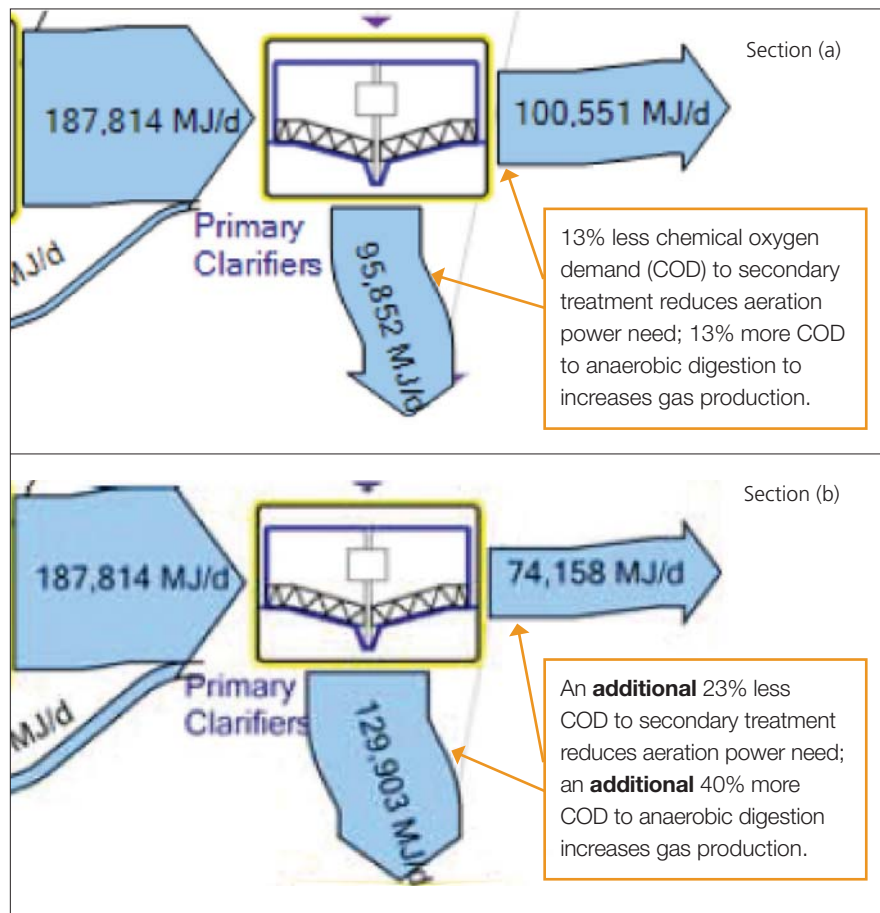


Figure 2. Energy effect of changes in operation. Section (a) illustrates best practice primary operation. Section (b) illustrates further improvement with chemically enhanced primary treatment

Model high-performance facility	Net electricity production (as % of energy consumption)
Basic secondary treatment with enhanced primary, thermal hydrolysis process, FOG and food waste co-digestion, anaerobic digestion, combined heat and power	139%
Nitrification with enhanced primary, thermal hydrolysis process, FOG and food waste co-digestion, anaerobic digestion, sidestream deammonification, combined heat and power	110%
Biological nutrient removal with enhanced primary, primary sludge fermentation, thermal hydrolysis process, FOG and food waste co-digestion, anaerobic digestion, combined heat and power	61%
Enhanced nutrient removal with enhanced primary, primary sludge fermentation, thermal hydrolysis process, FOG and food waste co-digestion, anaerobic digestion, combined heat and power	49%

Table 1. Model Facilities
 Net electrical energy recovery potential over a range of nitrogen control levels
 FOG = Fats, Oils & Grease
 Source: A Guide to Net-Zero Energy Solutions for Water Resource Recovery Facilities, WERF Report No. ENER1C12 (2015) by Stephen Tarallo

typically use 1,300 kWh per million gallons. This amount can be lowered by 35% to 870 kWh per million gal using best practices. **Figure 1** also shows the effect of more stringent nitrogen removal requirements (1,876 kWh per million gallons and 1,946 kWh per million gallons for biological nutrient removal and enhanced nutrient removal, respectively) and MBR treatment for reuse (5,676 kWh per million gallons). On average, model results showed a 40% reduction in energy use over all configuration types through the use of best practices.

Sankey diagrams. A key feature of the WERF research methodology involved the use of Sankey diagrams to portray the energy flows for each treatment configuration modeled. The essential feature of Sankey diagrams is the convention of making the energy-flow line widths proportional to the magnitude of the energy flow. The visual effect is enhanced by color-coding the electrical, heat, fuel, and chemical energy (as chemical oxygen demand) that is embedded in the wastewater and solids.

Figure 2 shows how Sankey diagrams can be used to quantify and visualize the effect of unit process improvements on the energy performance of downstream processes. This example shows the effect of employing chemically enhanced primary treatment, which is one of the best practices modeled in the study.

Is Net-Zero Possible for All Facilities?

Although WRRFs can achieve significant reductions in energy consumption, can most achieve energy neutrality? The answer depends largely on the level of nitrogen treatment required. The research team developed an optimal mix of best practices and innovative processes around the treatment configurations studied to strive for energy neutrality given nitrogen removal constraints.

Table 1 shows the model facilities. Using well-established processes such as biological nutrient removal (BNR) or enhanced nutrient removal (ENR), WRRFs required to provide advanced treatment can expect to see an increase in energy demand that cannot be offset by energy recovery and efficiency measures. While advanced facilities benefit from improved energy management, with current technology, their ability to become energy neutral is limited.

In addition to an increased energy demand, BNR and ENR processes require additional carbon as a food source for denitrifying bacteria. Outside carbon – commonly in the form of methanol, acetic acid or other organics – is added to the denitrification stage of BNR and ENR facilities. The energy to produce these external carbon sources, which is part of a facility's energy balance, is so significant that these nitrogen removal processes have little hope of achieving net-zero energy status.

For example, at a typical BNR facility, the electricity and natural gas required to produce an external carbon source is approximately 2.5 times the energy needed at the facility for nutrient removal. The challenge of energy management at nitrogen removal facilities becomes one of carbon-balance management. This balance was addressed in the facility models by employing on-site carbon generation via primary sludge fermentation. However, this carbon

comes at a price – it robs embedded energy from anaerobic digestion and digester gas-fueled combined heat and power production.

On the Horizon

Net-zero energy champions. While energy innovation is moving fast, the path for change requires leadership and a sustained effort. Recognizing that the guidance provided by the energy-modeling results of this study would be better understood coupled with real-world case studies, the research team interviewed utilities that already have made significant progress towards, or have achieved, net-zero energy results.

The energy champions interviewed – Ithaca, New York; Johnson County, Kansas; Los Angeles County Sanitary District, California; Philadelphia Water Department, Pennsylvania and Melbourne Water, Australia – independently, but consistently, took the following specific actions to propel their operations to exemplary energy performance. They all:

- developed utility-wide energy plans that incorporate strategic goals for key performance indicators;
- adopted a holistic, life-cycle approach to energy management;
- connected with academic institutions for support and expertise;
- applied available resources to understand energy efficiency and recovery opportunities;
- shared information with other utilities and collaborated on policies to advance energy goals; and
- routinely explored new and innovative funding options for energy projects and took advantage of outside sources of capital funds.

The Bigger Picture

The Utilities of the Future Energy Findings seeks to answer the questions about how sound is investment in wastewater renewable energy on a national scale, and what the payoff might be? The report determined that

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Project Title and Number	Research Focus
Triple-Bottom Line (TBL) Evaluation of Biosolids Management Options (ENER1C12a)	Uses a TBL approach to evaluate common wastewater solids management technologies and processes relative to their potential for long-term sustainability, including energy neutrality.
Demonstrated Energy Neutrality Leadership: A Study of Five Champions of Change (ENER1C12b)	Documents the steps used by utility leaders at WRRFs close to energy neutrality and the lessons they learned to explain to readers what they achieved in terms of energy and other benefits, and how they accomplished it.
Identification of Barriers to Energy Efficiency and Solutions to Promote Those Practices (ENER7C13)	Uses a national survey of input on barriers from more than 110 wastewater service utilities, along with utility focus groups that captures detailed experiences regarding barriers to successful deployment of energy efficiency initiatives.
State of the Science and Issues Related to the Recovery of Heat from Wastewater (ENER10C13)	Evaluates the state of heat recovery from wastewater by examining the extent of its use, the performance of available technologies, and emerging economic, environmental, social and regulatory issues which could impact its use. Includes theoretical models to help guide utilities to develop heat-recovery projects.
WaterWatts: A Modern Look at Wastewater Power Metering Data (ENER15C15)	Includes a collection and analysis of dis-aggregated power metering data by process, at water resource recovery facilities, including BNR plants.


Related WERF Research

maximizing the overall energy reduction for the largest 100 WRRFs in the U.S. is cost-competitive with other renewable sources, such as wind and solar energy. Focusing on these 100 WRRFs would

save an overall lifetime (30-year) reduction of 142 terawatt-hours of electricity and 1,658 trillion British thermal units of primary energy, according to *Utility of the Future Energy Findings*.

