

NC Currents

THE OFFICIAL PUBLICATION OF

NC AWWA-WEA
www.ncsafewater.org
Dedicated to Safe Water

SPRING 2013



PROSPERITY

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A Prosperous Association 2013 and Beyond

Jacqueline A. Jarrell, P.E., Supt. - Charlotte Mecklenburg Utilities Department

It is hard to believe that spring is already approaching, with warmer weather and a sense of new beginnings. Our Association is on the move and, in the first three months, there is already a flurry of activity going on throughout.

This *NC Currents* theme is Prosperity – Past, Present and Future. The articles in this issue focus on the financial aspects of prosperity, discussing the tools and approaches to maintaining financially successful utilities. No doubt that our industry has greatly experienced the difficult economic times in all sectors, from municipalities to private firms and companies to our educational institutions. There are significant challenges for managing water resources and providing quality services to our customers at a reasonable rate or,

shall I say, what is perceived to be a reasonable rate for water and sewer service.

The value of water and how that is defined, is very different depending on who you talk to or one's perspective. Unfortunately, I believe this is taken for granted by the public because we are fortunate to have water at the tap every day (at least for most of us in the United States). However, as you and I know, there is a cost to providing and maintaining high-quality drinking water and sanitation. Yet we must keep these services affordable for all people. The age-old question is how we balance affordability with the true cost in order to maintain successful, prosperous utilities.

As an Association we have the opportunity to provide public education and awareness programs to support our

members in their efforts to educate their customers about the value of water and the cost of service. The Public Education Committee and our Association have joined with the NC Waterworks Operators Association and the NC Rural Water Association to develop a joint public service video message that will be utilized to help educate the public. We have all agreed to continue our dialogue to further collaborate on common goals. The Public Education Committee is also working to support the development of education to our future customers and future colleagues by supporting activities such as judging science fairs and the Stockholm Jr. Water Prize. It is so important that we support these types of activities and engage more people in them.

The advertisement features a blue and white color scheme. On the left, there is a photograph of a large industrial building. Below it are logos for 'GOULDS WATER TECHNOLOGY a xylem brand' and 'GORMAN RUPP PUMPS'. In the center, a list of product brands is provided: GOULDS WATER TECHNOLOGY, FLOWTRONEX, GORMAN RUPP, HEALY-RUFF, PUMPSMART, RACO, SPENCER, THERMO SCIENTIFIC, TUTHILL BLOWERS, and WEMCO PUMPS. To the right of this list is a large blue arrow pointing right, containing the word 'TENCARVA' in a stylized font, with 'MUNICIPAL' written below it. Further right, a list of product types is shown: Self-Priming & Submersible, Packaged Lift Stations, Portable Pumps, Sewage, Effluent, & Grinder Packaged Stations, and Vertical Turbines. At the bottom right, a call to action reads 'Call your local Tencarva location Today!'. The top right corner of the ad displays the website 'www.tencarva.com'. The bottom of the ad contains contact information for three regional offices: Barry Harms (West NC), Tom Hegarty (Central NC), and Tim Tilley (East NC).

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Message from the Chair

Through networking and training, we offer opportunities for you as a member to learn more about the industry you work in. You never know when a neighbor or another parent at your child's soccer game is going to ask you a question about water quality, water bills or even about what you do as a water professional. A year ago, I was on a ski lift in Jackson Hole, Wyoming, conversing with a woman from Atlanta. When she learned what I did for a living, she began to talk to me about her water bill problems she was experiencing and asking for advice. Be prepared. Come to training and network with your fellow water professionals.

Our Spring Conference, April 14-16 in Wilmington, NC, is a great networking and training opportunity. This conference provides a good venue for presenting operations and maintenance professionals with perspectives on various topics in the water industry. If you missed it this year, you will

definitely want to attend in the future.

The Water Matters! The American Waterworks Association (AWWA) Fly-in will take place April 16 and 17. As it has been for the last couple of years, it will be a joint event with the Water Environment Federation (WEF). This is an opportunity for AWWA and WEF members from around the country to meet with their elected officials in Washington, DC and discuss water-related issues. We will send delegates to this event to represent North Carolina and to visit our NC congressional leaders.

The Regulatory Affairs Committee is also communicating with committee members and educating them on current regulatory and governmental affairs. Stay tuned to eNews emails and committee reports included in *NC Currents*.

Lastly, I want to update you on the strategic planning efforts our Association is undertaking. Your Board of Trustees has worked hard in the last few months

to develop a streamlined and focused strategic plan that we hope will help us to be a prosperous Association. One thing that we are learning is that in order for us to be sustainable and to continue to grow, we have to focus on what we do best: training and education. We want to be the preferred choice for professional development and continuing educating for the water industry in NC.

We have identified goals that we believe align with our mission and vision, along with objectives and strategies to achieve those goals. Our next step is to share the strategic plan with our Association leadership to guide work plans for committees as we move toward the next year. I will share the complete plan with you in the summer edition of *NC Currents*.

If you are not an active member, we need you. Consider getting involved and learning more about the industry you work in or teaching others what you know. [✉](#)



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Leadership is the Essential Ingredient for Prosperity

Lindsay Roberts, Executive Director

As the acorn descended in Raleigh, marking the start of 2013, our leaders in Washington were still locked in a ferocious duel at the edge of the fiscal cliff. Unfortunately, they were nowhere near an accord about what are the exact ingredients for a healthy economic future for our nation – more revenue or less expenditure, or some undefined combination of the two. Of course, around the globe, the same dialogue plays out in Ireland, Spain, Portugal, Greece... What seems to be missing everywhere is leadership and the courage to make difficult choices.

Non-profit associations are, in some ways, like tiny nation-states. A non-profit raises revenue in the form of membership dues ('taxes') and in the form of fees for the services it renders. Just like any government, the Board of Trustees of every non-

profit faces the task of balancing the budget each year, by increasing the dues and fees, by limiting the services the organization offers, or by some combination thereof. The real distinction, of course, is that non-profits have no ready method for deficit spending – no bonds that can be sold and no treasury where we can print money. If the income does not equal the outflow, we can really only borrow from ourselves in the form of reserve-fund expenditures, and without them, we must raise dues or cut services.

With a 92-year history behind us, NC AWWA-WEA can point with justifiable pride to the thoughtful governance of its Boards of Trustees. Over our history, dues have been kept at a minimal level – currently just \$40 per year (less than one month's basic cable TV service!). An impressive array of educational services has been developed, with costs for these also kept low. To accomplish

this, NC AWWA-WEA's Boards have, over the years, deliberately created a structure for service delivery that relies heavily on volunteers and minimally on paid staff. They have set aside a reserve fund – and created a reserve fund policy – that has allowed the Association to self-insure for many risks, and provide resources that can be used to develop new services, as required.

A good history is a good thing, but good past leadership cannot shield today's decision-makers from the need to continue making tough choices. The good news is that we continue to be blessed with good leadership, and we are not resting on our laurels.

Aware that the economic platform on which national, state, local and even non-profit finances have been constructed is changing inexorably, the leadership at NC AWWA-WEA has embarked on a

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deliberative process to ensure that we continue to plan and prepare for a sound future.

Long-range visioning and planning are critical to the process of building a mission-based future that is rooted in strong financial decisions. The Board has held two daylong workshops, and has embarked on the development of a new strategic plan. With the chair of the Strategic Planning Committee Steve Drew providing focus, the Board will continue now with the process of refining goals and objectives and developing strategies to accomplish those goals. What will not be changing is the core vision: "NC Safewater: THE leading educational resource for safe water in North Carolina." Or its mission: "NC Safewater is dedicated to providing water education, training and leadership to protect public health and the environment."

Although members of the Board of Trustees have much work still to do, and without any intent to limit or second guess their work, it seems extremely likely to me that goals will include a focus on member-

ship growth, particularly the outreach to young professionals and operators, and continued meaningful involvement of volunteers in the development of our peer-to-peer educational offerings. It is also probable that technology will have a greater role to play in all that the Association does, especially in the delivery of on-demand learning. High-quality learning at the best possible price will certainly remain a key goal.

Developing and refining a business model that ties to the strategic plan is another important piece of work ahead of the Board this year. This is where the real challenge lies – balancing the needs and desires of the membership and the profession against the available financial, volunteer and staff resources. That involves a delicate balancing act of sorting out priorities while maintaining an unwavering focus on mission, and using a scalpel to make necessary cuts to create capacity for growth without causing damage to the healthy program growth we have produced in these 92 years.

With water and sewer infrastructure an integral part of economic viability for every state and the nation, and with WEF and AWWA advocating strongly for investment in renewal and replacement in that infrastructure, delivery of educational resources for those who build, operate, and maintain that infrastructure is essential.

What is the key to prosperity – past, present and future? Personally, I believe that what makes the real difference is courageous and consistent leadership. Anyone can stare into the alphabet-soup of a typical strategic planning process and come away with glazed eyes. It takes a lot of courage to dig deeper, engage in hard discussion and make tough choices. With a void of leadership in so many governmental entities right now, the strength of purpose and commitment of the NC AWWA-WEA Board is a bright light indeed – and the ability to grow leaders in the water industry is just another of the gifts that this Association offers its members.

Thanks for your courage and commitment. 



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Training Report

Catrice Jones, Educational Events Manager

As we take a look back, we would like to thank the countless number of volunteers that made 2012 a productive year. Throughout the year, our dedicated volunteers spent numerous hours devoting time towards developing/planning agendas, contacting speakers, performing onsite coordination

and presenting information at various seminars, schools, and conferences.

Their dedication saw no bounds as they faced the challenge of delving into online learning. Our eLearning Taskforce collaborated with two committees to successfully present two webinars. They continue to work feverishly to produce more webinars

in 2013 and to expand future online course offerings.

As 2013 gets underway, our committees are hard at work planning even better training opportunities for water professionals. Be sure to visit www.ncsafewater.org for the most up-to-date information or call the office at 919-784-9030. [NC](#)

DATE	EVENT	LOCATION	# ATTENDED	COMMITTEE
March 6, 2012	Water Reuse: Drivers and Impediments Seminar	Elon University – Elon, NC	88	Water Reuse**
March 12-16, 2012	Eastern Collection/Distribution School	NCSU McKimmon Center – Raleigh, NC	598	Collection/Distribution Schools Committee
March 21, 2012	Legislative and Regulatory Topics Relating to Water/Wastewater – What's on the Horizon	Neuse River WWTP – Raleigh, NC	40	Regulatory Affairs**
April 15-17, 2012	NC AWWA-WEA Spring Conference	Wilmington Convention Center – Wilmington, NC	449	Spring Conference
April 30-May 4, 2012	Eastern Biological Wastewater Operators School	NCSU McKimmon Center – Raleigh, NC	175	Wastewater Schools Committee
May 1-4, 2012	Physical/Chemical Wastewater School	NCSU McKimmon Center – Raleigh, NC	77	Wastewater Schools Committee
May 9, 2012	Rate Setting 101	Fayetteville PWC – Fayetteville, NC	35	Finance & Management Committee**
June 7, 2012	It's Good to be Green: Project Funding and Sustainability in a Down Economy Seminar	DE Benton Plant – Raleigh, NC	44	Seminars & Workshops
July 16-20, 2012	Western Biological Wastewater Operators School	WPCC-Foothills Higher Education Center – Morganton, NC	134	Wastewater Schools Committee
July 16-19, 2012	Western Maintenance Technologist School & Exam – Grades 1, 2, & 3	WPCC-Foothills Higher Education Center – Morganton, NC	69	Plant Operations & Maintenance Committee
July 24, 2012	Drinking Water Rules & Regulations	NCSU McKimmon Center – Raleigh, NC	94	Seminars & Workshops
August 6-10, 2012	Western Collection/Distribution School	WPCC-Foothills Higher Education Center – Morganton, NC	480	Collection/Distribution Schools Committee
August 9, 2012	WEBINAR: An Introduction to NC Water WARN	WEBINAR	17	Risk Management Committee / e-Learning Taskforce
August 15, 2012	Understanding Your SCADA System	Fayetteville PWC – Fayetteville, NC	48	Automation Committee**
September 11, 2012	Advanced Topics in Wastewater	Davidson County Community College – Lexington, NC	48	Wastewater Schools Committee**
September 17-20, 2012	Maintenance Technologist School Grades 1, 2, & 3	Neuse WWTP – Raleigh, NC	101	Plant Operations & Maintenance Committee
September 27, 2012	Collection System Management	Greensboro Coliseum – Greensboro, NC	27	WW Collection & Water Distribution Committee**
October 10, 2012	WARN & Other Emerging Issues in Risk Management	Greensboro, NC	76	Risk Management Committee**
October 15-19, 2012	NC AWWA-WEA Coastal Collection / Distribution School	Carteret Community College – Morehead City	392	Collection/Distribution Schools Committee
November 6, 2012	WEBINAR: Utility Billing and Collections Webinar	WEBINAR	30	Finance and Management Committee / e-Learning Taskforce
November 11-14, 2012	NC AWWA-WEA Annual Conference	Raleigh Convention Center – Raleigh, NC	1,272	Annual Conference Coordinating Council
December 4, 2012	Contemporary Topics in Water/Wastewater Construction	Lee S. Dukes – Huntersville, NC	60	Seminars & Workshops
December 5, 2012	Pipeline	Lee S. Dukes – Huntersville, NC	57	Seminars & Workshops

** Indicates Seminars & Workshops Committee also participated in planning

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Summary of the NC AWWA-WEA Board of Trustees Meeting

The most current meeting minutes are available on the Board of Trustees page of www.ncsafewater.org

September 20, 2012

The NC AWWA-WEA Board of Trustees met on September 20, in Raleigh, NC. The meeting was chaired by John McLaughlin.

The following actions were taken during this meeting:

1. Authorized the purchase of a travel voucher in the amount of \$1000 from the proceeds of raffle for the Aruba timeshare donated by George Raffetis, for the purpose of raising funds for the Endowment Fund.
2. Approve revisions to the *Webinar Policy* and authorized contracts with Intralearn and Fusion for an aggregate total of \$40,000 through FY 2013.
3. Approved the recommendations of the Wastewater Board of Education and Examiners (WWBOEE) for reappointment of Ken Vogt; Daniel Gerald; David Wagoner; Bob Griffin and Troy Perkins, and appointment of David Wagoner as chair; John Gibson as vice chair; Jeff Mahagan as secretary; Bob Griffin as WPCSOCC liaison and Ken Vogt as past.
4. Received a report that the Water Resources Committee (WRC) and Government Affairs Committee (GAC) had jointly met with Representative Gillespie and NC Chamber representatives. It is the intent that the WRC and GAC will jointly serve as an expert resource.
5. Approved the addition of a new Water Distribution Award of the Year, to be available starting in 2013, in four categories, large, medium, small and micro. This award is the companion to the Wastewater Collection Award of the Year.
6. Ratified an electronic vote of the Board, approving a Memorandum of Agreement with Kentucky/Tennessee Section American Water Works Association (AWWA) for use of the Customer Service Representative Training Program owned by NC AWWA-WEA.
7. Ratified an electronic vote, approving language proposed by the Constitution and Bylaw Committee, establishing that the Nominating Committee chair is to be past-past chair of the Association; reducing the Nominating Committee to six members with the Nominating Committee chair to vote only in the event of a tie vote. This language will be placed before the membership for approval at the same time as the slate of candidates for the 2013 Board is voted upon.
8. Ratified an electronic vote of the Board, approving an Op Ed Article developed at the request of the Water Environment Federation (WEF) for publication in newspapers in North Carolina in the week of September 10 – 15, 2012, regarding the importance

Summary of the NC AWWA-WEA Board of Trustees Meeting

of infrastructure funding for water/wastewater, and the relationship of such funding to job creation. The article was published in Asheville.

9. Approved the submittal of Les Hall as a nominee for the AWWA Award of Excellence.
10. Approved the Minutes of the Board meeting of July 20, 2012.
11. Accepted the treasurer's report for July and August, reflecting total assets as of August 31, 2012 of \$1,013,471.90 with \$987,010.35 in checking/savings, of which \$185,935.32 is endowment funds, \$3,498 are temporarily restricted funds in the Outreach Account, and \$96.80 is temporarily restricted funds in the Water For People (WFP) Paypal Account. The balance of unrestricted net assets (Checking minus WFP Paypal, Outreach and Endowment) is \$797,478.23.
12. Accepted the committee reports submitted to and compiled by Secretary Crystal Broadbent.

13. Accepted Executive Director Roberts' report, including the membership report compiled by Nicole Banks, which provides demographic information on NC Section members.
14. Approved the continuation of support to the Management Institute Program including issuance of certificates in the name of NC AWWA-WEA, subject to a fee for service.
15. Received a report on the budget for FY 2013 from Treasurer Chris Belk, reflecting income of \$1,208,161 and expenses of \$1,186,447 and a positive net of \$21,714 as a result of the changes made by the Executive Committee.
16. The Board made no changes to the proposed budget, which will be subject to final approval at the November Board meeting.
17. Received a report from the Sustainable, Outstanding, Nimble, Anticipatory, Responsive (SONAR) Committee, which has made a decision not to pursue development of technology dependent

metrics for reporting, focusing instead on a single form that includes progress on objectives tied to Mission and Strategic Plan elements and developing and maintaining a legacy statement for each committee.

Remaining meetings of the Board of Trustees in 2012 are as follows:

- November 11 and 14, at the Marriott City Center, 500 Fayetteville Street, Raleigh.

November 11, 2012

The NC AWWA-WEA Board of Trustees met on November 11, in Raleigh, NC. The meeting was chaired by John McLaughlin.

The following actions were taken during this meeting:

1. Approved the minutes of the Board meeting of September 20, 2012.
2. Accepted the treasurer's report for September and October, reflecting total assets as of October 31, 2012 of \$1,077,698 with \$1,051,237 in checking/savings, of which \$196,785

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Summary of the NC AWWA-WEA Board of Trustees Meeting

is endowment funds, \$3,498 are temporarily restricted funds in the Outreach Account, and \$96.80 is temporarily restricted funds in the Water For People (WFP) Paypal Account. The balance of unrestricted net assets (Checking minus WFP Paypal, Outreach and Endowment) is \$850,856.

3. Accepted the committee reports submitted to and compiled by Secretary Crystal Broadbent.
4. Received a report from WEF Treasurer Rick Warner, which included information that the WEF has revised its strategic plan.
5. Received a report from AWWA Director Rosemary Smud and also from Christopher McGinness, AWWA Senior Section Representative, which included information on upcoming AWWA events for 2013, and noted that AWWA will be updating its strategic plan in 2013.
6. Accepted Chair McLaughlin's report of the highlights of 2012, which included progress for the Joint Public Education Committee, in partnership with North Carolina Waterworks Operators Association (NCWOA) and North Carolina Rural Water Association (NCRWA); the evolving council structure; progress with e-Learning; a new Risk Management Committee that has grown out of a combination of the Disaster Preparedness and Safety Committees and a reinvigorated spring conference.
7. Accepted Executive Director Roberts' report, and approved transfer to PNC Bank of the certificates of deposit (CDs) at Regions Bank, which have now matured.
8. Amended the budget for financial year (FY) 2013, adding \$2,500 to the endowment to cover the cost of a grant research contract and approved sale of the backflow trailer and purchase of a smaller trailer with a 'not-to-exceed' amount of \$8,700 allocated for the purchase of a new trailer, in addition to the amount received for the sale of the old trailer.
9. Adopted the revised budget for FY 2013 with income projected at \$1,208,161 and expenses projected at

\$1,197,647, with a net of \$10,514 to be transferred to reserves, to offset the projected \$32,500 cost of e-Learning and bar code scanning equipment, for a reserve projection of \$617,199.

10. Received an award of \$1,500 from WEF in recognition for the second place finish of the North Carolina State University (NCSU) Student Design Team. WEF has advised that the funds are for the Member Association (MA), not individual student participants of the team. The Board approved allocation of \$750 of the \$1,500 for the NCSU Chapter account and \$750 to be retained toward the cost of travel for a future Student Design Team participating in the WEF Student Design Competition.
11. Approved the recommendation of the Endowment Committee for eight scholarship awards in 2013: two \$1000 Carol Bond awards to university students; two \$500 Carol Bond awards to community college applicants; and one \$400 award to teachers in the K-12 range with funds to come from Carol Bond and NC Safewater endowments; \$1,000 award to be made from the George and Eva Raftelis Elementary Education Fund; \$1,000 to be made from the Les and Elaine Hall Fund, with the difference between revenue from the fund and the award amount to be in the form of a cash donation from Les and Elaine Hall; \$1,000 to be made from the Frank Stephenson fund, with the difference between revenue from the fund and the award amount to be in the form of a cash donation from Frank Stephenson.
12. Directed the Endowment Committee to consider fewer awards of larger amounts in the future.
13. Authorized the Collection and Distribution Schools Committee to sell the backflow trailer and purchase a smaller trailer for the combined total of the revenue from the sale of the large trailer and a cash amount not to exceed \$8,700.
14. Established Board meeting dates for 2013: January 17; March 7; May 9; July 19; September 19; November 10

and November 13.

15. Agreed that receipt in the Board agenda packet of committee meeting minutes would be a satisfactory substitute for reports formerly required from committees.
16. Thanked Robert Walters for his exceptional service as AWWA Director and 12 years service on the NC AWWA-WEA Board, including service as chair in 2004.

November 14, 2012

The NC AWWA-WEA Board of Trustees met on November 14, in Raleigh, NC. The meeting was chaired by Jackie Jarrell.

The following actions were taken during this meeting:

1. Received appreciation and a report from WEF Treasurer Rick Warner, which included a commendation of NC AWWA-WEA for its collaboration and integration of the AWWA Section and WEF Member Association (MA) and the great programs and activities NC AWWA-WEA offers.
2. Received appreciation and a report from AWWA Director Rosemary Smud, including a commendation for the level of student participation and information regarding introduction of the Water Infrastructure Financing Innovations Authority (WIFIA) Bill in Congress on November 13, 2012.
3. Received a report from Christopher McGinness, AWWA Senior Section Representative, on behalf of AWWA Executive Director David LaFrance, who has expressed his appreciation for the hospitality from NC AWWA-WEA, and commending the depth and breadth of work that NC AWWA-WEA is doing.
4. Accepted Chair Jarrell's assignment of David Saunders as liaison to the External Affairs Council, chaired by Tyler Highfill; Leslie Jones as liaison to the Technical and Education Council, chaired by Jon Lapsley; Paul Jackson as liaison to the Conference Council, chaired by Mary Knosby; and TJ Lynch as liaison to the Schools Council, chaired by John Kiviniemi.
5. Accepted Chair Jarrell's report, noting that Outreach and Small Community

Summary of the NC AWWA-WEA Board of Trustees Meeting

Committees have been eliminated, and the Water Resources and Government Affairs Committees combined into a single Regulatory Affairs Committee; also noting that Awards will be a committee chaired by Adrienne Coombes, handling all awards, State and National, and will fall under the Conference Council.

6. Accepted Executive Director Roberts' report, including confirmation of Board meeting dates, and locations; new Board contact list; NC Currents topics and deadlines for the 2013 year; and audit preparations.
7. Received Executive Director Roberts' report on the conference. Attendance was about 100 less than in 2009, when the conference was last held in Raleigh. Veterans Day impacted attendance, falling on the Monday of the 2012 Conference, and is expected to impact the conferences of 2013 and 2014 as well. The Board discussed methods to increase attendance in the Exhibit Hall; elimination of separate receptions on Monday evening of the conference; and requests received to consider alternating spring conference location between Asheville and Wilmington.
8. Held discussion on four governance items:
 - a. Adopted budget for FY 2013 with income projected at \$1,208,161 and expenses projected at \$1,197,647, with a net of \$10,514 to be transferred to reserves, to offset the projected \$32,500 cost of e-Learning and bar code scanning equipment, for a reserve projection of \$617,199.
 - b. Delay in further SONAR activities to develop a measurement tool under the Board has completed a new strategic plan.
 - c. Review of e-learning development activities.
 - d. Review of plans for Strategic Planning Workshop on December 6, to be facilitated by Leigh Wintz, and with Steve Drew to serve as facilitator for further steps in the Board's strategic plan activities.
9. Approved the 2012-2013 Board Conflict of Interest Statement.
10. Approved the 2012-2013 Banking

Resolution, establishing signatories for bank accounts for the 2012-2013 year as Jackie Jarrell, Chair; Mike Osborne, Chair-Elect; Julie Hellmann, Treasurer; Crystal Broadbent, Secretary; and Lindsay Roberts, Executive Director. Bank signature cards were signed and notarized.

11. Approved the committee chair assignments made by Chair Jarrell for all committees for 2012-2013.

12. Received information that Lindsay Roberts had prepared a nomination of the NC AWWA-WEA Maintenance Technology Program for the Association of Boards of Certification (ABC) Program of the Year Award, and that ABC has selected it as the winner.
13. Approved Mark Wessel as the representative from NC AWWA-WEA to receive the award at ABC's conference in San Diego. [AC](#)

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NC AWWA-WEA Committee Chairs

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

Board of Trustees Committees

SONAR	Julie Hellman	Hach Company	(704) 619-2458	jhellman@hach.com
Nominating/Canvass	John Kiviniemi	OWASA	(919) 537-4352	jkiviniemi@owasa.org
Strategic Planning	Steve Drew	City of Greensboro	(336) 373-2055	steve.drew@greensboro-nc.gov

Conference Coordinating Council

COUNCIL CHAIR:	Mary Knosby	HDR Engineering, Inc.	(704) 338-6857	mary.knosby@hdrinc.com
Annual Conference Local Arrangements	Lori Brogden	Schnabel Engineering	(336) 274-9456	lbrogden@schnabel-eng.com
Awards	Adrianne Coombes	McKim & Creed	(919) 233-8091	ayecoombes@mckimcreed.com
Exhibits	Jim Anderson	Daparak	(704) 323-7031	janderson@daparak.com
Operations Challenge & Pipe Tapping				
Sponsorship	Dave Zimmer	CDM Smith	(704) 342-4546	zimmerdt@cdmsmith.com
Spring Conference	Paul Shivers	Highfill Infrastructure Engineering	(910) 313-1516	pshivers@hiepc.com

External Affairs Council

COUNCIL CHAIR:	Tyler Highfill	Highfill Infrastructure Engineering	(919) 481-4342	thighfill@hiepc.com
Communication	Tom Bach	WSACC	(704) 786-1783	tbach@wsacc.org
Constitution & Bylaws	Chuck Willis	Willis Engineering	(704) 338-4668	chuck@willisengineers.com
Endowment	Ray Cox	Highfill Infrastructure Engineering	(910) 313-1516	rcox@hiepc.com
Membership Services	Kelly Boone	CDM Smith	(919) 787-5620	boonekr@cdmsmith.com
Public Education	George Simon Jr.	McKim & Creed	(704) 841-2588	GSimon@mckimcreed.com
Water for People	Lisa Edwards	NC DENR	(336) 771-5073	lisa.edwards@ncdenr.gov
Young Professionals & Students	Leigh-Ann Dudley	Dewberry		ldudley@dewberry.com

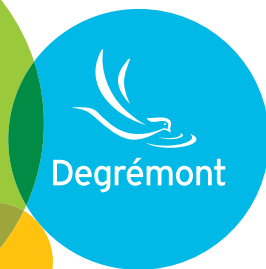
Technical Program Council

COUNCIL CHAIR:	Jonathan Lapsley	CDM Smith	(704) 342-4546	lapsleyjs@cdmsmith.com
Annual Conference Program	Chuck Shue	McKim & Creed	(704) 841-2588	cshue@mckimcreed.com
eLearning Task Force	Jonathan Lapsley	CDM Smith	(704) 342-4546	lapsleyjs@cdmsmith.com
Spring Conference Program	Kelly Ham	McKim & Creed	(910) 343-1048	kham@mckimcreed.com
SEMINARS & WORKSHOPS COMMITTEES:				
Automation	Greg Czerniejewski	CDM Smith	(919) 325-3500	czerniejewskiga@cdmsmith.com
Finance & Management	Elaine Vastis	Raftelis Financial Consultants	(704) 373-1199	evastis@raftelis.com
Industrial	Katie Jones	Dewberry	(919) 424-3723	kljones@dewberry.com
Regulatory Affairs	Ron Hargrove	City of Winston-Salem	(336) 747-7312	ronh@cityofws.org
Residuals Management/Groundwater	Jean Creech	CMUD	(704) 366-3588	jcreech@charlottenc.gov
Risk Management	Jack Moyer	URS Corporation	(919) 461-1100	jack_moyer@urscorp.com
Seminars and Workshops	Betsy Drake	Town of Cary	(919) 481-5093	betsy.drake@townofcary.org
Sustainability	Randy Foulke	URS Corporation	(919) 461-1466	randy.foulke@urscorp.com
Wastewater Collection & Water Distribution Systems	Terri Benson	Brown and Caldwell	(704) 373-9178	tbenson@brwnncald.com
Water Reuse	Marla Dalton	City of Raleigh	(919) 996-3700	marla.dalton@raleighnc.gov

Schools Council

COUNCIL CHAIR:	Jonathan Lapsley	CDM Smith	(704) 342-4546	lapsleyjs@cdmsmith.com
Collection & Distribution Schools	Andy Brogden	City of Durham	(919) 560-4344	andy.brogden@durhamnc.gov
Plant Operations & Maintenance	Bob Fritts	CMUD	(704) 363-8241	rfritts@ci.charlotte.nc.us
Professional Wastewater Operators	Tony Mencome	Heyward	(980) 395-3926	tmencome@heyward.net
Wastewater Board of Education & Examiners	David Wagoner	CDM Smith	(704) 302-3301	wagonerdl@cdmsmith.com
Wastewater Laboratory Analyst	Marti Groome	City of Greensboro	(336) 433-7229	martie.groome@greensboro-nc.gov
Wastewater Schools	John Dodson	City of Durham	(919) 560-4384	john.dodson@durhamnc.gov
Water Board of Education & Examiners	Thurman Green	OWASA	(919) 537-4224	tgreen@owasa.org

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Committee Reports

The following reports are based on information that was current as of January 16, 2013. For more up-to-date information refer to each committee's web page on www.ncsafewater.org or contact the committee chair directly. Contact information for all committee chairs is available on page 18 of this magazine, or on each individual committee's page of www.ncsafewater.org. If you are interested in joining a committee, refer to the volunteer form available at www.ncsafewater.org or contact the committee's chair.

NC Water For People Committee Report

Chair: Lisa Edwards, NC DENR

In the last quarter of 2012, Lisa Edwards participated in a World Water Corps® monitoring assignment in India. Kraig Kern of WK Dickson & Co., Inc. was honored at the NC AWWA-WEA Annual Conference with the Kenneth Miller Award for his work with Climb For Water. Everyone is encouraged to participate in the 4th Annual WFP Fun Run at McAlpine Creek Greenway Park in Charlotte on May 11, 2013. Register through www.ncsafewater.org or on-site the day of the event. WFP Committee meetings are generally the last Friday of every other month and all are invited. For more information, email Lisa Edwards at lisa.edwards@ncdenr.gov.

Wastewater Collections & Water Distribution Systems

Chair: Terri Benson, Brown & Caldwell

Our committee is dedicated to supporting and educating North Carolina professionals regarding issues dealing with the operation, maintenance, planning and management of wastewater collection and water distribution systems. The

committee meets bi-monthly and meeting dates can be found on our web page at http://www.ncsafewater.org/committees/seminars-workshops/www_collection_water_distribution_systemsms_committee/. Each meeting provides an opportunity for networking and includes an educational presentation on technical topics of interest. Professional development hours can be earned through participation. We welcome new members.

The committee recognizes outstanding water and sewer utilities throughout North Carolina through a Collection System of the Year and Distribution System of the Year Award program. In 2012, applications for the Collection System of the Year Award were received from top performing utilities including the City of Salisbury, Winston-Salem City-County Utilities Commission, City of Concord, City of Raleigh, and Charlotte-Mecklenburg Utilities. The 2012 award winners were Orange Water and Sewer Authority (OWASA) in the medium-sized system category, and MSD of Buncombe County in the large system category. Congratulations to MSD and OWASA for demonstrating proactive management, operations and maintenance of your systems. Applications for the 2013 awards will be available this spring. 2013 will be the inaugural year of the Distribution System of the Year award.

Membership Services

Chair: Kelly Boone, CDM Smith

The committee met on November 13, 2012 during the Annual Conference and discussed the committee work plan for 2013 and upcoming activities. Recent activities include:

- Set up tables in the back of the technical session rooms and a booth during

Annual Conference to provide information about joining the American Water Works Association (AWWA) and the Water Environment Federation (WEF).