Roadmap to Net-Zero

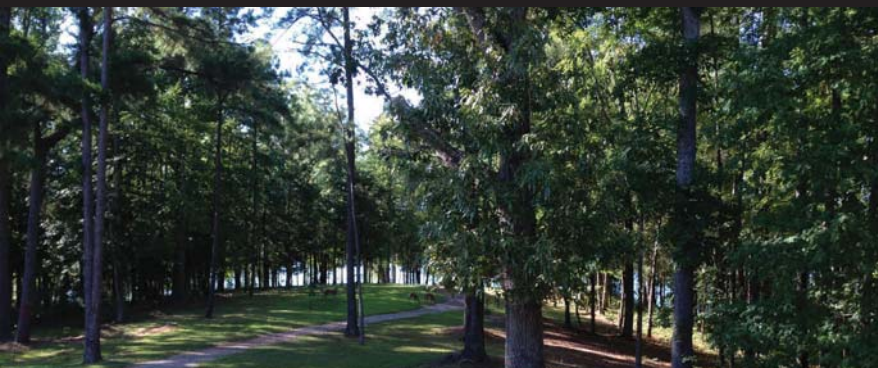
Net-zero or near-net-zero energy performance is at-hand for many facilities, and WERF research has provided a useful guide for a utility to benchmark its current position and chart its own path to neutrality. Utilities interested in further pursuing their own pathways to net-zero energy can download and use the referenced WERF energy study reports – Report Numbers ENER1C12 and ENER6C13. The reports can be obtained at www.werf.org.

Paul Kohl, energy manager of the Philadelphia Water Department, and **Stephen Tarallo**, client services director for Black and Veatch (Overland Park, Kansas), served as co-principal investigators for WERF's Net-Zero Energy research project. **Ralph Eschborn**, Americas practice lead for Energy, Water, AECOM, also served on the research team as a task leader. **Andy Shaw**, a global practice and technology leader in the Kansas City, Missouri office of Black & Veatch served on the research team as the process and energy modeling lead. **Lauren Fillmore** is senior program director with the Water Environment Research Foundation (Alexandria, Virginia). **Terry Goss**, a Biosolids Technology Leader for AECOM (Morrisville, North Carolina) also served as a contributor to this work. 



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LID Retrofit Demonstrates Potential for Green Infrastructure

By Robert Hopper, PE, CDM Smith and David Phlegar, CPSWQ, City of Greensboro

Green Infrastructure and LID

The green infrastructure revolution is taking root in our cities. Proactive integration of green infrastructure/low impact development (LID) type stormwater runoff controls on new and existing development is one of the ways the City of Greensboro is addressing non-point source pollution. On the site scale, rainwater, soils, and nutrients are a resource; however, once conveyed and concentrated downstream, these resources become pollutants, overwhelming downstream riparian ecosystems. One of multiple LID demonstration projects being implemented in the City of Greensboro, the Brown Recreation Center is being retrofitted with permeable pavement, rainwater harvesting, and bioretention to provide the municipality experience with implementation of LID practices, and to educate the community on the benefits.

The urban drainage design objective of rapid and complete drainage is being replaced with one of onsite capture, retention, and use or infiltration into the ground. The scale and methods employed differentiate LID as a subcategory of green infrastructure, defined as: the technological application of nature's elements and methods for managing stormwater runoff with retention, soils, and vegetation to achieve more sustainable development, productive landscape ecosystems, and to contribute to climate change resilience.

The Brown Recreation Center – at least the core of the site – is typical of an urban institutional or commercial site in the Piedmont, with a main building of sizeable footprint and an associated parking lot. During every rain event, the built-upon impervious areas create nutrient-laden runoff, which leaves the site and enters the natural stream channels without infiltration or treatment. The Brown Recreation Center



Brown Recreation Center runoff



Example of Rainwater Harvesting Cistern

LID retrofit demonstration is a progressive effort to understand and overcome the physical and socioeconomic obstacles toward mainstream implementation of green infrastructure, and to pave the way for LID to sink in throughout the city and across North Carolina. The project is being implemented by the City of Greensboro Stormwater Division, with funding from the City's stormwater utility fund. It is expected that areas treated for reducing nutrients and sediment with rainwater harvesting, permeable pavements, and bioretention will obtain credits toward the Jordan Lake Rules. Each of the LID practices will provide

institutional and regionally needed experience for furthering the practices of LID. These practices range from achieving water quality goals and other holistic benefits to integrating green infrastructure within new and existing development in the urban environment.

Rainwater Harvesting

Collection of stormwater runoff as close to where it falls from the sky for on site use is called rainwater harvesting. This practice reduces off site runoff by collecting it in tanks called cisterns or rain barrels.

Beneficial uses include toilet flushing, vehicle washing, and irrigation. The

Green Issues

rainwater harvesting system includes a collection and distribution system. Intercepted runoff from roof down drains flows through screening to remove leaves, debris, and mosquitos before entering above- or below-ground storage tanks. It is then pumped or gravity fed for beneficial use. At the Brown Recreation Center, rainwater will be pumped to yard hydrants for use in watering a community garden to be created and cultivated by the community. When not used for the garden, stored water will be slowly released to the ground to infiltrate and hydrate the landscape and make room for the next rain event. LID practices are usually designed to capture runoff from a design storm of one inch, which is intended to capture the first flush of pollutants from the impervious surfaces and the majority of rainfall runoff in a given year. Larger, less frequent storm events exceeding one inch of rainfall exceed the capacity of the LID, and excess runoff bypasses the devices.

Permeable Pavements

Permeable pavements are available in multiple surface varieties with a porous durable surface layer and a reservoir layer beneath the surface to capture rainwater. Pervious concrete, porous asphalt, and permeable pavers allow water to pass through interstitial spaces between the aggregate or stones. Special mixes of concrete and asphalt produce porous surfaces that allow flowrates greater than that of most rainfall to flow through. Permeable pavers consist of impervious stones with sand between them to capture the water. The porous surface materials are more susceptible to wear and abrasion, and are generally not used for high or heavy traffic or turning areas. Also, since permeable pavement relies on small interstitial spaces to pass water, areas with high sediment or debris loadings are not viable candidates for permeable pavement. Permeable pavements can only receive direct rainfall and very limited runoff from surrounding stabilized areas.

Pervious concrete and porous asphalt were selected for demonstration at Brown Recreation Center to evaluate the installation, maintenance, and life



Examples of porous asphalt

expectancy of these two materials. Construction must follow strict procedures and quality control to attain the correct pour parameters for a finished product that passes water and has a durable structural capacity for vehicular traffic. To avoid clogging of the pore spaces from regular debris, vacuuming will be required on a semi-annual basis. The expected life of pervious concrete and porous asphalt will be observed to determine how it compares with conventional materials. The retrofit demonstration at Brown Recreation Center will install the permeable pavements in rows of parking stalls to evaluate construction concerns, aesthetics, clogging rate, durability, and any other issues associated with site implementation.

Bioretention

The most popular green infrastructure device is bioretention, also known as biocells or rain gardens. These systems are stormwater filters built into the runoff flow path as shallow vegetated depressions. These systems most closely mimic natural upland systems where water is captured on the surface and held long enough to soak in through the soil, receiving treatment from the soil particles, microbes, and roots of plants. Once installed, the only



Examples of bioretention

observable features of a bioretention once installed are the cleanout pipes protruding from the ground, an elevated drain grate, and sometimes a slight berm around the perimeter. Bioretention promotes infiltration into the ground with up to 3 ft. of engineered soil media and underdrains in the North Carolina Piedmont region to facilitate flow-through. Bioretention systems are designed to hold water on the surface for less than 72 hours, in time for water to infiltrate prior to the next rain event and to avoid mosquito breeding.

In the case of the Brown Recreation Center, a bioretention is placed at the downslope end of the access road following an existing grassed swale. An existing depression will be retrofitted through excavation, followed by the installation of a concrete riser, underdrains, and engineered soil media, and topped with hardy native plants and mulch. The engineered soil media is the key design component subject to partitioning of sand, fines, and compost to attain and maintain a proper infiltration rate, as well as support plant growth and structural stability. To enhance nitrogen removal treatment with a dedicated anaerobic zone, internal water storage is optionally designed in, using an upturned pipe. Native or ornamental shrubs, trees,

and herbaceous species are selected for planting on the bioretention surface, based on their proven ability to survive and thrive under varying very wet and very dry conditions, as well as on space and aesthetic considerations.

Demonstration Potential




Brown Recreation Center LID retrofit site plan

The drivers for LID are similar to those for recent nutrient reduction upgrades for water reclamation facilities; to improve water quality in streams, water supply reservoirs,

and estuaries downstream for their ecosystem services, wildlife, recreational, and inherent values. Millions of dollars are being spent to secure the quality of Falls Lake, Jordan Lake, Neuse River, and the Tar-Pamlico River here in North Carolina, and elsewhere such as the Chesapeake Bay. In preparation for the next stage of the Jordan Lake Rules, where local governments are required to implement stormwater control measures to reduce loadings from existing development, local governments such as the City of Greensboro are digging in. Green infrastructure in the forms of LID and larger-scale wetlands and enhanced riparian floodplain zones will improve watershed water quality. Through this project and others like it, bioretention, permeable pavement, rainwater harvesting, constructed wetlands, green roofs, and other green infrastructure practices are being proven on public property for water quality improvement and education purposes.

About the Authors

Robert Hopper, PE is a water resources engineer with CDM Smith. He focuses on watershed planning, green infrastructure, and water quality improvements for North Carolina municipalities. He conducts hydrologic and hydraulic modeling and site design for stormwater controls applying ecological engineering toward sustainable water resource management. Rob can be reached at hopperrv@cdmsmith.com.