- Provided NC AWWA-WEA lanyards to Annual Conference attendees in appreciation of their membership.
- Provided NC AWWA-WEA travel mugs to students who attended the Annual Conference.
- Sent an eCard to members in December wishing them happy holidays, thanking them for their membership, and encouraging them to get involved.
- Provided NC AWWA-WEA pins to Board members and AWWA/WEF national officers who attended the Annual Conference.
- Discussed changes to committee budget for 2013 and that AWWA and WEF national award nominations will be handled by the Awards Committee in 2013.
- Identified opportunities to work with other committees.
- Discussed helping Communications Committee find articles for *NC Currents* and input on member portraits (and perhaps a committee spotlight).
- Reviewed progress on AWWA Membership Challenge.
- Committee Chair and staff liaison will attend the AWWA Membership Summit in February 2013.
- Jana Stewart agreed to serve as the committee Vice-Chair for 2013.

Risk Management

Chair: Jack Moyer, URS Corporation

The Risk Management Committee was formed in early 2012 by the merger of the former Safety and Disaster Preparedness Committees. The purpose

of the committee is to help Association members prepare for the full range of risks with which they may need to handle, including safety challenges, disasters, emergencies, business continuity, financial and legal risks, etc.

In 2012, the committee conducted a lunchtime webinar on NC Water's Water/Wastewater Agency Response Network (WARN) in early August and a seminar on WARN and other emerging risk management issues for water utilities in October. The webinar was the first pilot webinar for the Association. The seminar was highly successful, with nearly 100 attendees.

Another seminar is planned for June 27, 2013 and a webinar is also in planning for some time in 2013.

eLearning Task Force

Chair: Jon Lapsley, CDM Smith

The eLearning Task Force continues to make strides to roll out the eLearning program to the Association membership. The Association has contracted with Fusion Productions, a leader in online learning management systems, to help the Association navigate the development of the system and the initial course offerings. Initial course offerings will utilize previous training materials focused on updates to the State Drinking Water Rules and Regulations, with future training modules to be developed during 2012 focused on operator-specific training requirements. The task force also continues to coordinate with other membership associations and our parent associations to help spur content development in a cost-effective manner. The goal of the task force is to roll out the initial course offerings in the spring of 2013 and continue to supplement the available courses during the year to provide our members with training opportunities that are diverse in both content and format.

Wastewater Treatment Plant Operators Schools Committee

Chair: John Dodson, City of Durham

The Wastewater Treatment Plant Operators Schools Committee depends upon volunteers to plan and deliver schools every

year. The committee organizes and runs two five-day schools (one in Raleigh and one in Morganton) for biological wastewater treatment plant operators Grades I through IV, and one four-day school for physical/chemical wastewater treatment plant operators Grades I and II. This year, the committee is also responsible for the Advanced Topics Seminar.

It takes a large number of committee members and other volunteers to accomplish this work. I appreciate the efforts of these volunteers and thank their employers for allowing them to take time away from work to help develop and sustain our mission. I believe there may be other NC AWWA-WEA members who

would care to be involved in this committee. New members need to be recruited to help plan, deliver, and moderate the schools that we conduct. There is a special need for those who can share their talent as instructors. Participation in the committee's work is an excellent way to network across the industry and the communities involved. Participation is also a way for Association members to 'give back' to the wastewater community.

One area in which the committee particularly needs your help is to find speakers for the 'Innovative Ideas' portion of the Advanced Topics Seminar. This is the best-received segment of this seminar, but it is the hardest for which to find speakers.

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The Innovative Ideas segment features operators speaking to other operators about creative things they have done at their plant. Of particular interest are talks about small things that save time, money, make the plant work better, or just make their lives easier. Other operators can really relate to these and use the knowledge gained at their own plant. If you know of someone who has done something that you feel would be of interest to other operators, please forward this information to Joe Hughes. His contact information is given below.

The committee meets approximately once a month to plan, deliver, and evaluate the schools. If you would like to find out more about the committee, visit the Wastewater Treatment Plant Operators Schools Committee web page on <http://www.ncsafewater.org>.

Schools for this year include:

Eastern Biological Wastewater Treatment Plant Operators School

April 29-May 3
McKimmon Center, Raleigh
Subcommittee Chair
John Dodson
City of Durham
919-560-4384
john.dodson@durhamnc.gov

Physical/Chemical Wastewater Treatment Plant Operators School

April 30-May 3
McKimmon Center, Raleigh
Physical Chemical Wastewater Treatment Plant Operators School Subcommittee Chair
To be determined
Contact John Dodson for information

Western Biological Wastewater Treatment Plant Operators School

July 15-19
Western Piedmont Community College, Morganton
Subcommittee Chair
Billy Allen
City of Charlotte
704-201-2221
ballen@charlottenc.gov

Advanced Topics in Wastewater Treatment Seminar

September 4, 2013
Greensboro, NC
Subcommittee Chair
Joe Hughes
joe.hughes@aireo2.com

Public Education Committee

Chair: George Simon, McKim & Creed

Last year, our Association continued a joint public education campaign, working with the North Carolina Rural Water Association (NCRWA) and the North Carolina Waterworks Operators Association (NCWOA). In 2012, we completed our first major project by developing a website (www.mywatermatters.org) focused on promoting the value of water, as well as two public service announcements (PSAs). The three associations are continuing to work together to develop fresh and new educational outreach materials, as well as to find new avenues to deliver these messages. If you are interested in helping to promote this educational outreach campaign or developing exciting, new education materials, please contact the Public Education Committee Chair (George Simon, 704-841-2588, gsimon@mckimcreed.com).

Communication Committee

Chair: Tom Bach, WSACC

The Communication Committee held a face-to-face meeting at the 2012 NC AWWA-WEA Annual Conference in Raleigh and the following agenda items were discussed:

- Four new members were welcomed: Barry McKinnon, Marianna Boucher, Marco Menendez, and Kelly Boone.
- The initial proof for the 2012-2013 *NC Currents* Winter Issue was due back from the publisher for review by the Editorial Subcommittee.
- The Theme Leaders for the 2013 *NC Currents* Spring Issue were working with several potential authors for possible articles and features.
- The following parameters were discussed for all submitted articles and features in the future: A. Encourage authors to write mostly about North

Carolina projects; B. Articles and features should be written around the established theme summary; C. authors should always contact theme leaders and/or the committee staff representative about coordination issues or questions; D. Articles and features should not be too technical in nature; E. Encourage authors to include more pictures, graphs, etc. about the project or study.

- The NC AWWA-WEA Communication and Membership Committees will now share resources and work with each other on various activities/events in the future that meet the function and overall mission of each committee.
- The draft guidelines and format for the new Sustainability Feature that was first included in the 2012 *NC Currents* Fall Issue were discussed.
- Details for the WEF Water for Jobs Campaign were discussed, including a possible partnership with WEF and the National Technology Student Association (TSA). WEF leadership is currently waiting on the approval of a proposal that was submitted to TSA regarding the possible formation of a national middle school competition that would start in the fall of 2013.

Other Communication Committee news is as follows:

- The Editorial Subcommittee recently agreed to change the format of the *NC Currents* article and feature reviews, including the appointment of Sherri Moore becoming the Editorial Coordinator.
- The Electronic Subcommittee is continuing to review the NC AWWA-WEA website and giving applicable feedback to Nicole Banks.
- The next committee face-to-face meeting is scheduled for March 1, 2013 in Raleigh, and main topics of discussion will be the establishment of additional sub-themes and the status/needs for the coordination of the Communication and Membership Committees.
- During the week of December 31, 2012, it was confirmed that a national

middle school competition through TSA, focusing on water needs established by WEF, would begin sometime in the fall of 2013. Tom Bach will be coordinating with WEF and TSA personnel in the next several months and will give the committee updates on the progress.

Exhibits Committee

Chair: Jim Anderson, Daparak, Inc.

The Exhibits Subcommittee is part of the Annual Conference Planning Committee and consists of exhibitors concerned about making the two conferences meaningful and worthwhile for all exhibitors. We welcome anyone interested in joining us. Our last meeting was November 16 and we meet about three times per year, but via emails we are able to be effective in assisting with the two conferences.

Automation Committee

Chair: Greg A. Czerniejewski, CDM Smith

The Automation Committee's first quarter meeting was held January 22 and served as a planning session for the upcoming year. Our goals include continued growth in the areas of training. We are participating in the new eLearning initiative with a webinar titled *Securing Critical Control Systems in the Water Sector – Where Do I Begin?* In addition, we are providing operator certification training similar to what has been offered the last two years. It will be an all-day event with automation topics presented by members of our committee and is scheduled for August 29 in Huntersville. Another goal is to increase our participation in the Spring Conference, including the possibility of adding an automation track of presentation topics for Association members to attend at the conference. We also have a goal of increasing our participation in other committees with liaisons from our committee. We created a Security Subcommittee in 2012 (currently chaired by Don Dickinson), and Dan Edwards will continue to serve as a liaison to the

Risk Management Committee. Other Automation Committee members who are liaisons to Association committees include Jeff Miller (Plant O&M), Terry Draper (Conference Program) and Paul Jackson (Board of Trustees). Pavol Segedy is our liaison to the International Society of Automation (ISA), which is the society for automation professionals.

Finally, we plan to create a committee 'playbook' that details the history of our committee, a calendar of events for the year and the goals/objectives of our committee. The hope is to provide a method of knowledge transfer for future members of our committee and a means of documentation of our activities to the Association. 



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Portrait of



Bob Fritts: Finding the Right Pace

Bob Fritts likes to keep busy. Over and above his work as Maintenance Manager over Charlotte-Mecklenburg Utilities Department's (CMUD's) five wastewater treatment plants, he is actively involved in the NC AWWA-WEA and North Carolina's Maintenance Technologist Certification Program. As the current chair of the Plant Operations & Maintenance Committee, he also chaired the Curriculum Subcommittee for many years and currently sits on the Instructor Support Subcommittee, the Spring Conference O&M Track Subcommittee, and the Oversight Policy Subcommittee. At the same time, he also chairs the Maintenance Technologist Awards Subcommittee and sits on the Operations Challenge Subcommittee.

With this deep level of commitment to the industry, his colleagues may be surprised to learn that Fritts did not start his career in

water and wastewater. On the other hand, maintenance has always been near and dear to his heart. "When I was in high school, I worked in the garage at full service gas stations, changing oil and getting my hands in cars, replacing clutches and repairing components," he recalls. "That is when I was sure I wanted a career in the equipment repair field."

Fritts grew up in the steel town of Gary, IN, where his father worked as a millwright for the US Steel Corporation. Hoping to follow in his father's footsteps, he signed up for the steel mills millwright apprenticeship program, working in a magnet factory for two years while waiting for his name to come up.

In 1978, he started the four-year program, eventually graduating as a C-grade millwright, then immediately tested for and achieved his A-rate job class. Passionate about his work, he was looking forward to a long career as a millwright.

But the economy had other plans. "I loved what I was doing at the mill," says Fritts. "My work was hands-on every day, from high pressure hydraulics, motors, gearboxes, bearings, equipment, machining, etc. I was asked right before I was laid off if I would be interested in being a maintenance supervisor and I declined because I really enjoyed my work."

The person who did accept the position kept on working despite the downsizing. Fritts, on the other hand, was out of work, with no prospects in sight. Then in 1986, he accepted a position with the Florida Steel Company and moved his family to Charlotte, NC. Starting as a maintenance mechanic, he rose to the position of master mechanic within a few months.

The multi-craft environment offered Fritts the opportunity to work with electrical, plumbing and mechanical systems as well as programmable logic controllers (PLCs). He quickly became well versed in all aspects of maintenance. When Florida Steel offered him a shift maintenance supervisor position, he remembered the position he had turned down in Indiana. This time, he accepted. Over the next 14 years, Fritts continued to rise through the ranks, eventually becoming a senior process engineer in charge of a high-pressure robotics stacker system and then the general maintenance supervisor over the rolling mill.

"At that point, I had become a workaholic and really needed to slow down," recalls Fritts, adding that in an attempt to change his lifestyle he left the mill for a position as electrical project manager in a local electrical panel shop. "The problem was I slowed down too much. What I needed was a pace somewhere in the middle of my last two jobs."



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Two years later, an opportunity at CMUD finally provided that middle ground. But no sooner had Fritts started his position as the treatment plant maintenance supervisor for Mallard Creek Water Reclamation Facility and McDowell Creek Wastewater Treatment Plant, than he was tempted back into overdrive. In 2004, he started eight years of competing in the Operations Challenge, something he enjoyed enormously. Then came an opportunity to participate on the Maintenance Training Investigation Subcommittee of the Plant Operations & Maintenance Committee (PO&MC).

"I knew from my past experience in the private sector that there was not a maintenance training program available for our mechanics," says Fritts. "Going through a great program myself, I knew firsthand how valuable this was, not just for the employees, but also to the employer." During his first few years at Charlotte, he repeatedly approached his supervisor and mentor Robert Norris about training for the mechanics.

Norris approached Superintendent Jackie Jarrell. "She told us that T.J. Lynch from the City of Raleigh was looking for the same thing," recalls Fritts. "T.J. and I had several conference calls and he developed a PowerPoint presentation for the PO&MC meeting in December 2006." The committee was so impressed that it launched a subcommittee to investigate the creation of a maintenance training program.

Four years later, the Maintenance Technologist Certification Program became a reality. Since then, 605 North Carolina students have taken the certification exam for Levels One to Three. Fritts is now looking forward to seeing the completion of the Class Four exam and classroom presentation training.

He is also looking forward to retirement, when he plans to spend more time with his wife, Janet, their three children and 11 grandchildren. "I have been married to a wonderful woman for 36 years," says the happy husband and grandfather. "She has supported me and pushed me to do better throughout my career." Not that he is ready to hang up his gloves as yet. There is still plenty of work to do with the Maintenance Technologist Certification Program and Fritts

is eager to see many more maintenance technologists benefit from the opportunity.

He notes that the City of Charlotte's upper management – from his direct supervisor, Travis Hunnicutt to the director, Barry Gullet – has always fully supported the necessary training needs of all staff. At the same time, the school would not be possible without volunteers, including Mark Wessell, Dell Harney and many others.

"This outstanding program would not exist without them," confirms Fritts, reflecting on all the supervisors, department heads and co-workers who devote so much of their time to sharing their expertise and knowledge. "Throughout my career, I have been absolutely blessed with great jobs where people saw the need for surrounding themselves with trained professionals. I believe this is the best job yet." 

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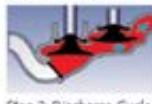
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Portrait of



Dell Harney: Nurturing a Passion

Whenever Dell Harney needs a bit of inspiration, he turns to the memory of a young man who was in Morganton for the Class 2 Maintenance Technologist School a few years ago. “This guy looked like he was riding on top of the world, with a smile that lit up the room,” says Harney, an instructor at the school. “He told me that, since passing the first level of maintenance technologist certification, he felt as if he was out of a dead end job. You could see it in his face and feel it in his handshake; here was a life changed.”

Although the Greensboro Electronic Process Technician is quick to deny any credit for this changed life, he acknowledges that, just like his young student, he shares a debt to the many mentors who nurtured his passion for process control, optimization and maintenance. For Harney, it is a passion that led to a rewarding and multi-faceted career.

Over the years, his career led him to some interesting places, including a crane bucket suspended hundreds of feet over an oil refinery flare stack; the secondary containment annulus of a nuclear plant where someone had made fantastic drawings of eagles in flight; and the crankcase of a massive Fairbanks-Morse Pielstick engine in Beloit, WI. “But what I keep coming back to are the faces and voices of those who have mentored me,” says Harney.

He points to Master Sergeant Leonard Brusso as the first among several mentors. A few days after graduating from his Washington State high school in 1979, Harney climbed the steps of an airplane that would deliver him to Fort Dix, NJ for army basic training. “Those first steps put me on the path to this

career in maintenance that has been just amazing,” he recalls.

His most vivid memory is one of Brusso stepping in to take the heat when Harney made a mistake setting up a tank fire-control computer. Later, in private, the Master Sergeant disciplined Harney over the seriousness of the incident.

The army training led to a ten-year stint with the National Guard where Harney served as a tank turret mechanic and received his first introduction to maintenance teams. “Not that I intended on a career in maintenance,” insists Harney. “Like many young people before me, I had my future all figured out: two years of junior college followed by two years at university would lead to a teaching degree and a job in education.” Then some electives at the junior college got in the way. Harney found himself with a passion for two disparate subjects: electronics and writing.

“So there I was with an Associate’s degree, an invitation to continue the writing path from the Iowa Writers Workshop, a keen interest in electronics – and a career plan to be a teacher!” he explains.

In the end, he decided to go to Perry Technical Institute in nearby Yakima, WA to complete a two-year program for Process Control Instrumentation and Industrial Electronics. There was great demand for instrument technicians at that time and he soon had job offers in the San Francisco Bay area and the North Slope of Alaska. Literally flipping a coin, he chose to go south. That decision led to working for a couple contractors in a wide variety of industries (chemical plants, oil refineries, food processing plants, water and wastewater). “It was probably the best move I could

have made in terms of experience with industrial processes and exposure to maintenance practices,” says Harney. He still recalls the way Ken Bodie at Dow Chemicals Western Division handed him a stack of project documents and then stayed in the wings, allowing him to work his own way through an extended process upgrade of a caustic plant. Later, there was the patient example of another mentor, master electrician James Finn. “Jim taught me the importance of finishing what I start and the value in doing a job right the first time. Also, that cleaning up after yourself is a part of any maintenance job.”

By 1991, Harney had moved back north to Hanford, WA for a job as an instrumentation and controls technician with Washington Public Power Supply System at its Number Two nuclear reactor. He then spent some time as a Work Analyst at Commonwealth Edison’s Dresden Station in Illinois.

Then in 1998, he accepted a position with the Greensboro Water Resources Department. It was there he met another mentor, Robert Fritts. “I can still hear his voice explaining to me how reacting to somebody’s anger with anger of my own is not beneficial and puts me in a bad position from which to lead others,” recalls Harney.

These leadership skills became invaluable when Harney decided to teach at the first Maintenance Technologist School, opened in 2009. His decision was prompted by Steve Drew, one of the founding fathers of the program and Harney’s Water Supply Manager at the time. “His enthusiasm with regard to the school was contagious,” explains Harney, recalling how Drew came to visit him at

one of the water treatment plants. “He described it as a chance to get in on the ground floor of the School program. The more I heard, the more excited I got.”

That first day, when he looked out at his first-ever group of students in the Electrical Concepts & Devices class, he was unable to make out the faces at the back of the room. More than 100 students filled the room at Raleigh’s Neuse River Wastewater Treatment Plant. “We were all blown away by the overwhelming response from cities, towns and utilities from all across North Carolina who sent people to that first class,” recalls Harney, who has developed and presented classes – on topics ranging from instrumentation to maintenance management – at all three levels of certification since then.

He continues to enjoy teaching the wide variety of maintenance technologists who attend the school every year. Some of them work in distribution systems, others in water or wastewater plants. Still others do it all – operator and maintenance mechanic and grounds keeper rolled into one. “These are folks who speak ‘maintenance’ and there has never been a forum for the kind of interaction I see going on at the schools,” says Harney. “Personally, I have developed a short list of who to call when faced with something that has got me stumped and it has kept me from reinventing the wheel several times. Part of our mission as administrators of the Maintenance Technologist Schools needs to be getting managers and supervisors to recognize this interaction for the progress it is within our industry.”

He adds that there has also been plenty of technical progress since he started at Greensboro 15 years ago. When he joined Water Resources, the first programmable logic controllers (PLCs) were just being installed in the water plants. Although progress has not always been as fast as he would like, today’s plants now have automatic flow control loops and proportional-integral-derivative (PID) algorithms humming away in the background to keep pH levels and chloramine ratios within tight limits. At the

same time, chromatographs and sophisticated analyzers that measure things like total organic carbon (TOC) or particle counts have started to migrate slowly from the laboratory to the plant operator’s workbench. “We can ‘see’ and manipulate our remotest processes via SCADA systems that are an extension of our operators’ eyes, ears and hands,” says Harney. “Soon, our managers and supervisors will be talking about model predictive control and remote access to plant data.”

Harney’s keen interest both in process control and in passing on knowledge makes him an invaluable member of the Plant Operations and Maintenance Committee (POMC), which he joined in 2009. He has served on several subcommittees and was elected as vice chairman in 2011. Last year, he chaired the Instructor Support Subcommittee.

It was also in 2012 that he was awarded the NC AWWA-WEA Maintenance Technician of the Year Award. “It is a shame that the award goes to only one person,” says Harney, “because I had a fantastic team of Class Coordinators, mentors and monitors who should really each have their names on the plaque beside my own.”

At the same time, he encourages his

colleagues to become involved with the POMC, adding that there are many volunteer positions waiting to be filled on NC AWWA-WEA Committees. “Involvement has given me opportunities for growth and experience in positions of leadership that were unavailable to me in my regular career path,” says Harney. “All it takes is the desire to get involved for wonderful things to happen for you.”

He looks forward to more involvement with the POMC and Maintenance Technologist Schools in the years to come. “I always have my eyes open for opportunities that allow me to make a difference in the lives of my fellow maintenance workers,” he explains.

Eventually, he hopes to retire in his beloved Idaho where he grew up, as a child of the Rockies, in the Big Lost River Valley. For those who know him, it should come as no surprise that he knows the details of every water and wastewater facility within 100 miles of the valley. Says Harney: “Finding a way to give back, the way my mentors gave to me, through a fulfilling career in maintenance – that plus the beauty of Idaho and enough time to explore that writing career that was cut short... it sounds a lot like heaven to me.” 



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Jason Beck: Opportunities to Contribute, Opportunities to Grow

In 2012, when Jason Beck, P. E., had the opportunity to serve as a judge for the Student Design Competition at the Water Environment Federation Technical Exhibition and Conference (WEFTEC), he was very impressed with the submissions. "It is amazing to see that people who are still in college have already come that far along in the industry," says the project engineer with CDM Smith.

Beck should know. It is not that long ago that he was a master's student, presenting his research at WEFTEC and getting to know people in the industry. A few years later he joined the NC AWWA-WEA's Young Professionals Committee, taking on the role of social coordinator, and organizing events and activities for connecting and networking.

Like research, networking provides important opportunities for growth. After all, it was while working with another engineer, during an internship in India, that Beck decided to pursue a career in wastewater treatment. "I got to do some environmental work with him," explains the young professional, "and I had the opportunity to work with pumps and hydraulics. I really, really liked it."

Initially headed for a career in structural engineering, Beck changed course. After completing his undergraduate degree, he accepted a position with an environmental firm in Virginia Beach, working there for a year before starting graduate school at Virginia Tech. For his master's thesis, he worked on a pilot study treating dairy waste. "I grew up on a farm in Indiana so that was right up my alley," he recalls.

Environmental engineering proved to be a good fit as well. "I like how this work

encompasses all aspects of engineering," says Beck. "Civil, architectural, structural, mechanical – all these types of engineering come together in the design of water and wastewater treatment plants."

In his current position as project engineer at CDM Smith, he focuses mainly on liquid treatment at wastewater treatment plants (WWTPs), designing systems from the headworks to the end of the plant. Since starting with the company, he has worked on two very large filter projects, chemical feed systems, and biological nutrient removal (BNR) systems, along with an aeration system design.

His first project with CDM Smith was a full-scale Integrated Fixed Film Activated Sludge (IFAS) pilot study. The process involves using small plastic media carriers (shaped like wagon wheels) in the aeration basin to provide bacteria with a surface on which to grow. The resulting increase in the number of bacteria in a given volume boosts the treatment capacity of the plant without the need to add more concrete basins.

Beck had the opportunity to present the pilot study at WEFTEC and has delivered the presentation on seven other occasions, including an international webinar on the subject sponsored by Headworks Bio™ with coworker Bill McConnell. It is one of several presentations he has made since starting with CDM Smith five years ago. "The company places a lot of value on participation in conferences and presentations," says Beck. "They really encourage people to submit abstracts and papers, and to get them accepted. It is a big networking opportunity."

But his collaboration with colleagues from across the industry is not limited

to presentations. In fact, he can readily identify four projects where he has been teamed with consultants from another company. "One of the things I like about this industry is that it seems to be more transparent than others," says Beck. "When you are working on a new or innovative project, the first thing you do is to go out and present papers on it. Then they get posted. It really is like working together even if we are competitors."

Beck loves to learn about new cutting-edge technologies and processes. "I am always trying to keep my ear out for new ways of doing things," he confirms. "There are some pretty stringent environmental requirements these days. It keeps leading to more interesting projects."

He is eager to embrace volunteer opportunities as well. During his first year at CDM Smith, he worked on a project for Engineers Without Borders. Then, recently, the young professional was asked to participate on the Water Environment Federation's (WEF's) Manual of Practice (MOP) 29 for the operation of BNR facilities. He is the lead author on one chapter and a co-author on two others.

"I would like to get more involved with WEF as well as the NC AWWA-WEA," says Beck, adding that he regularly attends the Association's annual conferences. In the meantime, he continues to volunteer as much as he can in his community. He and his wife spend quite a bit of time with their church doing community service activities around the area. After all, in a busy world that is increasingly interconnected, every opportunity to contribute is another opportunity to grow. 

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Plant Spotlight: Cherryville Wastewater Treatment Plant

By Larry Wright, Plant Superintendent, ORC
Edited by David Hamilton, PE / Malcolm Pirnie/ARCADIS (NC AWWA-WEA Plant Operations & Maintenance Committee)

Introduction

The City of Cherryville is located 33 miles northwest of Charlotte, NC and has a population of roughly 5,800 people. The original name, White Pines, was changed to Cherryville in 1881 due to the prominence of the flowering cherry trees in the area.

Cherryville built its 2.0 million gallon per day (MGD) Wastewater Treatment Plant (WWTP) in 1981. The plant's daily average flow is 0.415 MGD with the maximum of 0.769 MGD. The facility has an annual operating cost around \$400,000, excluding capital projects.

In addition to Cherryville's WWTP, the plant superintendent and operations and maintenance (O&M) staff are responsible for five of the city's largest pump stations. The Public Works Department operates and maintains the five smaller pump stations in town.

Treatment Processes

The Cherryville WWTP is an activated sludge plant that consists of an influent equalization lagoon, headworks and influent pump station, two oxidation ditches, two secondary clarifiers, chlorine contact chamber, cascade aeration steps, aerated sludge holding tank, and a sludge lagoon.

Influent flows through a WSG & Solutions stainless steel grit removal system that replaced the old system in 2005. It then flows through bar screening. The plant is in the planning stages of replacing the original bar screen with a stainless steel fine screen system. The activated sludge process occurs in oxidation ditches that are aerated by Lakeside Equipment Corporation brush aerators before flow passes to the clarifiers. The plant has budgeted

to rehabilitate both clarifiers, replacing the old original weirs with stainless steel ones. Clarifier #1 was completed in June of 2012 and Clarifier #2 will be completed in early 2013 by Charles Underwood Co. The treatment process results in a 98% removal average for biological oxygen demand (BOD) and total suspended solids (TSS) with the average effluent BOD of 1.5 mg/l and effluent TSS of 2.1 mg/l. After chlorine addition, then dechlorination with sulfur dioxide gas, the treated flow passes over cascade aeration steps and ultimately discharges into Indian Creek, which is part of the Catawba River basin.

Waste sludge is pumped into a holding tank until it is sent to the sludge lagoon. The holding tank (with thickening capability) is mixed and aerated by floating Aqua-Jet (Aqua-Aerobic Systems) aerators. The non-aerated sludge lagoon is dewatered using a float that pumps the clear water off the top of the lagoon. The decant water is returned to the head of the Influent Pump Station. The city contracts with Synagro for lagoon mixing and pumping as part of the biosolids removal process. Biosolids disposal is by land application to local farms.

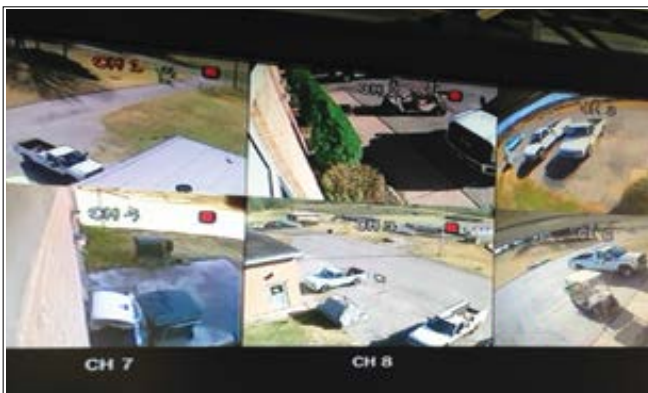
Plant back-up power is provided by a 300 kW Cummins/Onan generator.

The city recently began outsourcing lab services to reduce costs after the long-time lab supervisor retired. Shealy Environmental Lab handles BOD, TSS, ammonia, fecal and metals testing. Pace Lab handles quarterly toxicity testing. The field parameters, including dissolved oxygen (DO), pH, temperature, total residual chlorine and mixed liquor suspended solids (MLSS) are tested by the staff at the plant.

Challenges

Some of the collection system sewer lines have been in the ground since the early 1900s. Therefore, one of the biggest challenges for Cherryville's WWTP is infiltration and inflow (I&I) from heavy rains. The city is actively replacing old lines each year and is able to contain the high storm flows in flow equalization lagoons at two remote pump stations and the one equalization lagoon at the treatment plant. The total equalization (EQ) storage capacity of all three lagoons combined approaches 3 million gallons (MG).

Algae growth has been a challenge as well. Last year the WWTP enclosed the cascade aeration steps to block sunlight and prevent algae growth. The enclosure has almost stopped the algae growth completely.



View of security camera screen.

Personnel and Development Programs

The plant staff consists of four personnel: one supervisor/Operator Responsible in Charge (ORC), one lab technician/operator and two maintenance personnel. The plant superintendent works directly under the city manager, Mr. Ben Blackburn. The plant runs one shift and it is open from 8:00 am until 5:00 pm. The SCADA monitors the plant and pump stations 24/7, allowing this small staff to maintain operations. In the event there is an emergency, the SCADA notifies the personnel on call. Plant personnel keep up with the latest technology using iPad and iPhone applications that can view the plant's SCADA system, security camera system, and even control building thermostats by Nest™ that operate using a wireless Internet connection.

The City of Cherryville encourages its personnel to obtain the highest level of certification possible. All personnel must attend safety training each year.

The City of Cherryville has hosted a citizen's academy for the past five years, where each department within the city gives a presentation and tour of its department. At the end of the academy, the city then presents the attendee with a certificate of completion. This program has been very successful at promoting awareness of the city's departmental organization and operations to the public.



Plant O&M Staff (L-R): Chris Goodman, Rod Bowman, Willie Pow, and Larry Wright (Plant Superintendent/ORC).

Contact Information for more on the Cherryville WWTP

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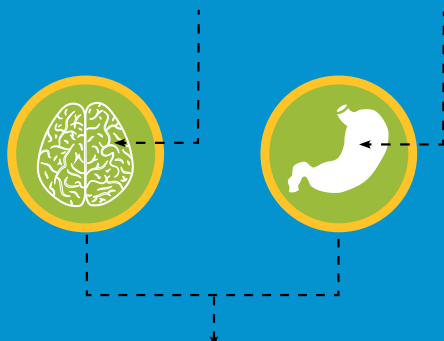


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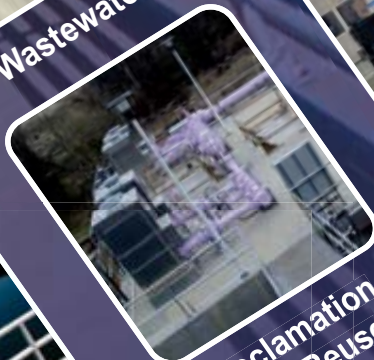
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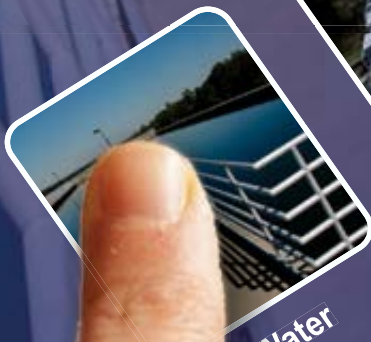
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If operating a water or wastewater utility in the black was difficult in past years, it became doubly difficult after the economic recession the United States experienced in 2008. While our municipal utility systems temporarily rode the wave of prior budget years' planning efforts, and felt the economic pinch later than many other industries, similarly, our systems will recover from the effects of the recession long after many industries have rebounded. How have we managed these challenging times and what have we learned about ourselves that will increase our chances for prosperity in the future? The supply/demand balance between needed water and sewer service, and the resources to provide them, will continue to be precarious and influenced by countless variables: economic outlook, development pressures, environmental regulations, aging infrastructure, skills and experience of system operators and managers, need for disaster preparedness, social and political influences, privatization opportunities, and a heightened emphasis on sustainable planning (to name only a few). This section of *NC Currents* will explore our industry's financial condition and will attempt to offer perspectives on establishing our utilities as thriving assets integral to our own and the entire nation's prosperity.