David Phlegar, CPSWQ is the stormwater manager for the City of Greensboro's Water Resources Department. His job includes all aspects of stormwater utility management. David serves on the board of the Stormwater Division for APWA-NC and various other local and statewide boards and commissions. David can be reached at david.phlegar@greensboro-nc.gov. 

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Duke University Water Harvesting Pond

By James W. Caldwell, PE, McAdams



Circuit Drive overlook

As a result of both Duke University's Climate Action Plan and the 2007 drought in North Carolina's Piedmont, Duke University constructed a 6-acre \$14 million water harvesting and reuse pond on the university's historic campus. This facility provides up to 143 million gallons of harvested stormwater a year and saves the university \$400,000 annually in potable water costs.

Through summer and into the fall of 2007, the drought affected most of the Southeast. By October 2007, The National Drought Mitigation Center recorded a

Level D4 'Exceptional' drought, which led the City of Durham to enact multiple-stage water restrictions and emergency measures. At the height of the drought, Durham's storage of potable water supply diminished to approximately one month. This made the City evaluate the use of all water customers, especially their largest users.

Duke University is Durham's largest water user. In fiscal year 2006, campus-wide water use totaled 645 million gallons. Approximately 140 million gallons of this was make-up water for the university's two centralized chilled water facilities

(evaporated into the atmosphere). Of Duke's two chilled-water plants, Chiller Plant #2 has the largest demand, making it the largest single potable water user in Durham. Since the university's hospital and other life-critical facilities depend on the chilled water system, this single high-demand system could not be shut down or easily reduced.

As the City and Duke discussed other emergency plans, rain fortunately provided much needed relief to the region. However, the drought, coupled with the fact that every component in the university's chilled

water system was redundant except for the water supply, caused the university to make water reuse and supply central to Duke's initiative to achieve climate neutrality by 2024 and provide true redundancy to Chiller Plant #2. This also provides critical infrastructure for emergency public safety hospital operations.

Through public outreach, awareness, and campus-wide conservation, the university's water consumption dropped to 369 million gallons in fiscal year 2009 (a 42% reduction). As part of the water saving and reuse initiative, the university asked McAdams to use their on-going campus-wide stormwater impact analysis (SIA) to identify water harvesting and reuse sites. Using the SIA, which McAdams maintains for the university, McAdams initially identified eight aboveground sites for drainage areas and runoff potential. Using the university's chilled water plant projected demand, irrigation demand, and other campus water uses, McAdams pared these eight sites down to four, then to two, and ultimately to the water harvesting pond site adjacent to Chiller Plant #2. The 256-acre, highly urbanized watershed, along with the 2020 projected demand of 198 million gallons a year for Chiller Plant #2, provides a high-runoff, high-use site for the pond.

McAdams, along with a geotechnical engineer, was commissioned to perform more preliminary site design and modeling work, which included a realistic 'continuous' model using actual historical rainfall data rather than theoretical storm events in order to show potential yield from the pond. Using stream gauge data, Duke's demand and use projections, and 1997 recorded rainfall, McAdams modeled a full year of rainfall events including base flow, storm runoff, evaporation, infiltration, minimum release, and chiller plant demand. This showed the pond could supply up to 143 million gallons of harvested stormwater a year, almost 75% of the annual projected demand of Chiller Plant #2 and a savings of \$400,000 annually.

The pond is sited on a blue-line stream on the southwest side of Duke's campus. This location was originally slated for



View from covered pavilion

a pond by the University's architect, Horace Trumbauer, in the 1920s. The stream and culvert system downstream of the facility are inadequately sized and therefore a 'tailwater' condition exists through each hydraulic element of the system. Interconnected pond and spillway modeling was needed for modeling of both existing and proposed conditions to ensure no existing roadways, utilities, or buildings would be affected by construction of the pond.

After initial design and modeling work, the university brought a renowned land-

scape architect to the project, along with a structural, and mechanical engineer to complete the design. The final design of the facility includes a 20-foot tall high-hazard potential dam, a pavilion with the intake structure, a boardwalk, footbridge, pump house, amphitheater, outdoor classroom area, wetland and woodland plants, and campus amenities that improve water quality. The pond will always have 8 feet of standing water with a reusable "flux" of 4 feet for storm runoff and chiller plant use (6.7 million gallons). The standing normal pool will provide almost 8 million gallons

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Green Issues

of emergency water storage for natural disasters, during which the Duke University Hospital, and therefore Chiller Plant #2, must function as a regional disaster center with no power or potable water. The landscape architect was able to incorporate all of the site elements into the design of the project with the ongoing 4-foot fluctuation of the pond water surface. All 'functional' elements of the facility including the pump

house, intake structure, and forebay for the pond are integrated into the site such that, to a casual observer, it would not be known that the pond is a water harvesting facility.


Wood for the boardwalk and pavilion decking for the project came from trees harvested and processed during site clearing. The pond also features a 0.6-mile walking trail loop tying into the campus-wide pedestrian plan. McAdams and the design team

worked with the University's professors and research staff from the engineering, environmental, and biology departments to design the pond, choose plant species, and incorporate 'lessons learned' from other campus and research projects. Filtration and chemical treatment for the water is achieved through several stages at the intake structure, in the pump house, and in the chiller plant.

Permitting this facility took approximately 1 year, as 19 permits were necessary to begin construction. The pond impacts 1,700 feet of stream, so a mitigation ratio of 2:1 was determined through multiple meetings and site visits with NC Division of Water Quality (NC DWQ) and the U.S. Army Corps of Engineers. McAdams also designed and permitted 3,400 ft. of stream restoration on the east side of Duke's campus, tying directly into the University's SWAMP (Stream & Wetland Assessment Management Park). Permits for the pond were required from the US Army Corps of Engineers, NC DWQ, NC Dam Safety, City of Durham, Durham County, and even Duke University itself. As part of the City of Durham's permitting, and to benefit other campus development projects, a high water quality removal rate for nitrogen, phosphorous, and total suspended solids was claimed for the facility and the highly urbanized watershed.

Construction for the project started in April 2013 and the bottom drain valve in the spillway riser was closed in October 2014. The pond was initially filled in the fall of 2014 and was functional for water reuse at the university's Chiller Plant #2 by Summer of 2015. This pond will provide a continuous harvested stormwater supply for use in Duke's Chiller Plant #2 and will be a campus amenity as intended by the original university architect's vision.

About the Author

James W. Caldwell grew up near Asheville, NC before attending NC State University. Caldwell served in the Peace Corps in El Salvador and worked at a geotechnical engineering firm and the NC Dam Safety Program prior to joining McAdams. He currently serves as Assistant Director of Water Resources & Infrastructure for McAdams. 



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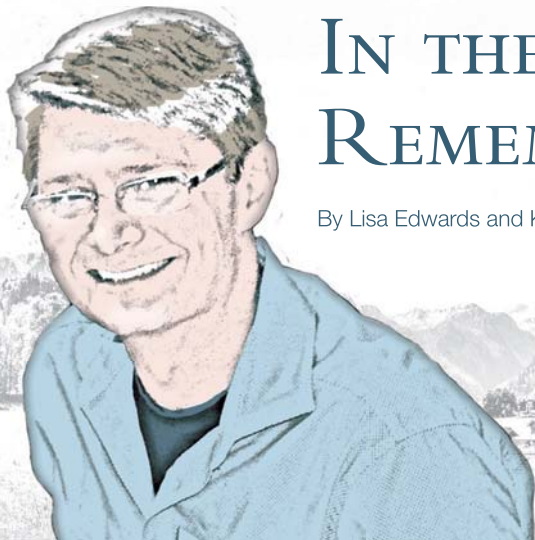
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IN THE FOOTSTEPS OF A HERO: REMEMBERING PAUL JUDGE

By Lisa Edwards and Kraig Kern

It has been said that a hero is somebody who is selfless, who is generous in spirit, who just tries to give back as much as possible. Paul Judge was all of those things and much, much more.

Paul died on the morning of March 9, 2016 on the steep and dangerous slopes of Ixtaccihuatl, a 17,159-foot extinct volcano in Central Mexico. He was there to fulfill a dream of reaching his highest personal altitude. According to his guides, nothing seemed unusual as they started to descend – having been forced to turn back due to a fierce storm. But within just a few steps Paul collapsed, tried to rise, and then fell again for the last time. Despite an hour of resuscitation attempts, nothing could be done to save him.

To say that everyone who knew Paul was shocked and saddened by the news would be a monumental understatement. People would describe him as a friendly, quiet, and unassuming guy, but he had a pronounced impact on everyone he met. Since his death there have been thousands of comments, notes, pictures and memories on Paul's Facebook page, and mourners were moved to a larger room during his memorial service because of the large number of people who came to pay their respects.

It may sound cliché, but Paul died doing what he loved. Those who knew him best are comforted with the knowledge that he was truly happy. When Paul was not working, he was outside involved in one adventure after another. Although he left us much too soon, Paul experienced



Paul Judge, second from left, was part of the Climb for Water team in Ecuador. Co-author Kraig Kern is third from left.

more of life than most of us could ever dream, and he also affected the lives of many others along the way.

He was not only influential in the adventurer community, but also within the water industry. Paul worked with the North Carolina Department of Environmental Quality (formerly NCDENR), Public Water Supply Section as a Hydrogeologist for over 21 years in the Mooresville Regional Office. Although he was employed as a regulator, many operators formed a personal bond with Paul and contacted him as a trusted friend to seek guidance. He was a mentor to those inside and outside of his agency.

One word people would use to describe Paul was reliable. He was very knowledgeable and responsive, even answering his work phone calls while on vacation. Paul was always ready to help anyone. Paul's brother described him as thoughtful – both in a kind, sincere, caring way and also in the thoughtful thinkings-through way, always evaluating

consequences. Paul was calm during a crisis and was quick to help water systems through potentially catastrophic situations.

Paul was very active in the water industry and held many licenses and certifications including A Surface, A Well, A Distribution and Cross Connection. He was on the Public Water Supply Section's Area Wide Optimization Program (AWOP) team helping water systems go above and beyond regulatory requirements and serving the citizens of North Carolina optimized drinking water.

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

Paul was also able to effectively combine his affinity for adventure with water quality issues on a global scale. After observing the success of the first Climb for Water campaign to Africa's Mt. Kilimanjaro in 2011, he got heavily involved in the effort going forward. During the next two campaigns, Paul helped raise another \$25,000 for clean water and hygiene projects around the world. Perhaps Paul's greatest contribution to the team was his



In his trademark red shirt, Paul had an adventurous spirit, always challenging himself.

infinite patience. He was more physically fit than anyone who participated in Climb for Water, but always stayed in the back of the pack to make sure he was there to lend a hand or an encouraging word. Climb for Water was a turning point in Paul's life, it gave him purpose while allowing him to pursue ever greater adventures.

In an article he co-authored in this very magazine (*NC Currents*, Summer 2014, pp. 58-60), Paul wrote "I stopped and reflected that this was precisely the reason the seven members of Climb for Water were in Quito, Ecuador. In the US, most of us do not need to think twice about the safety of the water that comes from our taps. In Ecuador, and many other places around the world, potable water is not taken for granted. Climb for Water wants to help change that."



Paul had a way of reassuring people they could do anything, despite this lighthearted teasing of co-author Lisa Edwards.



Paul was a mild-mannered and extremely approachable person. He made friends with everyone he met.

Paul was more than an adventurer and water quality practitioner; he was a humanitarian. In a society bombarded daily with bad news, Paul was the very personification of what is good and right in this world. He believed that all of us have the power to make the world a better place and he lived that way every day of his life. In fact, Paul believed so much in the cause of helping others gain access to clean water that he revived Climb for Water two years after it officially shut down. Paul was planning on leading a climbing group this Labor Day 2016 with a new campaign that would take him and his team to the summit of Mount Washington in New Hampshire, while raising more life-saving money for Water For People.

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

Paul, our minds still talk to you, our hearts still look for you, and our souls know you are at peace. We love you and miss you.

**Paul's final wish was to have a successful Climb for Water campaign this year. Help him reach his goal by going to www.crowdrise.com/climbforwater.*

ABOUT THE AUTHORS:

Lisa Edwards has been with NCDEQ (formerly DENR) for over 25 years. She was former Chair of the Water For People committee and served with the World Water Corps in several developing countries. She participated on the Climb for Water Ecuador campaign and plans to summit Mt. Washington in September.

Kraig Kern is the Vice President and Director of Marketing at WK Dickson & Co., Inc., and a member of the board of directors of the American Council of Engineering Companies of North Carolina (ACEC/NC). He is the original founder and team leader of Climb for Water and has been active with the Water For People committee since 2010. Kraig will lead the 2016 Climb for Water expedition in September. <#>

What is NC AWWA-WEA?

Formed in 1928, NC AWWA-WEA is a volunteer association operating jointly under one Board of Trustees as the **North Carolina Section of the American Water Works Association (NC AWWA)** and the **North Carolina Member Association (MA) of the Water Environment Federation (NC WEA)**. We are dedicated to providing water and wastewater education, training, and leadership in an effort to protect public health and the environment. In striving to be the leading educational resource for water-related issues in North Carolina, we recognize the broad scope of the industry and its reach beyond water sources, treatment plants, and pipe systems and its importance in homes, businesses, and the community.

We have close to 3,000 members in North Carolina representing municipal and private utilities, consulting engineering firms, government agencies, equipment suppliers, service providers, and representatives from academia. Working through a network of committees, our volunteers provide the foundation for all Association activities

VISION

(What we strive to achieve)

NC AWWA-WEA: THE leading educational resource for safe water in NC.

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(The purpose of what we do)

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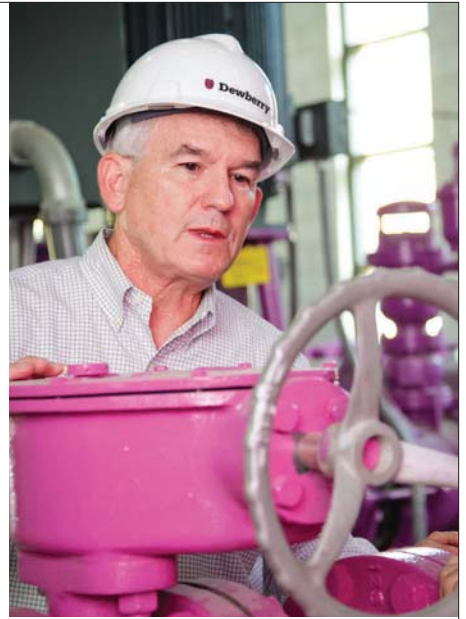
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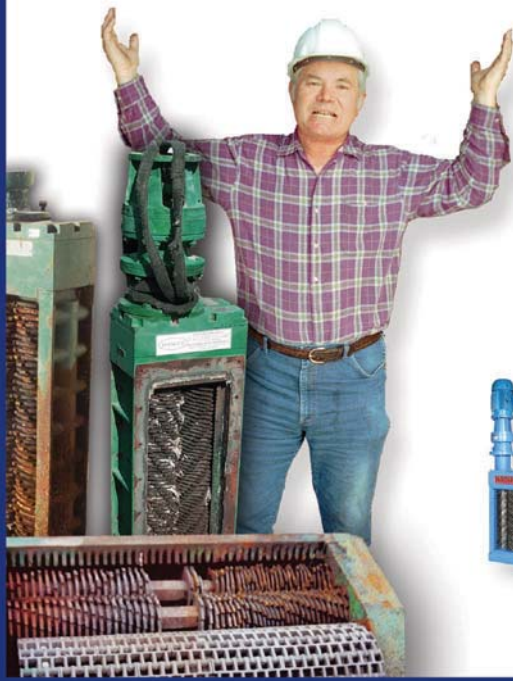
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The Way to Ensure a Future of Safe Water Is Through Your Stomach

By Chris Belk, P.E., Past Chair, Hazen and Sawyer

This past Fall the NCAWWA-WEA Endowment Committee, guided by Ms. Linnell Stanhope of Crowder Construction Company, came up with a novel idea for fundraising for the NC Safewater Endowment Scholarship Fund. That idea was to host a fundraising dinner. While I'm sure this idea initially concerned several members of the committee, some of whom I'm sure were worried about what dish they may have to prepare, Linnell quickly put those fears to rest by offering up the services of her son, Jason. No, this was not a punishment for some dastardly deed; this was because Jason Stanhope, as the executive chef of Fig in Charleston, SC, loves to cook, is capable of cooking for large crowds, and like his mother, loves to give back. Jason is the 2015 James Beard award winner for Best Chef in the Southeast. This is a tremendous honor and means Jason has been recognized by his peers as one of the best chefs in the world!

By now your mouth should be watering just imagining the different dishes such a chef could prepare. But Linnell and Jason had more ideas. Jason is friends with NC State graduate and chef, Ashley Christensen, the culinary force behind several popular Raleigh restaurants and bars, like Death & Taxes, Bridge Club, Chuck's, Joule Coffee & Table, Beasley's Chicken & Honey, Fox

Liquor Bar, and Poole's Diner. Ashley is the 2014 James Beard Award winner for Best Chef in the Southeast and was nominated for the 2016 James Beard Outstanding Chef Award. Jason and

Ashley agreed to collaborate on a menu for the dinner.

The fundraising dinner was first advertised at our annual conference in Raleigh where four tickets to this

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“This event raised over \$8,000 for the Scholarship Fund. The endowment committee is already making plans for next year’s event and may hold two events, one in Raleigh and one in Charlotte.”

inaugural event were included in the silent auction. I was the proud winner of those tickets. An additional 54 people also attended the dinner, including one corporate sponsor, Pepsi Bottling Ventures of Raleigh.

An added benefit of winning the auctioned tickets, at least this year, was the opportunity to help set the date for the event, which was held on February 21, 2016 at Ashley’s Joule Coffee and Table in downtown Raleigh. Piedmont Wines was

on hand as you walked in the door, ready to pour you an aperitif of rosy champagne. All night long, Piedmont Wines paired Italian wines with each of the five courses, carefully chosen to complement but not overpower the chef’s dish. Jason and Ashley prepared two courses each and then the dinner concluded with a fabulous desert. As each new course was served, the chefs came into the dining room to introduce it. Jason and Ashley explained what was in each dish, its inspiration, how it was prepared, and the source of the ingredients – some of which were local to Raleigh, NC, and some local to Charleston, SC.

That fabulous dinner helped ensure safe, clean water for my children, because a portion of the proceeds from all of the ticket sales went to fund NCAWWA-WEA’s eleven scholarships for future water professionals and educators.