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Charlotte's Find-and-Fix Sewer Rehab Approach – 13 Years of Documented Successes and Substantial Savings

By Chris Allen, Charlotte-Mecklenburg Utility Department; Aaron Frazier, Frazier Engineering, PA; and Mark Lambert, Frazier Engineering, PA

INTRODUCTION

The Charlotte-Mecklenburg Utility Department (CMUD), located in Charlotte, North Carolina, provides water and sewer service to Charlotte and several surrounding smaller towns. CMUD serves more than 800,000 customers.

Over the last 20 years, CMUD has been implementing a long-term sanitary sewer rehabilitation program to reduce infiltration and inflow (I/I) into its aging sewers and to correct historic maintenance problems. The rehabilitation program is part of CMUD's strategic efforts to maintain the performance of the sewer system and compliance with regulatory requirements.

After several years of 'traditional' sewer rehabilitation design and construction projects in the 1990s, CMUD realized there had to be a better approach for performing rehabilitation projects. The traditional design of rehabilitation projects took an extensive amount of time to complete and were cost prohibitive. During traditional rehabilitation design, CMUD was paying for expensive sewer cleaning and television inspections over the course of the design process. This resulted in the completion of numerous sanitary sewer evaluation survey (SSES) project reports that just sat on the shelf. Also, CMUD did not have flexibility during the traditional rehabilitation projects to address ever-changing sewer rehabilitation needs and emergency situations.

In 1999, CMUD developed and implemented what is now commonly referred to as the find-and-fix approach to sewer rehabilitation. The 'find-and-fix' concept was developed to address the pitfalls associated with the traditional design and construction approach to rehabilitation and to reduce costs. Many utilities across the Carolinas and the southeast are now implementing a similar approach. For the last 13 years, CMUD has exclusively followed a find-and-fix approach and has completed over \$90 million of rehabilitation since 1999. By utilizing the find-and-fix ap-

proach, CMUD estimates a savings of over eight million dollars during this time period.

BENEFITS OF THE FIND-AND-FIX APPROACH

There are numerous benefits to the find-and-fix approach versus the traditional design approach. The main benefits are expediting rehabilitation work, effectively handling emergency situations, and saving substantial money. In addition, the find-and-fix projects demonstrate to state and federal regulatory agencies CMUD's commitment to quick and responsive sewer rehabilitation, which is critical in order to prevent possible regulatory enforcement action. The find-and-fix project expedites the rehabilitation work and allows the rehabilitation contractor to immediately handle any emergency situations that arise.

Find-and-fix projects are similar to 'design-build' projects. The sewers and manholes are evaluated and inspected as the construction work progresses, meaning that defects are identified and then immediately repaired. A simple map of the system is used along with memorandums and tabular summaries to define the required work to the contractor. Find-and-fix projects do not require extensive studies, maps, notes, tables of information, etc., thus reducing engineering design costs. Emergency situations are handled within a few days, unlike traditional design approaches that can take a few months.

In addition, the find-and-fix approach reduces overall costs. As aforementioned, the sewers and manholes are cleaned, evaluated and inspected once as the work progresses. This translates into substantial cost savings, in particular with the sewer cleaning and television inspection work. Traditional design approaches require cleaning and televising sewers during initial design phase and then again during the construction phase. The consulting engineer must review the television inspections so that detailed drawings and specifica-

tions can be developed and then again after construction, in order to confirm the work has been completed by the contractor. Thus, the cleaning and television inspection costs and the engineering fees to review the inspections are double. The cleaning and television inspection costs can be substantial, typically ranging from \$2 to \$4 per foot.

Furthermore, extensive television inspection can disclose a volume of sewer repair needs that may exceed your rehabilitation construction budget. If the funding is not sufficient, the TV data could be shelved, all the needed repairs unresolved and then the data become 'old.' If the collection of data is shelved for an extended time period, the same sewer system will need to be cleaned and televised once again to develop the design, because the system conditions could have changed. Ultimately, three complete inspections would have been performed on the same system. CMUD's find-and-fix approach argues that it is better to use the funding to make the repairs to a limited section of the sewer system than to collect data that just sits on the shelf or to collect data multiple times. The result is paying less for inspection and engineering while getting more actual rehabilitation work completed.

CMUD'S FIND-AND-FIX APPROACH

CMUD's contract documents for the find-and-fix projects include a specification book only. Extensive drawings are not required, and extensive television inspections are not performed to develop the design. Standard details are included in the specifications book. In 1999, the design process took approximately one month to develop. Now, the contract documents are developed by a consulting engineer for a few thousand dollars, the design is completed in a week, and then the project is released for bids. CMUD constantly improves and tweaks the

contract documents, and the find-and-fix process with each new project. After 13 years of find-and-fix projects, the process has proven to be successful and economical. Nonetheless, CMUD always looks for ways to improve.

CMUD typically has two find-and-fix projects in progress at the same time. One find-and-fix project primarily focuses on system-wide inflow reduction by repairing major defects found through smoke testing and manhole inspections (SSES) work, and the other find-and-fix project primarily focuses on addressing reoccurring maintenance problems. Other utilities may want to combine these efforts into a single project depending on funding, the extent of the known defects, and the size of the sewer system.

The bid schedule for the find-and-fix projects includes over 200 bid items that cover nearly every potential rehabilitation scenario that may be required during the life of the project. The bid includes point repairs (excavation), sewer replacement from manhole to manhole, cured-in-place pipe (CIPP) lining, pipe bursting, service lateral rehabilitation, specialty cementitious mortar coatings for manhole rehabilitation, and manhole point repairs, such as raising manholes, resetting and replacing frames and covers, etc.

The find-and-fix projects are generally implemented as follows:

1. CMUD identifies the sewer basins that have known infiltration and inflow (I/I) problems and identifies specific sewers, whether it is one section of sewer or multiple sections of sewers totaling several thousand feet, that have reoccurring maintenance problems. The sewer basins and specific sections of sewers are selected from flow monitoring data, maintenance records, customer complaints, etc.
2. **Sewer Basins:** SSES work is performed in the sewer basins that have been identified as having excessive I/I. Defects identified from the SSES work are immediately issued to the construction contractor in the form of a work order. The work order may be a spreadsheet, a GIS map with notes, a smoke sketch, an AutoCAD drawing, or whatever is necessary to show the required work efficiently and cost-effectively. Most of the work orders are emailed to the contractor. The contractor begins the rehabilitation work upon receipt of the work order.

CMUD does not spend money on expensive SSES summary reports that just sit on the shelf. The SSES work is summarized in spreadsheets and databases for documentation purposes, but expensive reports are not performed. More importantly, the defects do not sit on the shelf.

They are immediately repaired by the contractor.

3. **Specific Sewer Sections:** Sewer cleaning and television inspections are performed in the specific sewer sections that have been identified as having reoccurring problems. A map and spreadsheet identifying the sewers for cleaning and TV inspection are issued to the construction contractor, by email. The contractor performs the cleaning and TV inspections and submits the information to the engineer. The engineer reviews the TV inspections and identifies the required rehabilitation work. A rehabilitation work order, which usually consists of a spreadsheet, is issued to the contractor within five days of receipt of the TV information; and rehabilitation work begins soon thereafter. The work order may include point repairs, sewer replacement, lining with CIPP, service lateral rehab, and/or manhole rehab. The process is quick, efficient and cost-effective. Sewer cleaning and TV inspections are only performed and reviewed by the engineer one time, resulting in a substantial savings.
4. **Emergency Work:** Emergency work typically occurs throughout the duration of the contracts. When emergency work arises, the engineer notifies the contractor via an emergency work



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order by email. The contractor is notified to proceed immediately to the emergency work, and the work is generally completed within a few hours to a few days depending on the required repairs.

This approach allows quick, cost-effective rehabilitation of sewers and manholes to remove large volumes of inflow and to correct known sewer problems. This approach truly is a team approach between the owner, the engineer and the contractor. It is critical to have experienced, competent and cooperative contractors to make find-and-fix projects successful.

CONCLUSION

CMUD has been implementing find-and-fix contracts since 1999. CMUD estimates a savings of over eight million dollars in design and sewer system evaluation costs over this 13-year period. Many serious emergency situations have been addressed within days of identifying the

problems, not months. Work that would normally require extensive design and internal processing for bidding has been completed quickly and efficiently. Maintenance efforts on previous problem sewers have been eliminated. Significant reductions in peak wet-weather flows have been documented.

CMUD will continue to implement find-and-fix projects to fast-track sewer rehabilitation construction and to save substantial money. For CMUD, the money saved to reduce design costs means more actual repair work can be completed. The estimate eight million dollars in savings, to date, represents one complete year of CMUD's rehabilitation budget.

The find-and-fix approach should work for any utility and should be considered as the primary approach for sewer rehabilitation work. Find-and-fix should save utilities substantial money and ultimately will allow more rehabilitation work to be completed, thereby avoiding the pitfalls of traditional rehabilitation design and construction.

ABOUT THE AUTHORS

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The Evolution of an Industry – The Rise of Utility Optimization: Focus on Financial Sustainability

By Amy Santos, Principal Consultant, and Raul Torres, Senior Vice-President, of Red Oak Consulting, an ARCADIS Group

Water infrastructure is critical to the protection of public health and the environment. Since the 1970s, the United States has invested billions of dollars in its water infrastructure through the *Clean Water Act*, the *Safe Drinking Water Act* and other federal programs, augmented by funds from state and local governments, to expand and renew these essential public utility assets.

Yet, much new investment is needed, particularly with regard to the aging horizontal assets (i.e., collection, transmission, and distribution systems) of a water utility, along with the preservation of vertical assets (i.e., pump stations, treatment systems and storage facilities). The industry is evolving toward more sophisticated approaches for prioritizing future capital needs to enable water utilities to achieve financial sustainability by minimizing capital spending and maximizing the use of available funds.

While water utilities are learning to operate within the classic struggle to ‘do more with less,’ there are still gains to be made. Despite what may be an overused term, the overriding concept is clearly relevant. While the question is easily articulated, the answer is not so simple. Water utilities are challenged to protect the public’s health and welfare despite fixed or falling revenues and rising costs.

Traditionally, efforts to control utility costs have focused on the capital expenditures resulting from routine master planning processes. However, efforts to evaluate the efficiency of operational expenses and performance have been variable. One may theorize that this may be due to a lack of availability or quality of benchmarked cost and performance data for operations, as compared to the data typically available in the capital delivery arena. This is likely a significant factor contributing to the state of certain operational inefficiencies within some utilities, and, fortunately, one that can be overcome in time.

For years, as costs for water and wastewater services were a fraction of many other utilities, there was flexibility to raise rates to cover increasing capital and operating costs. Now, with stressed municipal budgets and lackluster growth, no longer are rate increases easily approved or even a politically viable option. It is time for the water industry to evolve, to exhaust any cost-reduction and revenue enhancement opportunities, and optimize its business practices before rate increases are contemplated.

WHAT TO CONSIDER WHEN OPTIMIZING A UTILITY

Utility optimization requires an integrated view of the full range of utility functions at both the capital and operational levels, focusing on four key areas: financial sustainability, infrastructure preservation and performance, risk mitigation, and technology optimization.

Understanding the interplay between these key areas, pursuing each in a balanced enterprise view, and capitalizing upon both inherent and imposed synergies is the pathway to utility optimization. This article focuses on financial sustainability within this larger context.

WHAT CONSTITUTES FINANCIAL SUSTAINABILITY?

To achieve financial sustainability, a water utility cannot rely solely on rate increases to meet short-term budget shortfalls. It is important to understand the drivers behind each budget line item to identify opportunities to maintain a stable financial condition amidst declining revenues and increasing costs. A long-term financial plan should encompass both revenue enhancement and cost-reduction strategies, and be firmly rooted by an equitable and justifiable rate structure that generates revenues adequate to meet current and

projected system requirements. A sound financial condition results in enhanced bond ratings, which lowers the cost of capital for necessary infrastructure investments, and minimizes the need for significant rate increases, which supports local ratepayers and garners political goodwill.

Control costs and improve operational efficiency and effectiveness.

Capital expenditures have a significant impact on the water utility budget. Water utilities should break away from traditional capital improvement plan development strategies and implement a zero-based asset management approach to eliminate unnecessary spending. This involves using statistically based risk assessment and asset management concepts, rather than traditional master planning approaches to prioritize capital outlays. By incorporating risk assessment and failure analysis into repair and replacement modeling, water utilities will be better equipped to anticipate upcoming expenditures and mitigate the financial risk of aging assets. Furthermore, water utilities should evaluate funding sources and financing methods for capital expenditures to minimize the impact of borrowing or self-funding on the utility’s overall financial condition.

By focusing on operational expenses (i.e., people, products and processes) in addition to capital expenditures, water utilities can identify further opportunities to eliminate unnecessary costs. Utilities should focus on key drivers of operational expenses, including chemical and energy use, operational and maintenance practices, and procurement strategies. Additionally, water utilities should evaluate whether utility departments are organized to support the utility’s goals and mission, whether staff has the right skill sets and training, and whether there are ways to optimize workflow processes to maximize effective time management.

Enhance and optimize revenues.

Declining consumption and stagnant growth have forced utilities to reconsider current rate structures and reevaluate traditional rates and charges. Many utilities have implemented alternative mechanisms to equitably recover the costs for regulatory compliance projects, stormwater management and other expanded services. Additionally, utility billing errors and non-revenue water can represent millions of dollars of unrealized revenue, and should be carefully scrutinized for accuracy. Water utilities

should also look for new ways to supplement traditional revenue sources through the development of new business lines such as leasing utility real estate, allowing advertising on towers and fire hydrants, offering service line insurance, and more through the use of innovative strategies.

HOW DO INNOVATIVE STRATEGIES SUPPORT UTILITY PERFORMANCE?

To achieve financial sustainability within the larger context of utility optimization, water

utilities should not limit themselves to traditional solutions. Innovative strategies are increasingly playing a critical role for improved utility performance.

For example, a growing trend in the industry is to evaluate regionalization and consolidation strategies to get better economies of scale and pool regional resources. Many states have legislation in place to allow such consolidations, or legislative changes are often considered. Oftentimes, consolidation of regional assets

LESSONS FROM THE UNITED KINGDOM

Since the privatization of water utilities in the United Kingdom in the early 1990s, the UK water industry has invested over \$150 billion to upgrade and replace its water assets. Having successfully implemented major capital improvements, the UK water industry is now focusing on achieving operational and maintenance efficiencies. Traditionally, the emphasis on reducing operational expenditures (Opex) has been somewhat limited, given the challenges of massive capital programs.

Unlike the United States, the UK water industry is heavily regulated, which includes regulated mandates to reduce operation and maintenance costs. Such cost reductions are conditions of obtaining rate increases for each five-year 'asset management period' or AMP, which stipulates allowable rate increases.

As a condition for allowing rate increases, the UK regulatory agencies require the twelve UK water companies to shift their focus to Opex, thereby obligating an evaluation and implementation of cost-reduction programs. The US can learn from its UK counterparts on how to be smart around cost reduction while not compromising service. Initially, the focus in the UK was to reduce labor and consumables (i.e., chemicals and power) costs.

The critical question is what actually drives best-in-class operational performance? Achieving 'frontier' or 'best-in-class' performance requires attention to five key components.

1. **Effective operating model** – Processes and functional interfaces within the business need to be aligned with 'single point accountability' allocated for asset decisions. Clarity is required around asset management and operations interfaces and the expectations for specific roles and responsibilities. For example, who is accountable for operational risk, particularly if the asset requires replacement? Equally, who is accountable for asset data quality? A similar approach should also be considered for the in-house labor forces, contractors and service providers.
2. **Effective planning** – Total visibility is needed on the maintenance plan and efficient mechanisms need to be in place to control reactive work. This should encompass an effective logistics function for scheduling jobs, dispatch and control of inventory and spares.

3. **Productivity** – In this case, the focus should be on maximizing the amount of productive work completed per shift. This should also consider how work is allocated to field crews and the role of the site supervisors or depot manager in helping to drive improved performance by working closely with the work scheduling team to maximize the volume of jobs that can be completed in a single shift.
4. **Cost control** – All direct and indirect Opex costs, at unit cost and cost base level, need to be effectively managed. This should include the creation of accurate estimates for labor and materials for routine inspection and maintenance activities, and a regular assessment of estimate versus actual cost per work type.
5. **Benchmarking** – It is critical that 'should cost' and 'should take' benchmarks are set for key tasks and activities. The 'should cost' estimate needs to include both unit costs and a provision for indirect cost categories considered collectively in terms of what a work function 'should cost' to deliver. The 'should take' benchmarks consider process and work activity durations, which in turn should drive the overall cost and efficiency expectation for a work function, such as planned maintenance activities.