In my opinion, this is the best fundraiser (and best dinner) I have ever attended. An ingenious idea that drew members of our own association to Raleigh from all over the state, and unlike many of our events catered to those both inside and outside of our organization, such as Pepsi Bottling Ventures. Even after all expenses were paid (note: Jason and Ashley both donated their time and skills), this event raised over \$8,000 for the Scholarship Fund. The endowment committee is already making plans for next year’s event and may hold two events, one in Raleigh and one in Charlotte.

Check out our scholarships, because you, your child, or your child’s teacher may be eligible. A perfect example of how giving to the scholarship fund gives back to our membership is Meredith Bullard, the current recipient of the Frank and Susan Stephenson Water Environment Scholarship. Meredith is the daughter of NCAWWA-WEA member Mike Bullard of Hazen and Sawyer. She has utilized the scholarship to help fund her studies at NC State University in Civil Engineering with a focus in Water Resources, and hopes to go on and get a Master’s degree and/or work in academia. [M2](#)

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COLLECTION SYSTEM CERTIFICATION QUESTIONS

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

- High-pressure jetting hose is made of a continuous polyolefin thermoplastic inner tube, braided webbing, and an abrasion-resistance outer covering that is bonded to inner webbing. This outer jacket is sold in many different colors. What does outer color code indicate? (Typical colors: yellow, orange, blue, red, and black.)**
 - Nothing, color is up to preference of the purchaser
 - Indicates the outer diameter of hose
 - Indicates the pressure rating
 - Indicates the manufacturer
- High-pressure jetting hose is made of a continuous polyolefin thermoplastic inner tube, braided webbing, and an abrasion-resistance outer covering that is bonded to inner webbing. The inner tube (inside of hose) can be found in many different colors. What does the inner color indicate?**
 - Nothing, color is up to the preference of the purchaser
 - Indicates the inside diameter of hose
 - Indicates the pressure rating of hose
 - Indicates the manufacturer
- In a typical high pressure cleaning operation, what would a 'Tiger Tail' be used for?**
 - Wheel chocks to keep truck from rolling
 - Rope used to lower nozzle into manhole
 - Sleeve to protect high pressure hose
 - Emergency shut off lever
- In NC what volume of wastewater spill (SSO) requires a wastewater facility to issue a press release?**
 - 1 gal.
 - 100 gal.
 - 1000 gal.
 - 10,000 gal.
- This press release notification must be done within what time frame from first knowledge?**
 - 8 hours
 - 24 hours
 - 48 hours
 - Five business days
- In NC when a spill (SSO) exceeds _____ gallons, permittee is required to post public notice.**
 - 1,000 gal.
 - 5,000 gal.
 - 10,000 gal.
 - 15,000 gal.

Answers:

1. c) 2. d) 3. c) 4. c) 5. b) 6. d)

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

1. When performing a listening survey, a small leak is generally:

- a) hardest to find b) loudest c) overlooked d) ignored

2. Systems serving more than 3300 persons must certify to _____ that a Vulnerability Assessment has been completed

- a) NC Public Water Supply Section b) Homeland Security
c) USEPA Administrator d) County Health Director

3. Which of the following often causes hydraulic transients in a distribution system?

- a) pump start-up b) valve opening and closing
c) pump failure d) pipe rupture

4. Axial-flow pumps handle high volume but add limited head

- a) True b) False

5. When flushing a fire hydrant to improve water quality, it is recommended to open and close the hydrant quickly to achieve the desired flushing velocity in the water main.

- a) True b) False

Answers:

1. b) Water Transmission and Distribution 4th ed., p. 392 2. c) Water Transmission and Distribution 4th ed., p. 465
3. c) Water Transmission and Distribution 4th ed., p. 129 4. a) Water Transmission and Distribution 4th ed., p. 80
5. b) Water Transmission and Distribution 4th ed., p. 371

MAINTENANCE TECHNOLOGIST QUESTIONS

Questions provided by the NC AWWA-WEA Plant Operations & Maintenance Committee

1. A maintenance technician can safely hoist up a piece of equipment weighing 3,000 lbs using a gantry rated for 2,000 lbs and a chain hoist rated for 1,000 lbs.

- a) True b) False

2. How many millimeters are in 5/16 inches?

3. Which of the following materials is not recommended for use with sodium hypochlorite?

- a) PVC b) CPVC c) Titanium d) Stainless Steel

4. Which of the following is a representation of Ohm's Law?

- a) $Q=AV$ b) $E=IR$ c) $A=LH$ d) $A=4dd$

5. How many CEUs are required each year to maintain a Maintenance Technologist Certification?

- a) 2 b) 4 c) 6 d) 8

Answers:

1. False 2. 7.9375 mm 3. d) 4. b) 5. c)



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2015 AWARD WINNERS

NC AWWA-WEA members work every day to protect the public health and the environment, and our extensive awards program recognizes individuals and organizations at the national, state, and local levels that go above and beyond established standards and expectations. We are proud of these professionals and are fortunate to count them among our members and colleagues.

All 2015 award recipients were listed in the Winter 2016 issue of *NC Currents*, along with the 2015 Annual Conference summary article. To better recognize and appreciate our award winners, they are recognized in more detail in the 2016 Spring and Summer issues of *NC Currents*. Please note that the information listed with each award was current as of November 2015.

Select Society of Sanitary Sludge Shovelers

Recognizes long and faithful service to NC AWWA-WEA.



Jean Creech, Charlotte Water

Jean Creech has been a NC AWWA-WEA member since 2005. She has dedicated herself to the residuals and biosolids business for over 25 years. She is a committee co-chair of the NC AWWA-WEA Resource Recovery & Reuse Committee and previously chaired the Public Education Committee for both NC AWWA-WEA and WEF. She shows devotion to operator professional development by teaching annually at the Biological Wastewater School, Land Application School, and other opportunities through Charlotte Water. She is extremely dedicated to the industry and the environment. She is a teacher and an advocate for protection of the environment.

Betsy Drake, Town of Cary

Betsy Drake has gone above and beyond in her service to NC AWWA-WEA. She has served on the Biological Wastewater Schools Committee and Seminars and Workshops Committee for many years, and is now council chair for the Technical Program Council. Currently, she is also serving on the Career Ladders/Academy Task Force, where she is helping integrate the Academy for Water Professional Development into various technical committee work plans. She was recognized in 2014 for her outstanding service with a Special Recognition Award. Without her hard work and dedication, our organization would not be as successful as we are today.

Greg Morgan, Union County

Greg Morgan has been a very active participant ever since he became involved in the Operations Challenge event, first as an event coordinator and then as the vice chair of the Event Committee. He has helped promote the development of the Operations Challenge and elevate it to its current status in North Carolina. He has represented wastewater operators on the board of trustees since 2014, and taught at Collection & Distribution Schools. He is one of the original task force members involved in the development program for the new Academy for Water Professional Development, and has presented talks on this program at the regional meeting of AWWA section officers.

Peter Schuler, Brown and Caldwell

Peter Schuler has been a member of NC AWWA-WEA since 1999 and has served on the Seminars and Workshops and Wastewater Schools Committees. He has been a highly active member of the Wastewater Schools Committee for several years, and has served on the subcommittee for the Western Biological School, including taking over as the coordinator for the Western Biological School in 2014. He is passionate about sharing his experience and educating others in our industry. He is truly dedicated to the profession. He works with operations staff all over the country, looking for practical ways to improve their operations. He is humble in his work, and very committed.

Brian Tripp, WK Dickson

Brian Tripp is the current AWWA director on the board of trustees and chair of the Annual Conference Program Committee. He is a great volunteer for NC AWWA-WEA, and is always ready to help out wherever he is needed. He has recently been involved with promoting the Academy for Water Professional Development, including presenting with fellow 5-S inductee Greg Morgan at

the AWWA regional meeting of section officers. He is dedicated to improving the water/wastewater profession in general and NC AWWA-WEA specifically, and brings a very thoughtful perspective to whatever he does.

AWWA Meritorious Operator of the Year

Recognition of special performance.



Jeremy Godfrey, City of Asheville

Jeremy Godfrey has been employee with the City of Asheville Water Resources Department for 18 years. He started working for Water Maintenance in 1997 as a pipe fitter, and has gained experience through working in a variety of positions that have brought him to his current position as labor crew coordinator for the leak survey and valve exercising crew. His extensive knowledge has led the department through many tough situations.

Jeremy has taken the valve/leak survey crew to the next level by helping create standard operating procedures for leak surveying that coincide with Asheville's Non-Revenue Water Program. In the first quarter of this year, Jeremy and his crew were responsible for finding and repairing more than 80 leaks in the water distribution system, helping the department reduce its water loss by over 10%.

Jeremy has volunteered for many other activities, including managing 20 scheduled water interruptions required for installation of zone meters for Asheville's Zone Metering Project, and maintaining contact with the residents regarding project status. Jeremy teaches onsite safety training, and assisted in developing a weeklong new employee safety orientation for distribution operators. This training is responsible for a decrease in bodily harm related injuries over the last two years.

Jeremy prioritizes his work to meet the needs of the public and the department, and helps exemplify what a team player and leader should be.

Special Recognition Award

Given to a member(s) of NC AWWA-WEA whose efforts and contribution to NC AWWA-WEA deserve special recognition.