Studies by ARCADIS companies in the UK have found some startling statistics:

- Up to 90% of maintenance activity was reactive, not planned;
- On occasion, as little as 10% of planned work was carried out;
- 75% of all maintenance activities at certain treatment works were solely one process stream;
- Unplanned maintenance activities equated to 33% of downtime losses;
- Unplanned maintenance is 50% more expensive than planned maintenance.

Although there are clearly differences among the UK privatized water industry and US municipal water sector, it is likely that many similar trends exist. While there are clearly performance issues to tackle, there is also a significant challenge about the availability of quality data to evaluate efficiency opportunities. With sufficient focus and guidance, utilities can collect, manage, and utilize data to better manage operation and maintenance costs.

and programs provides excellent opportunities to control costs. One must look at the legal, financial, and technical elements involved to uncover cost-saving opportunities.

In some cases, consideration of outsourcing options such as design-build-operate contracts, which may include full-service delivery contracts with long-term operations, may be appropriate. Public-private-partnerships (PPPs) are becoming more popular, some of which even include private financing options. In some cases, PPPs with private financing may be advantageous. Such PPPs usually only make sense when low-cost public financing cannot be secured or a performance-based contract with allocation of financing risks to the private sector, such as for power or biosolids management, makes business sense.

Outsourcing PPP arrangements are best when in-house capabilities are limited, private sector innovation is warranted, and the allocation of risk is fairly balanced among the involved parties. In general, the best arrangements are secured via a competitive, open and fair process that provides the right incentive for performance while allowing creative solutions.

FINANCIAL SUSTAINABILITY – THE CORNERSTONE OF SUCCESS

To achieve financial sustainability, water utilities must develop an integrated approach that spans across all aspects of the utility operating model, combining traditional and innovative practices to form the cornerstone for lasting utility optimization.

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THE POWER OF ENERGY

Energy is typically the second largest operating expense for water utilities, and offers significant opportunity for cost control and revenue enhancement through demand reduction and on-site generation strategies.

Demand Reduction. Much of the energy consumed by aging infrastructure is simply wasted by outdated treatment processes and control systems; equipment that has been insufficiently maintained, has become outdated, or has reached, or exceeded, its useful life. Inflow and infiltration, combined sewers, and leaking water distribution systems waste energy through unnecessary pumping and treatment. Excessive energy use wastes limited financial resources. There are several ways to reduce energy consumption or improve energy efficiency. In addition to building system/site lighting improvements, utilities may explore process improvements using equipment and process upgrades, operational optimization, process automation, load shifting, and other energy management strategies. In some cases, energy projects may be implemented through energy performance contracts to mitigate short-term financial impacts for utility ratepayers.

Energy Generation. Across the country, utilities are installing solar panels or micro-hydropower or anaerobic digester gas utilization systems or other forms of renewable energy to generate energy on-site. The energy may then be used to offset facility usage and avoid, reduce or stabilize energy costs; or, in some cases, it may be used to generate revenue by selling the energy back to the grid. These projects may be financed through power purchase agreements or through a variety of other mechanisms, including traditional bonded debt. Most water and wastewater utilities are well positioned to take advantage of renewable energy. As large electrical users with a stable long-term outlook and generally good credit ratings, utilities are typically viewed as excellent candidates by investors and rating agencies.



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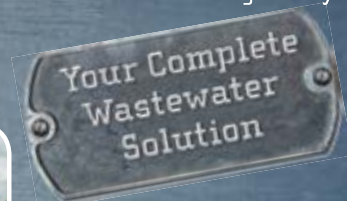
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The Falls Lake Rules and Where They May Lead Us

By Katya Bilyk, PE, Ron Taylor, PE, Tony Greiner, PE, and Paul Pitt, PE, PhD. – Hazen and Sawyer

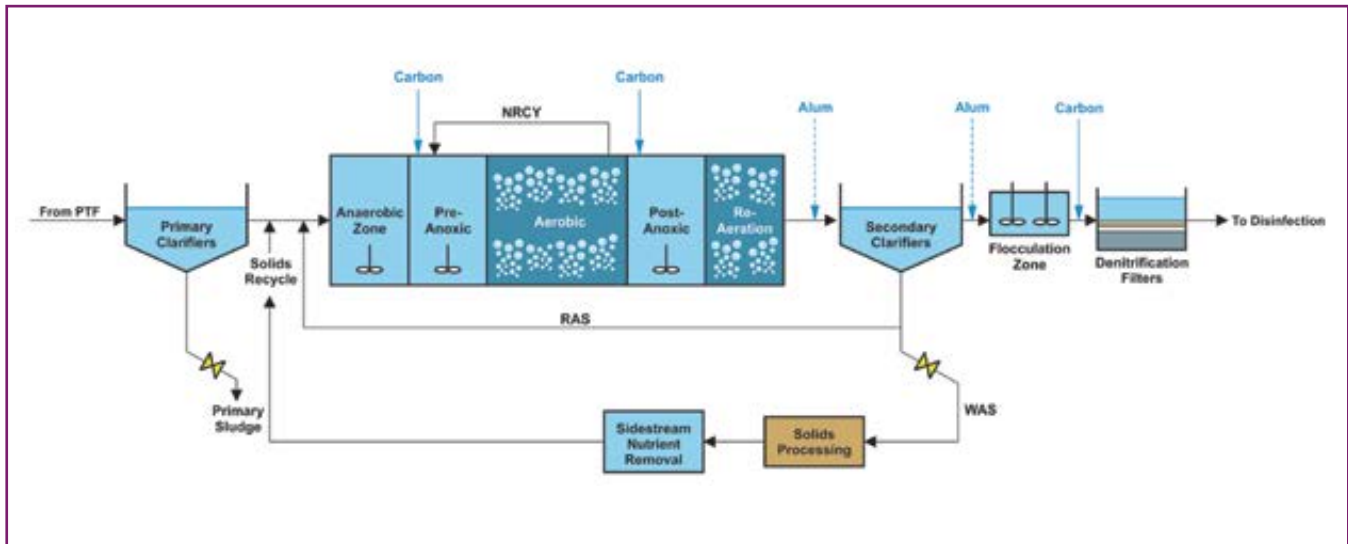


Figure 1 - Representative Process Flow Diagram of a Wastewater Treatment Plant with Best Available Conventional Technology

OVERVIEW

As an industry, we are responsible for protecting water quality for the general public. Our roles vary according to whether we are regulators, consultants, operators, and/or utility managers. Using these roles and this framework, we strive to develop the best solutions that will protect water quality for future generations. This article discusses one of the most significant pieces of nutrient legislation passed in North Carolina and – assuming it is a trend rather than an isolated case – what the legislation means in a broader context.

INTRODUCTION

In January 2011, the North Carolina State Legislature approved its most stringent

nutrient standards to date. The Falls Lake Rules were set to protect and preserve water quality in Falls Lake, a drinking water source for approximately 450,000 people. Accordingly, both point and nonpoint sources of nutrients are regulated.

Three major point sources will have to dramatically reduce the amount of total nitrogen (TN) and phosphorus (TP) discharged from their facilities to comply with the Falls Lake Rules. The point sources affected are owned and operated by the City of Durham, South Granville Water and Sewer Authority and the Town of Hillsborough. The Phase 1 (2016) TN and TP allocations for these point sources are shown in **Table 1**, along with their permitted flow and the concentration equivalent at design flow.

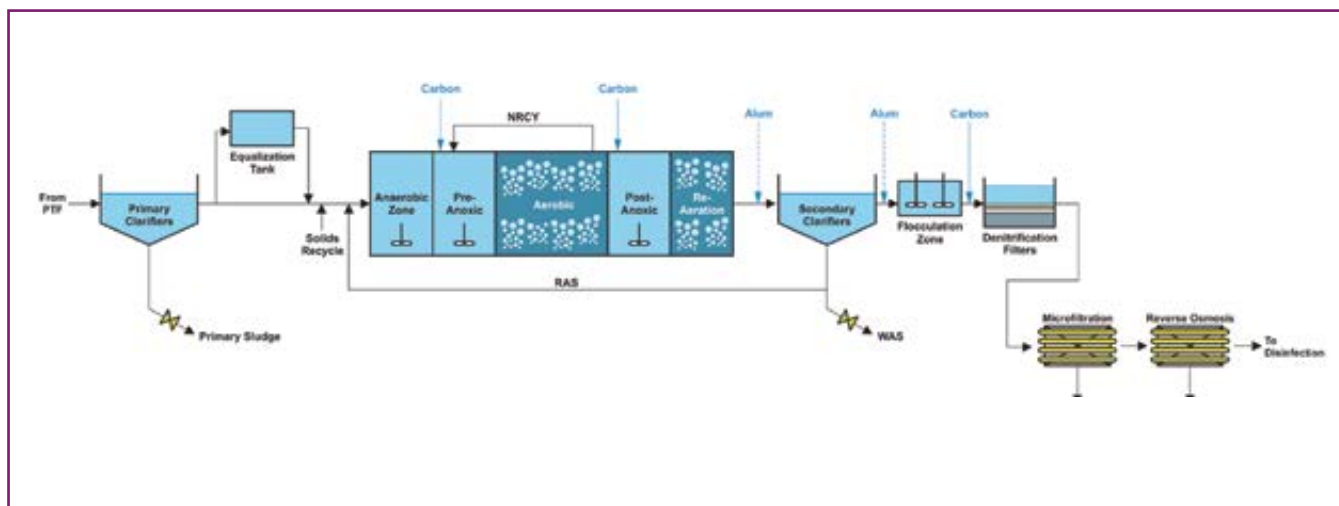
Phase 2 (2036) will reduce and cap TN discharged from point sources at 97,617 pounds per year and TP at 5,438 pounds per year, substantially less than the amount allocated in Phase 1.

While the Falls Lake Rules are the most stringent point source allocations for nutrients, they are not the only rules affecting nutrients from point sources in North Carolina (i.e., The Jordan Lake and Neuse Rules). The Falls Lake Rules differ from other nutrient compliance legislation in North Carolina in that the level of technology required to reliably achieve the Phase 1 and 2 TN standards in the Falls Lake Rules is beyond the capabilities of conventional technology (**Figure 1**). The same goes for the level of technology for the Phase 2 TP standard.

Table 1 - Phase 1 TN and TP Allocations for Falls Lake Point Source Dischargers

Municipal Treatment Plant	Permitted Flow (mgd)	Mass Allocations (lb/yr)		Concentration at Design Flow (mg/L)	
		TN	TP	TN	TP
North Durham	20	97,665	10,631	1.6	0.17
South Granville Water and Sewer	5.5	22,420	2,486	1.3	0.15
Hillsborough	3	10,422	1,352	1.1	0.15

Figure 2 - Liquid Train Process Flow Diagram of Conventional Treatment followed by MF and RO



LIMITATIONS OF CONVENTIONAL TECHNOLOGY

Typically, conventional technology can reliably achieve annual average effluent TN concentrations of 2.5 and 3 mg/L, depending on influent characteristics and TP concentrations of 0.03 to 0.08 mg/L TP, depending on the treatment approach. The key issue with biological nutrient removal processes and conventional technology are that they are not physical barriers capable of removing all species of nitrogen. While microfiltration (MF) membranes are considered conventional technology, they are designed to remove particulate material only and hence cannot address ions such as ammonium, nitrate, nitrite and ortho-phosphate.

Representative effluent nitrogen speciation goals for a plant that needs to meet a TN limit of 3 mg/L could be categorized as follows:

- ammonia < 0.1 mg/L,
- nitrate/nitrite – 1 mg/L,
- soluble organic nitrogen – 1 mg/L,
- particulate organic nitrogen – 0.2 mg/L, and
- TN goal < 2.3 mg/L.

By maintaining full nitrification, good denitrification and good solids separation, a plant can operate below the threshold of 3 mg/L allowing some excursions in performances. Such excursions may occur as a result of high flows, low temperatures and/or maintenance issues that may affect treatment.

ADVANCED TREATMENT

Advanced treatment technologies are required to meet nutrient standards that are beyond the limitation of conventional technology (LOCT). MF followed by reverse osmosis (RO), as shown in **Figure 2**, is

commonly considered the most reliable means of achieving nutrient standards that are below LOCT.

There are currently only a handful of wastewater treatment plants in the world that are achieving TN limits at or below

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1 mg/L, including three plants in Australia. All of these plants utilize MF + RO, but it is important to point out that all of the operating plants receive a constant influent flow with no wet weather peaks. This is a condition that is not applicable to the Falls Lake point sources. Currently, there are no facilities worldwide that can treat to this degree without flow equalization of peak flows to limit the flow through the advanced treatment process.

MF is a required pre-treatment step to reduce fouling of RO membranes and ensure a consistent feed water quality to an RO system. RO is a high-pressure membrane process that targets the removal of dissolved solids. The pressure required of an RO system is in the range of 200 psi; therefore, it requires a tremendous amount of energy. It also has a large carbon footprint. Disinfected RO permeate is suitable for a high quality reuse application, while the concentrate requires further treatment before disposal.

The disposal of RO concentrate is a challenging issue that can constitute a large portion of the overall project costs and may require substantial coordination with permitting agencies. Currently there are only a few methods of concentrate disposal that are being used widely, which include:

- surface discharge,
- deep-well injection,
- evaporation pond, and
- zero-liquid discharge (ZLD).

The most common practices are surface water discharge, deep-well injection, and evaporation ponds. Surface water discharge is most applicable to RO desalination plants located near coastlines and is typically not feasible for land locked areas with nutrient-sensitive surface waters. Deep-well injection is expensive, but can have significant economies of scale for larger plants. However, there are preliminary discussions with North Carolina Department of Environmental Quality (NC DEQ) that have indicated deep-well injection will not be allowed in North Carolina. Concentrate handling using evaporation ponds is limited to areas with hot and dry climates and is restricted by the availability of large tracts of low-cost land. ZLD involves further concentrating the brine to minimize volume followed by using heat to evaporate the remaining liquid and landfilling the solids. Costs and energy required to operate this type of system are high.

The anticipated capital cost of adding MF + RO to a LOCT plant is approximately \$10 to \$15 per gallon with the design flow peaking factor being one of the most sensitive variables to price. Brine

disposal using ZLD is anticipated to cost approximately \$30 per gallon of concentrate. Planning-level estimates from recent studies in North Carolina show that the twenty-year net present cost of operating a MF + RO system is nearly the same as the capital cost. The carbon footprint of the MF + RO process is also orders of magnitude greater than the LOCT plant.

Because the construction and operating costs of an MF + RO system are much higher than conventional treatment, the industry's best chances for an economic environmental win-win is to identify lower cost and lower energy alternatives to MF + RO.

OTHER POTENTIALLY VIABLE ADVANCED TREATMENT TECHNOLOGIES

Although MF + RO is the most reliable and proven advanced treatment technology to address nutrient limits below the LOCT, there are other advanced treatment technologies that have the potential to develop into suitable and perhaps less costly and lower energy-consuming alternatives for complying with nutrient standards below LOCT. These processes, which would be added onto a conventional treatment plant include, but are not limited to:

- MF + ion exchange (IX),
- conventional filtration (CF) + IX,



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“There are also a number of outside-the-fence and/or non-technology alternatives that may be helpful to municipalities that have to comply with nutrient standards below the LOCT.”

- ozone + granular activated carbon (GAC), and
- primary clarification + MF + RO.

These options have no full-scale installations and one or no pilot-scale installations, and in many cases are also less conservative. A recent planning-level cost estimate for a plant in North Carolina showed that CF + IX or MF + IX had an estimated twenty-year net present cost savings of 50% and 30%, respectively, compared to MF + RO.

It should also be noted that side-stream treatment for nitrogen and/or phosphorus removal may also be a strategy for deferring investments in advanced treatment. While not a long-term alternative to advanced treatment, providing a reduction in the nitrogen and/or phosphorus load to the mainstream BNR process may reduce effluent TN by 10 to 15 percent by reducing the load to the mainstream BNR process. Common side-stream treatment approaches include, but are not limited to:

- bioaugmentation,
- nitrification/denitrification,
- nitrification/deammonification,
- struvite precipitation/recovery, and
- sidestream coagulant addition.

Lastly, two promising areas of research that are currently generating a great deal of interest in point-source nutrient removal are mainstream deammonification and mainstream anaerobic treatment of wastewater. Both of these concepts offer substantial energy savings over conventional treatment. However, it is yet unclear if they are capable of treating wastewater to TN and TP standards below the LOCT.

NON-TECHNOLOGY AND OUTSIDE-THE-FENCE ALTERNATIVES

There are also a number of outside-the-fence and/or non-technology alternatives that may be helpful to municipalities that

have to comply with nutrient standards below the LOCT. Most of these strategies involve reducing the quantity of flows coming into the water reclamation facilities (WRFs) and/or providing alternatives to discharging treated effluent into the receiving waters. These alternatives include effluent reuse, infiltration/inflow reduction, decentralization of facilities/low-impact development, flow diversions and relocation of the plant outfall. Not all of these approaches will be feasible on every project, but alternatives to capital improvements are worth considering to identify a lower cost solution.