Billy Allen, Charlotte Water

Billy Allen is currently the treatment plant supervisor for Charlotte Water, where he has worked since 1999. He has progressively risen from treatment plant operator through the supervisory ranks. Billy has been heavily involved in developing interest in and support of the Operations Challenge, as a way of motivating enthusiasm for the profession and enhancing the skills of wastewater professionals. Despite a heavy workload, he has also taken on the responsibility of chairing the Wastewater Schools Committee, where he has also been involved for more than a decade. Make no mistake: chairing a schools committee is an enormous undertaking. This year was a particularly challenging one, as heavy, wet snow on the second day of the February

Wastewater School forced NC AWWA-WEA to cancel the school and necessitated re-scheduling and re-doing much of the work. Billy has risen to this challenge, as he does with all challenges, with calm, grace, dedication, and enormously hard work.



Mary Knosby, HDR

Mary Knosby is a graduate of the University of North Carolina-Charlotte. She's been a project manager and engineer for a variety of water and wastewater engineering projects at HDR since 2009. She has been a passionate advocate for students and young professionals throughout her career, seeking out ways to engage them in the profession and in NC AWWA-WEA. Student poster competition, student design competition, Spring Conference, student luncheon at the conference, forums at the Annual Conference – all these have been instigated and shaped by Mary's passion, dedication, and creativity. Mary's gift to the organization has been helping to grow the careers of others.

Kasey Monroe Outstanding Service Award

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



David Saunders, HDR

David Saunders has had a 30-year career of progressive responsibility in the field of public administration and management, but his primary focus has been in public works – solid waste management, water and wastewater engineering, and utility financial management.

David currently serves as the executive director of the Yadkin Pee Dee River Basin Association, guiding that organization through the strategic planning process. He has also been a senior consultant at HDR. Prior to that, he was the utilities director at the City of Winston-Salem.

David was a member of the NC AWWA-WEA board of trustees from 2012 – 2014, contributing strongly to the development of our strategic plan. Since then, he has remained fully engaged in the work of NC AWWA-WEA. His volunteerism is extraordinary; he offers himself for any position where he might be needed and he's willing to serve in any capacity. He's currently a vital member of the Career Ladder Academy Task Force. This year, he's also chaired the Curriculum Development Subcommittee for the Task Force, lending his exceptional knowledge and skills to the development of the first components of the training program NC AWWA-WEA is developing to meet the 21st-century needs of utilities in North Carolina. David has just been elected by the membership to the position of treasurer of NC AWWA-WEA, so we gratefully welcome him back to the board in yet another leadership role.

William D. Hatfield Award

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



Darrell DeWitt, Charlotte Water

Darrell DeWitt has more than 27 years of experience in the wastewater field. His experience includes the operations of a 36-mgd biological nutrient removal facility and several smaller package plants as well as serving as the plant supervisor at the 12-mgd Mallard Creek Water Reclamation Facility with Charlotte Water over the past 10 years. He has managed the plant with an excellent compliance record, receiving both gold and platinum level awards from the National Association of Clean Water Agencies. Darrell was instrumental and a key leader in directing his staff through the first ISO14001 certification for the City of Charlotte.

Darrell has successfully utilized his knowledge and process control strategies to streamline the treatment process and reduce chemical and energy use at the Mallard Creek plant. In February 2014, he co-authored a *Water Environment & Technology* article titled "Finding the Right System Balance," which earned the authors WEF's 2015 Gascoigne Wastewater Treatment Plant Operational Improvement Medal.

In February 2014, the Mallard Creek plant experienced an illegal dumping of PCBs into the collection system and WWTP. Darrell's response to this event was decisive, professional, and successful. Through conferences, workshops, panel presentations, and publications, Darrell informed and educated the industry in the innovative procedures and protocols used to bring his facility back into service and compliance. The response to this event by Darrell and the entire team at Charlotte Water exemplify all aspects of the Hatfield Award.

Arthur Sidney Bedell Award

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



Tyler Highfill, Highfill Infrastructure Engineering

Tyler Highfill, PE, is the founding manager and president of Highfill Infrastructure Engineering and a licensed professional engineer in North and South Carolina. After receiving his master's degree in civil engineering from NC State in 1994, Tyler went on to build his career in the water and wastewater industry. Tyler has earned a great reputation for his professionalism, his ingenuity, and his ability to lead project teams through complex project issues to effective solutions. Tyler's natural leadership skills led him to found Highfill Infrastructure Engineering in 2004. While the company began as a small start-up in Tyler's home office, it has, over the past 11 years, become an industry leader for water and wastewater engineering in the Carolinas. In his 21 years of service as a water infrastructure engineer, he has won numerous awards, including the NC AWWA-WEA Kasey Monroe Outstanding Service Award. He currently chairs the NC AWWA-WEA Career Ladder Task Force. He is also a 5-S member and has served as trustee and WEF delegate on the NC AWWA-WEA board of trustees.

WEF Gascoigne WWTP Operational Improvement Medal

Honors George Bradley Gascoigne and recognizes the author(s) of an article which presents the solution to an important and complicated operational problem within a full-scale, operating WWTP.



(L-R) Darrell DeWitt, Charlotte Water; Jacqueline Jarrell, Charlotte Water; David Wagoner, CDM Smith

The recipients of this award were recognized 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 to 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 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.

National Municipal Stormwater and Green Infrastructure Awards

Developed through cooperative agreement with the U.S. Environmental Protection Agency (EPA), this program recognizes high-performing, regulated Municipal Separate Storm Sewer Systems (MS4s) and inspires them to exceed requirements through innovative and cost-effective approaches.



Phase I Overall High Score: Charlotte Stormwater Services

Charlotte Stormwater Services received the overall highest scores for Phase I in the new MS4s and Green Infrastructure Award. The National Municipal Stormwater and Green Infrastructure Awards program, led by WEF through a cooperative agreement with EPA, was established to recognize high-performing, regulated MS4s and 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 and financially efficient. Recognition of innovative approaches is 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.

WEF Fair Distinguished Engineering Educator Award

Honors Gordon Maskew Fair and recognizes accomplishments in the education and development of future engineers.



Francis de los Reyes, III, NCSU

Dr. de los Reyes received the WEF Fair Distinguished Engineering Educator award. This award "...recognizes accomplishments in the education and development of future engineers.

The award 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." (Award description from www.wef.org.)

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. He 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 at the state, national, and international levels. His work has been recognized 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) and serving as speaker for the laboratory technicians, specialty seminars, and NC AWWA-WEA conferences.

Kenneth J. Miller Water For People Award

Honors an individual for outstanding service to Water For People.



Keller Schnier, CDM Smith

Keller Schnier has been an active member in the Water For People committee for 6 years and has been involved in planning the annual 5k race each of those years, often as both a participant and race planning volunteer. He helped grow the 5k each year and was an integral part of the race planning team that produced net proceeds in excess of \$10,000 in both 2014 and 2015. He has also volunteered at the Water For People golf tournament and currently serves as the secretary of the committee. Being involved with this international humanitarian organization and seeing the difference that can be made through the collective efforts has impassioned him to continue his involvement with Water For People.

Donald E. Francisco Educator of the Year Award

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




John Hodges, City of High Point

John Hodges has worked in wastewater and water treatment operations, maintenance and design since 1972. There is hardly a job he hasn't had. He's worked as a wastewater and water treatment plant superintendent, wastewater plant ORC, wastewater plant manager, laboratory chemist, maintenance superintendent, and engineer.

A member of WEF since 1974, John received the Safe Water Maintenance Technologist of the Year Excellence Award in 2011. He has been a member of the Plant Operations and Maintenance Committee and Curriculum and Awards Subcommittees since 2009, and worked to get the Maintenance Technologist School started by recruiting instructors and serving as school coordinator and classroom monitor.

John has helped train wastewater laboratory technicians in how to run wastewater analyses and instructed GTCC students on wastewater treatment processes. He developed PowerPoint presentations for wastewater instruction and for Drawings Classes at the Maintenance Technologist School.

Teaching is in John's blood. He not only teaches for us, but has also presented papers on solids dewatering, biosolids land application and developing plant O & M manuals at various conferences. 

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2016 Spring Conference: Spring into Operation – Conference Recap

The 15th Annual Spring Conference was held April 17-19, 2016 at the Crowne Plaza in Asheville, NC. The jump across the state from the coast to the mountains was successful and the Spring Conference attracted 278 attendees and 30 exhibitors from across North Carolina.

As the tagline “*Spring Into Operation*” suggests, one of the goals of this conference was to enhance the conference experience for Operation and Maintenance professionals. Many of the presentations in water, wastewater, special topics, and Operations and Maintenance tracks emphasized topics that would be of interest to operations and maintenance personnel.

The Operation and Maintenance track was organized by the Plant Operations & Maintenance Committee, and used a mix of presentations, demonstrations, and hands-on training to cover a variety of topics. During Monday morning’s Opening Session, Forrest Westall, Director of Regulatory Relations, McGill Associates discussed “The Evolution of North Carolina Laws, Regulations and Procedures that Influence every Facet of Water.” The focus of Tuesday afternoon forums was condition assessment and regulatory issues.

The Spring Social on Monday held at the Crowne Plaza was well attended and gave attendees an opportunity to socialize

with colleagues in a fun atmosphere that included ‘mountain music’ by local band Appalachian Turnaround Robinson, appetizers, a cash bar, and a Cornhole tournament.