A recent evaluation in North Carolina demonstrated that reuse had the potential to reduce the 20-year net present cost of complying with a TN limits below LOCT by approximately \$300 million, which is approximately 60% less than the net present cost of the MF + RO project. This evaluation included the capital and operating costs associated with constructing and operating a brand new

reuse distribution system with the costs associated with building and operating a MF + RO system.

CONCLUSIONS

This article discussed the technologies required to comply with the Falls Lake Rules with an eye toward the future landscape of point-source nutrient removal to levels below the LOCT. The key issue with biological nutrient removal processes and conventional technologies are that they are not physical barriers capable of removing all species of nitrogen. MF + RO is commonly considered the most reliable means of achieving nutrient standards that are below LOCT. Because the construction and operating costs of an MF + RO system are so much higher than conventional treatment, the industry's best chances for an economic-environmental win-win (when it comes to complete nutrient removal at point sources) is to identify lower costs and lower energy alternatives to MF + RO. 💰



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Put Americans Back to Work – Invest in our Nation's Essential Water Infrastructure US Jobs Plan: Invest in Water Infrastructure

Following the hyper-partisan election season, a rare opportunity exists to unite and support a truly bipartisan cause that affects every American: the desperate need to invest in our nation's crumbling water infrastructure. Both political parties focused their campaigns on the economy, job creation, and unemployment, but made almost no mention of water infrastructure. The widespread deterioration of America's water and wastewater infrastructure is reaching a critical stage – it is literally crumbling beneath our feet. With this crisis comes incredible opportunity. Forty years of data, experience and expert studies undeniably demonstrate that investing in water and wastewater infrastructure creates jobs and boosts the nation's economy.

The North Carolina Section American Water Works Association and Water Environment Association have worked for the past 92 years to provide state-of-the-art training for water professionals and public education, in order to enhance the understanding of issues relating to water in our state. We are working with many other national and statewide organizations to send a strong message to congress and the president about the importance and benefits of investing in America's water infrastructure. The year 2012 was the 40th anniversary of the *Clean Water Act*, and North Carolina has made great strides in cleaning up our waterways and providing lakes and streams that are safe for fishing and swimming. But in order for this progress to continue, our leaders need to ensure that we continue to invest in our essential water infrastructure.

Some might think we cannot afford to make these investments during a time of economic distress. But the fact is that investing in water infrastructure creates high-quality jobs through the repairs, replacements and upgrades to our aging drinking water, wastewater and other water-related systems, which is essential to economic vitality. This investment also



spurs economic growth by ensuring safe, reliable water and wastewater systems that attract and retain industry, business and qualified workers. Every dollar invested in water and sewer construction leads to \$6.35 in long-term private input. An investment of \$1 billion in water infrastructure would create 40,000 jobs.

Water infrastructure investment is also critical to ensure the protection of the public health and our quality of life; it provides multiple benefits for our communities and promotes innovative technologies that can keep America competitive.

A recent survey found that 95% of voters ranked clean water as the most important governmental service. Furthermore, 87% believe the government should take the lead in identifying solutions to the current investment crisis and 85% support additional investment. We have an estimated water infrastructure backlog of nearly \$10.98 billion in North Carolina alone, and another \$5.05 billion gap for wastewater infrastructure. A \$16 billion investment is needed now in North Carolina towards the repair and/or replacement of aging wastewater treatment, stormwater, and other clean water infrastructure. This is part of a nationwide backlog of nearly \$300

billion. But there is a silver lining. In 2011, the American Society of Civil Engineers estimated that a modest increase in spending on water infrastructure could result in 700,000 new jobs.

Both the Republican and the Democratic Party election platforms included language that emphasized the importance and need to invest in water infrastructure, and the relationship between job creation and investing in infrastructure renewal or replacement. The value of water must be forefront on the Congressional agenda in 2013. As voting citizens, we need to ask our representatives what solutions they are enacting, and what commitments are planned to ensure clean water is a top priority in North Carolina. If we are proactive in this effort, we all benefit – through new jobs and the development of infrastructure that ensures our state and our nation will remain economically competitive AND ensures the continued protection of our public health and environment. This is the best sort of win-win.

This article was written by the Water Environment Federation and is supported by NC AWWA-WEA Chair Jackie Jarrell and Past Chair John McLaughlin. 



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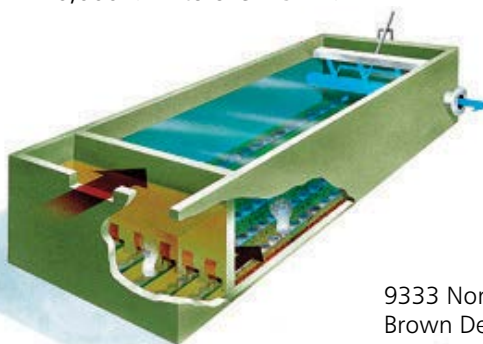
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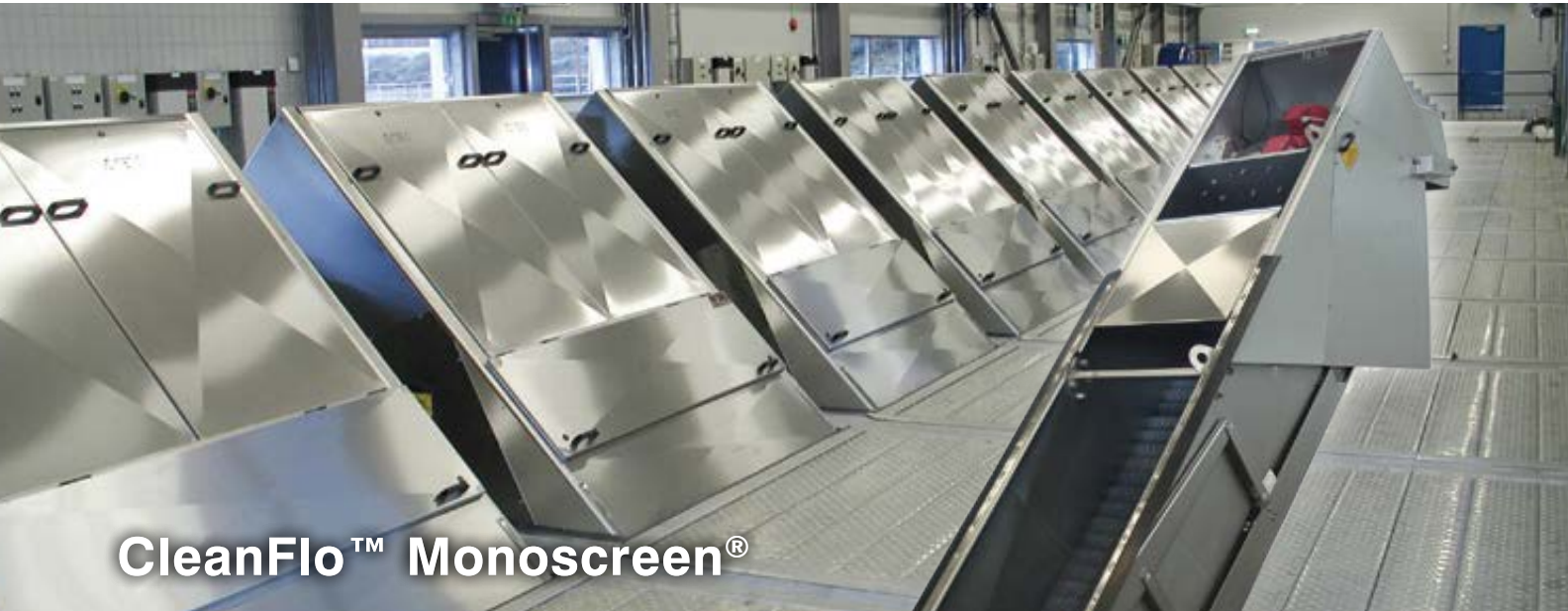
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Master Plan Provides Roadmap for Kill Devil Hills' Water System

By John H. Eick, PE, Project Director GHD Consulting Services Inc. and Stephen F. Albright, Public Services Director, Town of Kill Devil Hills

BACKGROUND

The Town of Kill Devil Hills (KDH) was hit hard by the “great recession” that began in 2008. Higher unemployment rates resulted in less discretionary income and this meant fewer tourists’ dollars flowing to local businesses. The decline in the real estate market resulted in foreclosures and an inability to obtain financing for home purchasing and investments. A once-booming construction industry stalled. These economic conditions made it more difficult to generate the funds necessary to fund Town services, including the water system.

Yet one of the most important Town assets is its water system. It supports the economic health of the community and is a vital component to the area’s quality of life. Despite broader economic problems occasioned by the recession, the water system still had to operate at its required level of service including:

- high reliability,
- no violations,
- excellent customer service, and
- emergency preparedness.

In 2011, the Town commissioned a Water System Master Plan to respond to the challenge of meeting its required level of service at an acceptable level of risk during times of financial austerity. This article describes how a well-crafted water system master plan can serve as a roadmap for the future of a water system and help secure its contribution to the prosperity of the community it serves.

KDH’S WATER SYSTEM

The Town of Kill Devil Hills is located in Dare County along North Carolina’s Outer Banks. The Town contains approximately six square miles of land. The water system serves approximately 7,000 permanent residents and as many as 40,000 during the peak vacation season. The Town is surrounded on the east and west by ocean and sound, and north and south by other



municipalities. These constraints place limitations on expanding the Town’s boundaries. Therefore, the hydraulic backbone of the system, which originated in 1963, has not had to be extended.

Dare County supplies treated water for the Town’s system through two metered connections. Water supplied to the Town is treated at either the County’s five-million-gallon per day (mgd) Skyco Plant or the 5 mgd North Reverse Osmosis (RO) Plant. The Town’s agreement with the County permits the Town to purchase up to 3 mgd of treated water. The agreement stipulates the quality requirements for the water.

The Town provides retail water service to its commercial and residential customers through a distribution system with 422,000 feet (80 miles) of piping ranging in size from two to 16 inches in diameter. Pipe materials

include: PVC (70% of the system), asbestos cement (AC) (26% of the system) and ductile iron (4% of the system). Key elements of the distribution system also include: pumping, elevated storage, ground storage, emergency generators, disinfection facilities, hydrants and blow-offs.

In 2011, the total volume of treated water provided to the Town was 443 million gallons, for an average of 1.2 mgd.

DISTINCTIVE FEATURES OF THE MASTER PLAN

Asset management framework

The Town completed a previous water system master plan in 2001 and systematically implemented its recommendations by completing some large capital improvement projects. This former plan had ‘run its course’ and the Town needed an updated roadmap.

Traditionally, water system master plans have involved extensive system modeling and development of a capital improvement plan based on that modeling. The key issue has often been providing sufficient capacity to serve growth.

Despite covering all points of a traditional master plan, the focus of KDH's plan was different. This plan was developed within an asset management framework. This meant that the work was organized along the lines of the five core asset management questions:

1. What are my assets and what is their condition?
2. What is my required level of service?
3. What are my critical assets?
4. What is the optimal mix of capital improvement program (CIP) and operations and management (O&M) strategies?
5. How do I fund the system for long-term sustainability?

Significant involvement by town staff

From the first day of the project, staff from the Town's Public Services and Finance Departments was involved. This involvement included participation in workshops, input to the plan, suggestions for improvements and review and comment on the draft report.

Comprehensive financial review

The third way this plan differed from traditional master plans is its inclusion of a comprehensive analysis of water system rates and fees with assistance from the Environmental Finance Center. Integration of the financial, engineering and operational aspects of the plan helped ensure that its recommendations constituted the right balance of risk, level of service and cost for the Town.

FIVE CORE QUESTIONS

1. What assets comprise the system and what is their condition?

Previous master plans had done a good job of identifying the system's assets and cataloging them into an EPANET model. This information was updated and supplemented by interviews with Town staff. To the extent possible, each pipe's material and size was added to the new

asset database (aka Asset Register). Aboveground assets were inspected and their attributes were entered into the asset register.

Asset condition was assessed by inspections (aboveground assets), interviews with Town staff, and review of work order histories (buried assets). The asset register developed for this project can, and will, be periodically updated by Town staff outside the master planning process and used to inform future renewal decision-making.

2. What is my required level of service?

In a workshop setting, Town staff discussed what was expected of this water system by its stakeholders. Stakeholders include: customers, elected officials, environmental regulators, adjoining towns and Dare County.

The required level of service for the system was defined by the Town as follows:

- delivering safe and aesthetically pleasing water to current and future customers at suitable quantities and pressures, including desired fire flows;
- meeting all federal and state laws and regulations governing drinking water systems;
- establishing rates to cover all system costs, while operating at the lowest life cycle cost;
- providing an exceptional level of customer service; and

- serving as an asset to the Town, offering economic, environmental and social benefits.

3. What are my critical assets?

Once the distribution system was modeled, a workshop was held to discuss critical assets. These were defined as those whose failure would significantly impair the ability of the system to meet its required level of service.

Assets were evaluated on the basis of risk. Risk was defined as the 'likelihood of failure' times the 'consequence of failure' (including considerations of redundancy). Critical assets were identified and rated as shown in **Table 1**.

Once the critical assets were ranked by their risk profile, it became apparent where the Town's limited asset renewal dollars should focus. The question then becomes what capital or operation and maintenance (O&M) strategy is the most appropriate for each of the priority assets.

4. Optimal mix of CIP and O&M strategies

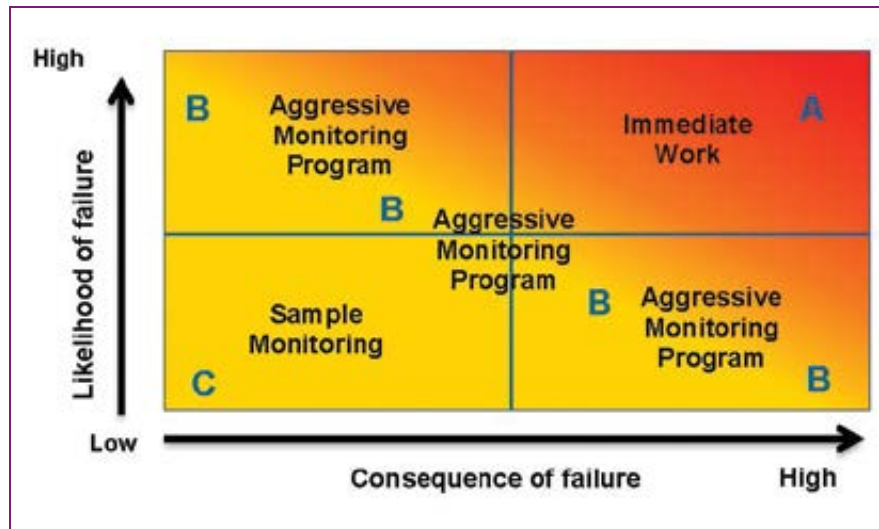
Figure 1 depicts asset strategies based upon their risk profile.

So, using **Figure 1** for guidance, Town staff and GHD developed strategies to manage the risk of failure of critical assets, as shown in **Table 2**.

This list includes only those assets deemed critical to achieving the required level of service. Obviously, there are many other less critical assets that will require



Figure 1



maintenance and renewal in the near future. However, the preceding steps illustrate how any number of assets may be evaluated and ranked for renewal.

A great deal of the system was installed in the 1960s and is in the last third of its useful life. Therefore, it is important for the Town to continue its capital improvements program. The focus for the past 10 years has been to increase capacity and pressure, reinforcing the hydraulic ‘backbone’ of the system, particularly along the oceanfront.

With that largely complete, the focus should shift to either repairing or replacing vital system components before they fail. A 10-year capital improvement program was developed based upon the risk rating of various assets. However, where management strategies other than a capital improvement were appropriate, they were recommended.

5. Funding the system for long-term sustainability

Municipal water systems in North Carolina

are required to be financially self-sufficient. Therefore, the rates and fees charged by utilities must be adequate to cover the annual operating and maintenance costs, pay debt obligations and provide for necessary capital renewal. GHD examined these factors and outlined a strategy that will provide the system with the necessary financial resources to reliably meet its required level of service into the future.