The 16th Annual Spring Conference will travel back across the state to the coast at the Blockade Runner in Wrightsville Beach, NC on April 2-4, 2017. Please mark your calendars and don’t miss out! If you have a great idea or project you would like to present next spring, watch for the Call For Presentations that should be available this fall.

Thank you to everyone who worked on the 2015 conference planning committee, including the exhibitors and sponsors!

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Welcome New Members!

The following people became members of NC AWWA-WEA in October, November, and December 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)

Michael Adejimi
James Aiken, City of Graham
Kimberly Auvil
Keith Barnes, City of Concord Public Utilities
Robert Bonham, City of Raleigh
Gavin Bostian, City of Jacksonville
Nimasheena Burns, City of Durham
Russell Byrd, City of Clinton
Sahil Chaini, Duke University Library
Darius Chisholm, Union County Public Works
Shawn Coffman, Charlotte Water
Tim Downs, Charlotte Water
David Draughn, Town of Long View
Chad Easter, The Wooten Company
Jason Eudy, City of Concord
Jessie Femmer, Carbonline Company
Brady Glover, Charlotte Water
Amy Hall, Cumberland County
Nathaniel Hampton, Charlotte Water
Gregory Harrison, Charlotte Water
John Hawkins, Lincoln County
Nick Hollabaugh, BLD Services LLC
Jordan Hughes
Ethan Hypes
JG Locklear, CDM Smith
Lucas Magrini, Aeration Industries
Tonya Mann, City of Graham
Jennifer McNabb, Xylem
John Medina
Bill Migirditch, RoviSys
David Mohr, Onslow Water & Sewer Authority
Joshua Reeves, Mulberry-Fairplains Water
Shelby Smith, City of Graham
Randy Sturgill, Sturgill Engineering
Claire Tipton
Matthew Wetherell, Town of Cary
James Whitley, City of Concord
Thomas Worley-Morse, Hazen and Sawyer

Water Environment Federation (WEF)

Christopher Andres, CH2M
Marcus Bullock, Source
Matthew Buswell, Hazen and Sawyer
Max Foster, Premier Water, LLC
Stephen Gardiner
Travis LeFever, PC Construction
Jason Manning
Christopher Morss
Byron Poelman, Town of Clayton
Cherie Shaw, Harnett County Public Utilities
Glenn Thesing, Kruger, Inc.
Zachary Trammel, McKim & Creed
Genevieve Versteeg

NC SLAM

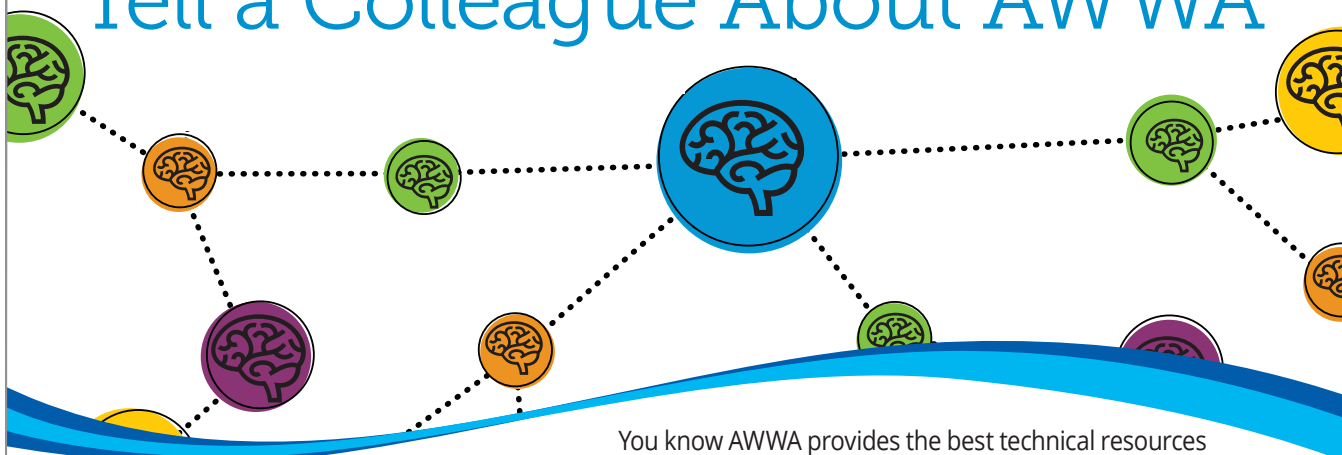
Tim Allred, City of Asheboro
Horace Ames, City of Elizabeth City
Karen Atkinson, City of Sanford
Randy Beamon, Greenville Utilities Commission
Bob Berndt, Retired
Chris Boone, City of Raleigh
Chad Bouffiu, City of Raleigh
Kevin Brickhouse, Town of Chocowinity
Jesse Burgess, Town of Oriental
Jack Burner, Utilities Inc.
Heather Cagle, NCWOA
Pem Carter, Celanese – Shelby Plant
Ganthore Childers, Rocky River Waste Water Treatment
Lisa Cole, City of Sanford
Stephen Corcoran, City of Eden
John Cormier, MSD Buncombe County
Ken Cowper, Gates County Schools
Allen Creed, City of Asheboro
Matthew Dellinger, City of Gastonia
Sarah Douglass, Charlotte Water
Emily Fentress, City of Raleigh
Phillip Fisher
Katie Fornes, HIGHFILL Infrastructure Engineering P.C.
Michael Galin, Black & Veatch
Brenna Garner, City of Raleigh
Justin Glen, Durham County
Colton Gonzalez, City of Asheville

John Gosnell, Metropolitan Sewerage District of Buncombe County
 Jacob Gray, McGill Associates
 Nathan Guyton, ADM
 Devin Hall, Sampson County Public Works
 LaVerne Harding, City of Raleigh
 Dylan Hensley, City of Asheville
 Christie Holt, City of Sanford
 Jacob Holt
 CJ Howell, City of Asheville
 Eugene Hudson, Jr., Charlotte Water
 Donald Hunley, McGill Associates
 Paul Jackson, Interstate Utility Sales, Inc.
 Heath Jenkins, Town of Stanley
 Robert Johnson, City of Winston-Salem
 Ryan Johnson, Charlotte Water
 Jerry Jones, Greenville Utilities
 Tara Jones- Legros, City of Durham
 Terry Jordan, City of Asheboro
 Sheila Kilby, Metropolitan Sewerage District
 Ryan Lambert, City of Raleigh
 Greg Lathrop, Commscope
 Tripp Leggett, City of Washington
 Leo Lima, City of Raleigh
 Zach Mason, Lincoln County Public Works
 Alyssa May, PAX Water Technologies, Inc.

Josh McChesney, Davie County
 Ebony McLean, City of Sanford
 James Meade, City of Raleigh
 David Melton, City of Asheville
 Kara Meyers, CDM Smith
 Lakisha Miller, City of Raleigh
 Dylan Moore, City of Washington
 Shannon Murphy, City of Asheville
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 David Parker, Town of Cary
 Eliza Perdue, City of Sanford
 Bradley Prevetie, Davie County
 HP Pyles, City of Southport
 Joshua Quinn, City of Raleigh
 Mathew Reaves, City of Goldsboro
 Mickey Roberts, Metropolitan Sewerage District
 Barry Stanley, Town of Four Oaks
 Justin Tate, City of Raleigh
 Anthony Tyson, Town of Chocowinity
 Arron Upton, Lincoln County Public Works
 Michael Whittenburg, McGill Associates
 Eric Williams, Town of Valdese
 Lonnie Woolard, Jr., City of Washington 

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News and Notes

NC AWWA-WEA Members Participated in AWWA Fly-in

On April 12-14, 2016, NC AWWA-WEA was represented at the AWWA Fly-In in Washington, DC by Brian Tripp (W.K. Dickson), David Saunders (HDR Inc.), Kenny Waldroup (City of Raleigh), and Steve Drew (City of Greensboro). NC's representatives met with 13 of 15 of our NC legislators and/or their staff to advance AWWA's legislative issues on Capitol Hill, utilizing the broad grassroots power of AWWA. Topics discussed included the following:

- Cybersecurity
- Support assistance / pass legislation providing assistance to Flint and other communities wrestling with lead or other urgent public health challenges
- Support full authorization funding for the Water Infrastructure Finance and Innovation Act (WIFIA)
- Support freeing WIFIA to more fully realize its potential by removing the cap on WIFIA support of a project
- Support at least \$1.3 billion in funding for the drinking water and \$1.3 billion for the wastewater state revolving loan fund programs.
- Remove the annual volume caps for private activity bonds for water infrastructure projects.

Willingness to Serve

The Nominating Committee is looking for members with a good knowledge of NC AWWA-WEA, commitment to the water/wastewater industry, strong leadership skills, and a desire to serve on the 2016-2017 NC AWWA-WEA board of trustees. To nominate yourself or someone else, complete the 2016-2017 Willingness to Serve form, available

at www.ncsafewater.org, and return it to Nominating Committee Chair Mike Osborne by **July 31, 2016**.

To learn more about NC AWWA-WEA's nomination and election process, as well as the roles and responsibilities of board of trustee's members, refer to the following documents which are all available at www.ncsafewater.org: Bylaws Provisions for Elections, Nominating Criteria, and Board of Trustees Job Descriptions.

Members Update Profile for 2016 Directory

NC AWWA-WEA's next Membership Directory & Buyers Guide will be available in January 2017 as a part of the Winter 2017 issue of *NC Currents*. So that we can print the most accurate information for all of our members we are asking you to verify and update your contact information by **October 1**.

The easiest way to view and update the information we have for you is to login to your NC AWWA-WAE profile at www.ncsafewater.org and 1. Review your profile to make sure your information is correct, and 2. Respond to the "Information to include in Annual Printed Member Directory" field available in your profile under the Professional Information heading. Your response in this field will determine what information we print for distribution to other NC AWWA-WEA members. The default is to include your name, employer, professional address, email address, and professional phone number.

If you have forgotten your user name or password, use the "Forgot your password" option to look them up using your email address. If you are unable to login, contact the NC AWWA-WEA office at (919) 784-9030.

Fifth Annual Photo Contest

Get your cameras ready! The NC AWWA-WEA Communication Committee is hosting its annual photo contest again this year! Photos submitted will be used in our publications, on our website, and in our emails.

The Communication Committee will judge photos based on four categories: Our Members at Work; Environment; Structures; and Critters Around Us. **NEW THIS YEAR!** The top entries in each category will be posted online, and NC AWWA-WEA members will be able to vote and select one photo to receive a Members Choice Award. Winning photos/photographers in each category will receive a \$50 gift card and will be recognized at the Annual Conference.

Each submittal must be accompanied by a completed NC AWWA-WEA Entry/Photo Release Form, which also contains additional contest details. Please ensure photos represent activities compliant with safety and environmental regulations. Photos and entry/release form must be received by **September 1, 2016** to be considered for the competition.

High Point City Lake Dam Designated as an AWWA American Water Landmark

High Point City Lake Dam in Jamestown, North Carolina has been affirmed as an American Water Landmark following favorable review of the nomination by the AWWA Water Landmarks Award Committee. The award will be recognized at AWWA's 2016 Annual Conference & Exposition in June, and on www.awwa.org.

From www.awwa.org, *American/Canadian/Mexican Water Landmarks Award*:

Purpose of the Award: To recognize and preserve an American, Canadian, or

Mexican Water landmark at least 50 years old that has had a direct and significant relationship with water supply, treatment, distribution, or technological development.

Eligibility for Award:

- An American, Canadian, or Mexican Water landmark must be a tangible, physical property that has or has had a direct and significant relationship with water's supply, treatment, distribution, or technological development. It should be of a permanent and nonexpendable nature, such as a building, dam, reservoir, tower, etc., and not machinery or a natural water resource.
- A water landmark must be at least 50 years old and be recognized within its own community or region as a popular, valued, or historically significant property. (Evidence of this recognition must be provided.)
- It must be apparent that the landmark candidate has been and will continue to be maintained in a manner appropriate to the status of an American, Canadian, or Mexican Water Landmark. (A clear, current, original photo of the candidate should be provided to demonstrate its condition.) The landmark may be utilized in a manner other than its original purpose.

Partnership for Safe Water 2016 Winners

The Partnership is an unprecedented alliance of six prestigious drinking water organizations. The Partnership's mission is to improve the quality of water delivered to customers by optimizing water system operations. The Partnership offers self-assessment and optimization programs so that operators, managers, and administrators have the tools to improve performance above and beyond even proposed regulatory levels. Learn more at www.awwa.org/resources-tools/water-and-wastewater-utility-management/partnership-for-safe-water.aspx.

Congratulations to the following North Carolina utilities for their accomplishments in 2015!

5-Year Excellence in Water Treatment Award

- Orange Water and Sewer Authority – Jones Ferry Road Water Treatment Plant

Directors Award

- Charlotte Water – Vest Water Treatment Plant

15-Year Directors Award

- Fayetteville Public Works Commission – Glenville Lake Water Treatment Facility
- Fayetteville Public Works Commission – P.O. Hoffer Water Treatment Facility

AWWA announced the accomplishments of award-winning utilities at ACE16, at the Partnership's annual award luncheon on Monday, June 20, 2016.

Congratulations to AWWA Scholarship Recipients from NC

Three students from NC AWWA-WEA have received 2016 AWWA Scholarships. The scholarship recipients were recognized at the AWWA Annual Conference & Exposition at the Water Industry Luncheon on June 21.

Holly A. Cornell Scholarship
Katherine Connolly, University of North Carolina at Chapel Hill

ARCADIS Scholarship
Mikayla Artmstrong, University of North Carolina at Chapel Hill

Dave Caldwell Scholarship
Alma Beciragic, University of North Carolina at Chapel Hill [NC](#)

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2016 Schedule of Events

The following schedule is current as of June 6, 2016. For updates or more information, please contact the organization listed with each event. If a listed event does not reference a specific organization, the item listed is a NC AWWA-WEA event.

For further details concerning all NC AWWA-WEA events, visit the NC AWWA-WEA website at www.ncsafewater.org or contact the NC AWWA-WEA office directly at (919) 784-9030.

July	
11	NC Currents Fall issue submission deadline
11-12	Academy classes at the Western Collection & Distribution School Morganton, NC
11-15	Western Collection/Distribution School Morganton, NC
14	GROW Wilmington, NC
15	NC AWWA-WEA Board of Trustees Meeting Wilmington
28	Drinking Water Rules & Regulations Seminar Raleigh, NC
31	Deadline to submit Willingness to Serve nominations for the 2016-2017 Board of Trustees
August	
1-3	Advanced Management & Supervisory Leadership Training Program Greensboro, NC
2-3	Raleigh Institute Raleigh, NC
14	Deadline to submit nominations for Wastewater Collection System and Water Distribution Systems Awards
18	RCAP/EPA Workshop Small System Operator Training: Achieve and Maintain Compliance with SDWA Greensboro, NC
25	NCWTFOCB Exams <i>(application deadline 30 days prior)</i> Kinston, Morganton, and Raleigh NCWTFOCB 919-707-9040
30	Emerging Issues in Emergency Preparedness, Safety, and Risk Management Greensboro, NC
September	
8	NCWPCSOCC Exams Kenansville, Morganton, Raleigh, Salisbury, & Williamston, NC NCWPCSOCC 919-807-6353
12-16	Eastern Collection/Distribution School Durham, NC
15	GROW Charlotte, NC
15	NC AWWA-WEA Board of Trustees Meeting Charlotte, NC
24-28	WEFTEC New Orleans, LA WEF 800-666-0206
26-28	Utility Management Institute Raleigh Chuck Christensen
October	
1	Applications due to participate in the NC AWWA-WEA Leadership Development program
3	NC Currents Winter issue submission deadline
18	Wastewater Laboratory Analyst Exams Wilson, NC
27	NCWTFOCB Exams <i>(application deadline 30 days prior)</i> Kinston, Morganton, and Raleigh, NC NCWTFOCB 919-707-9040
November	
13-16	NC AWWA-WEA Annual Conference Raleigh, NC
December	
8	NCWPCSOCC Exams Kenansville, Morganton, Raleigh, Salisbury, & Williamston, NC NCWPCSOCC 919-807-6353





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NC Currents Future Themes & Submission Deadlines

NC Currents is the official publication of NC AWWA-WEA. Members, individuals, and committees are encouraged to submit content for the magazine. If you would like to submit an article to be considered for publication in NC Currents please complete the Submission Form & Publication Agreement (available at www.ncsafewater.org) 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.

FALL 2016	Risk and Resilience Management of Water and Wastewater Systems (Submission Deadline July 11, 2016)
<p>In 2006, Risk Analysis and Management for Critical Asset Protection (RAMCAP) was designated as the key critical infrastructure protection methodology. The non-mandatory standard, J100 (described in this summary), evolved from RAMCAP and was approved in 2010 by the American Society of Mechanical Engineers Innovative Technologies Institute (ASME-ITI) and AWWA.</p> <p>The purpose of the J100 standard was to:</p> <ul style="list-style-type: none">• Guide analysis of risk and resilience of water and wastewater systems.• Direct the design and evaluation of options to reduce risk and enhance resilience.• Support resource allocation decisions to risk-reduction and resilience-enhancement options.• Implement the RAMCAP in the water sector.• Ultimately, reduce risk and enhance resilience of water and wastewater utilities. <p>Since then, many municipalities have been proactive in areas such as planning for long-term water supply reliability, condition assessments, maintenance enhancement programs, and risk analysis of existing infrastructures and pipelines.</p> <p>Articles that can be beneficial to this particular issue will feature the overall details and processes of the different type assessments and programs that relate to risk and resilience management, including the J100 RAMCAP Method. For example, this method contains the following seven steps:</p> <ul style="list-style-type: none">• Asset Characterization• Threat Characterization• Consequence Analysis• Vulnerability Analysis• Threat Likelihood Analysis• Risk/Resilience Likelihood• Risk/Resilience Management <p>In summary, the risk and resilience management methodology has provided guidance for evaluating and defining countermeasures and consequence-mitigation strategies based on benefits and costs. In addition, it has also made many municipal utilities stop and think of multiple proactive measures needed to enhance longevity of their systems and infrastructure.</p> <p>Theme Leaders: Tom Bach, Lori Brogden, Sherri Moore</p>	
WINTER 2016	Funding the Value of Water (Submission Deadline October 3, 2016)
<p>Paying for water and wastewater infrastructure continues to be a challenge for the industry. This issue will explore the importance of adequate funding and solutions for providing crucial water and wastewater service to customers.</p> <p>Theme Leaders: Steve Hilderhoff, Mike Shelton, Marie Sugar</p>	

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