The approach to this evaluation was guided by the principles outlined in AWWA Manual M1 – Principles of Water Rates, Fees, and Charges – and followed eight general steps:

1. Determine ongoing operations and maintenance costs for the water system.
2. Identify existing debt.
3. Review details of the CIP developed earlier.
4. Combine the three previous elements to determine annual revenue requirements for the water system.
5. Estimate projected revenues from fees, e.g. connection fees.
6. Determine the revenues to be raised by rates by subtracting projected fee revenue from projected annual revenue requirements.
7. Examine alternative rate structures that

Table 1: Risk Rating of Critical Assets

Critical Asset	Failure		Risk Rating
	Consequence	Likelihood	
Emergency Generator (1970)	4	4	16
Dare County Interconnections	3	4	12
Old Town Hall Elevated Tank	3	3	9
Control Valves (Old Town Hall Pumping Station)	3	3	9
Consumer Meters	3	3	9
Special Need Customers	4	2	8
Backflow Prevention	4	2	8
Ground Tanks	4	2	8
Eighth Street Elevated Tank	3	2	6
Replacement of Asbestos Cement Pipe	3	2	6
Old Service Lines	2	3	6
Gate Valves	2	3	6
Variable Frequency Drives-Eighth St. Pumping Station	2	2	4
Blow Offs	2	2	4
Large Lines 16-inch	4	1	4
Emergency Generator (2006)	3	1	3

- will generate the necessary revenues.
8. Determine the set of rates, fees and financing approaches that best meet the objectives of the Town.

Using computational models, each of the preceding steps was completed. Some notable findings of the evaluation were as follows:

- Since the previous master plan, the Town had been diligent in following its CIP recommendations.
- In that same time period, the Town had also been diligent in increasing water rates to match increased costs of operating the system.
- The Town has financed all recent capital expenditures from current revenues without borrowing. This was assisted by impact fees generated by system growth.
- Due to slower growth, the Town cannot depend on the same level of impact fees in the future.

- The current rate structure for the system is comprised of a minimum charge for the first 5,000 gallons per quarter and a series of increasing commodity rates for gallons in excess of 5,000 gallons per quarter. This is termed an 'increasing block rate' or 'conservation rate' structure.
- The existing rate structure was working well and there was no compelling reason to alter the structure.
- Under current rates, a residential customer using 5,000 gallons per month would pay approximately \$35.00 per month for water service (\$6.93 per thousand gallons).
- Recommendations were made to fully recover costs through changes to various fees – some increased and others decreased.

The Town had a range of options to consider with respect to rates. The options revolved around how much of the system's

capital costs should be paid by current users versus future users. At the one extreme, the Town could continue its pay-as-you-go approach to funding necessary capital projects. This approach would have required rate increases in the range of 5.4% annually. The great advantage of this approach is the continued lack of system debt. Close to the other extreme is the option to finance all major capital projects, spreading the costs over 20-30 years. If the Town selected this option, it could avoid rate increases for the foreseeable future. However, it would be deferring significant costs into the future, including interest charges. A moderate approach would be to use debt to finance only the largest of capital expenditures, such as the new elevated tank. In doing so, the Town would shift some costs to future users and with 4% annual increases, meet its expenses and maintain adequate reserves. This alternative appeared to best suit the needs of the Town.

Table 2: Capital, O&M and Management Strategies for Critical Assets

Critical Asset	Failure		Risk Rating	Capital or O&M Strategy
	Consequence	Likelihood		
Emergency Generator (1970)	4	4	16	Replace immediately.
Dare County Interconnections	3	4	12	Exercise valves to confirm readiness.
Old Town Hall Elevated Tank	3	3	9	Rehab no longer cost-effective. Budget for replacement in 3-5 years.
Control Valves-OTH PS	3	3	9	Remaining life estimated at 10-15 years. Monitor performance.
Consumer Meters	3	3	9	Develop program to test large meters and replace residential meters over four years.
Special Need Customers	4	2	8	Identify customers and evaluate nearby pipe network.
Backflow Prevention	4	2	8	Pass ordinance and step up existing program.
Ground Tanks	4	2	8	Periodic inspection.
8th Street Elevated Tank	3	2	6	Periodic inspection.
Replacement of Asbestos Cement Pipe	3	2	6	Begin budgeting today for wholesale replacement in approximately 15 years. Leave in place until failures accelerate.
Old Service Lines	2	3	6	Replace along with main replacements.
Gate Valves	2	3	6	Exercise valves to confirm readiness.
Variable Frequency Drives-8th St. Pump Station	2	2	4	Monitor performance.
Blow Offs	2	2	4	Monitor performance.
Large Lines 16-inch	4	1	4	Monitor performance and periodic sampling.
Emergency Generator (2006)	3	1	3	Monitor performance.

SUMMARY AND CONCLUSIONS

Each water utility should periodically complete a Water System Master Plan. The interval between such plans in Kill Devil Hills was about 10 years. In the opinion of the authors, a successful master plan should include the traditional evaluations of projected demand, capacity needs, source water adequacy, plant evaluations (if applicable) and distribution system modeling. However, the master plan should also:

- include a serious commitment of staff from the Town's water and finance departments;
- be undertaken within an asset management framework to ensure that there is an appropriate balance between system risk, level of service and cost; and
- include an integrated financial evaluation because the level of service and risk are dependent on the financial resources applied to the system.

The Town of Kill Devil Hills partnered with GHD and implemented a master plan with all of the preceding elements. As a result, the Town now has the assurance that it

will be able to sustain its required level of service at an acceptable level of risk and it knows how to pay for it. The water system will continue to play a vital role in the economic viability of this vibrant community on the Outer Banks.

ABOUT THE AUTHORS

John H. Eick, PE, has 40 years of diverse civil and environmental engineering experience. His background includes planning, design and construction management of water, wastewater and solid waste facilities. He has served on state and local boards focused on land use and infrastructure planning. In recent years, he has developed a keen interest in infrastructure asset management and associated technological tools. He is GHD's Business Group Manager for Business Consulting for the Eastern US.

Stephen F. Albright, RLA, has worked for the Town of Kill Devil Hills for over ten years starting as the Planner in the Plan-

ning and Inspections Department. He was then promoted to Assistant Director of Public Services, and finally to Director in 2012. As Director, Mr. Albright is responsible for five Public Services Divisions including Water Administration, Water Systems, Water Plant, Streets and Solid Waste.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the contribution of the entire project team comprised of staff from GHD, the Town of Kill Devil Hills, and the Environmental Finance Center of UNC-Chapel Hill. We would like to specifically acknowledge the contribution of:

- Randy Metzger, former Director of Public Services who had the vision for the master plan;
- Sandy Tripp, PE, GHD's Project Manager for the master plan; and
- Glenn Barnes, who represented the Environmental Finance Center and provided valuable insight, perspective and review of the work products and final report. 💰



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New Strategies for Prioritizing Old Projects - Using Risk and Triple Bottom Line Criteria

By Celine Hyer, PE Malcolm Pirnie/ARCADIS

Toho Water Authority (TWA) has been implementing an asset management program for the last four years to improve the management of its over \$700-million-dollars-worth of water, wastewater and reuse assets. A significant amount of asset condition, consequence of failure and risk data has been collected during this time and is now available to assist with asset renewal and replacement planning and prioritization. In the past, capital improvement program (CIP) projects were only identified on a finance budget form and contained little back up information as to the problem being addressed, the impact of not performing the work, or the relative priority compared to other projects. This caused issues when budgets became tighter and a way to choose which projects

“The system also incorporated a triple bottom line approach that identifies how the project impacts financial, environmental and social issues.”

would go forward needed to be developed. In addition, due to citizen pressure to keep rates low, the TWA Board was looking for more supportive information on which to base its approvals. To address this, a capital project prioritization process and scoring system was created based on asset management principles. The system also incorporated a triple bottom line approach that identifies how the project impacts financial, environmental and social issues. Using this process has

made it easier to determine which projects are the most important while providing the amount of back-up information needed to receive Board approval and support for the CIP budget. This process also supports the financial viability attribute of effective utility management by performing the right projects at the right time.

INTRODUCTION

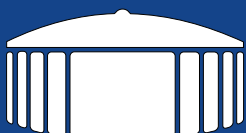
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Figure 1 – Example and sections of the Long Form Business Case Template

Full Business Case Includes:

1. Funding Sources
2. Project Summary and Description
3. Strategic Plan Alignment
4. Service Level Impacts
5. Project Alternatives Evaluated
6. Condition, Consequence of Failure and Risk Analysis
7. Project Cost Estimates
8. Project Priority Scoring

service to approximately 85,000 customers in Kissimmee, Florida. For the past four years, the utility has been implementing an asset management program for its over \$700 million dollars worth of water, wastewater, and reclaimed water assets. During this program, TWA has made significant investments in asset management information systems including an Infor EAM Computer Maintenance Management System (CMMS) and an ESRI Geographic Information System (GIS) database. These two systems now contain the comprehensive asset inventory for the utility. A built-in interface between the programs allows the CMMS and GIS to integrate and share information across the utility. An asset manager is responsible for both programs as well as overall asset management planning and implementation. The CMMS software was configured to store asset management-type data in January 2008, after interactive workshops were conducted with staff to define the attributes. In August 2008, pilot projects were implemented to define the process to consistently collect and calculate the linear and vertical asset data, including condition, consequence of failure, risk, and replacement cost for all assets in the utility. The majority of this data is now available to support identifying renewal and replacement project planning. Building upon the concepts of using asset risk

to prioritize assets for replacement, this same concept was applied to prioritizing all types of projects for consideration of inclusion into TWA's CIP. This paper will describe how the concepts from the asset risk methodology, including triple bottom line evaluations, were used to prioritize all CIP projects using standard business case templates and an excel prioritization scoring tool. These concepts support Toho in meeting the financial viability attribute of effective utility management.

METHODOLOGY

During the asset management project the asset risk equation was defined simply as: $Risk = [Physical Condition + Performance Condition] * Consequence of Failure$

The asset physical and performance condition represents the different asset failure modes of mortality, capacity, level of service and efficiency that relate directly to the probability of asset failure. The 'consequence of failure' represents the impacts of asset failure based on a 'triple bottom line' approach incorporating potential financial, social and environmental impacts.

TWA Engineering staff is currently using the condition, consequence of failure and risk scores to help bundle and create capital projects for renewal and replacement needs along with asset remaining useful life projections. Once projects

are identified, the same concepts were incorporated into a project level prioritization and include a procedure to not only rank renewal and replacement projects but also apply to expansion and enhancement projects so that all potential CIP projects can be compared in an 'apples to apples' method. To support the project level prioritization, a standard multi-page business case template was created that includes all necessary supporting information to score the priority of a project. The scoring is also broken down by the triple bottom line categories to easily see where impacts may occur if the project is not performed. Three versions of the business case template were created: a short form for smaller projects, a long form for larger projects, and a triple bottom line multi-criteria alternatives analysis form for very large projects with many alternatives to consider. The font sheet and sections of the long form are shown in **Figure 1**.

The scoring portion of all three of the Business Case Templates is a weighted criteria approach that includes the following 10 criteria that support a triple bottom line analysis while also considering asset condition, criticality and risk for existing assets.

Condition and Strategic Alignment

1. Physical Condition
2. Performance Condition
3. Strategic Alignment

Financial

4. Financial Return of Investment
5. Economic/Financial Impacts

Social

6. Public Image
7. Service Level/Reliability
8. Public/Employee Safety Impacts

Environmental

9. Environmental Impacts
10. Efficiency/Energy Impacts

The weighting criteria for each of the categories were assigned by TWA during a workshop and relate to the overall utility vision, mission, goals and strategic plan. The difference between expansion and renewal and replacement projects is also

taken into consideration. **Table 1** lists the weightings selected.

Guideline documents created for TWA staff contain specific definitions for the scoring of the above criteria as well as a description on how to fill out the business case templates to promote consistency and provide for training of future staff. An example for the scoring of service level/reliability is shown in **Table 2**. An excel tool was created to support financial return calculations and summarizes all of the projects and their scores in a simple graphic that can be used in high level CIP meetings.

Also consider past history of documented breaks or boil water notices, and the size of the facility that is causing the impacts. For Project Benefits add 1 to 3 points if the project specifically adds or improves redundancy and/or allows for new customers to connect.

Table 1 – Scoring Criteria and Weightings

	Criteria	Weighting
1	Physical Condition	10%
2	Performance / Process Condition	10%
3	Strategic Alignment	10%
4	Financial Returns	10%
5	Economic / Financial Considerations	10%
6	Public Image	10%
7	Service Level / Reliability	10%
8	Public / Employee Safety	10%
9	Environmental	10%
10	Efficiency / Energy	10%

RESULTS

A sample of the ranking from the pilot set of five projects in the excel tool is shown in **Figure 2** and **Table 3** (p. 60). The pilot included expansion as well as renewal and

replacement projects to make sure the scoring and relative ranking made sense.

This process was successfully used for the FY 2012 budget process and will be used again during FY2013 with some minor

Figure 2 – Results Graph of Project Priority Scoring from Pilot Projects

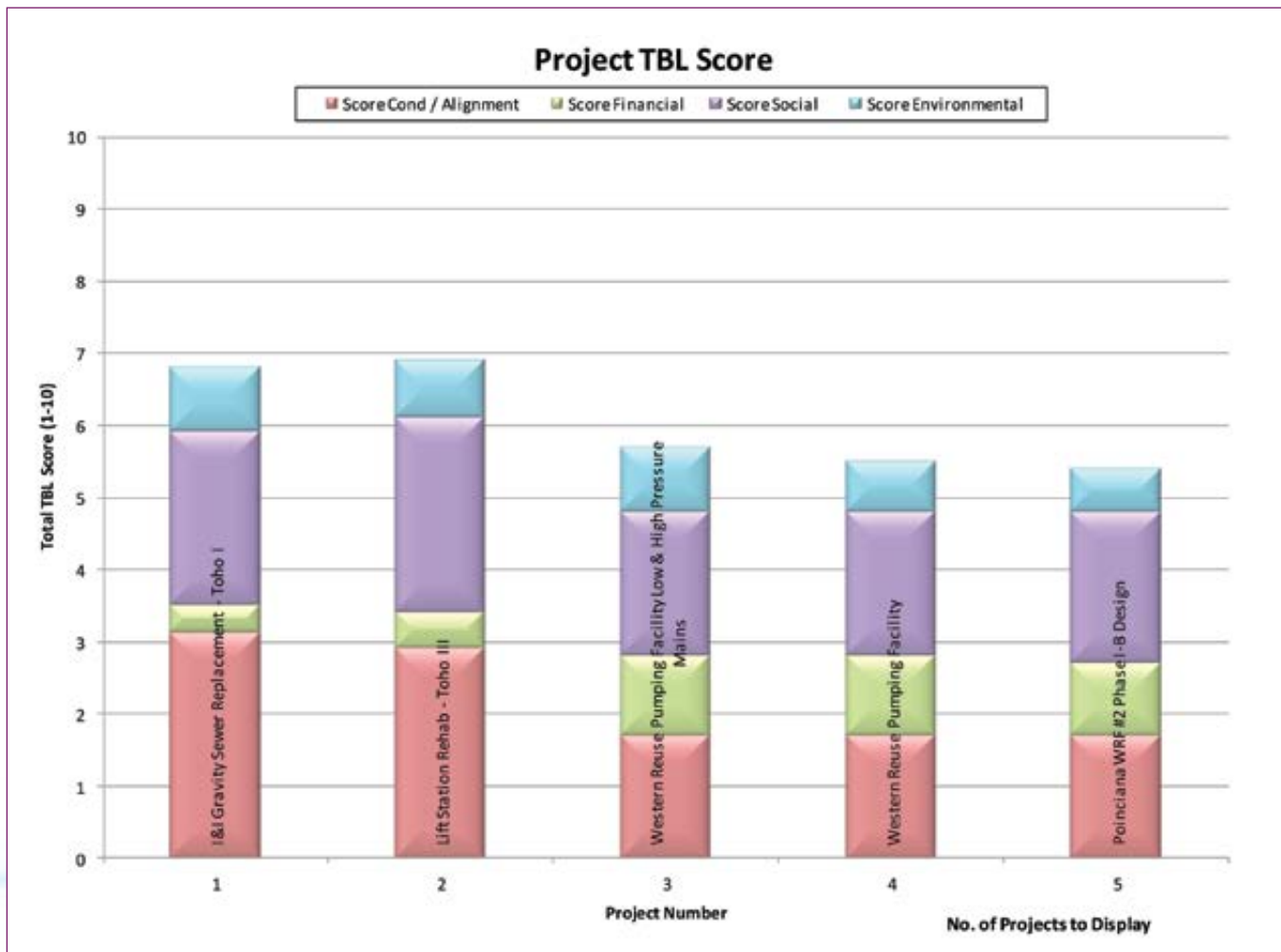


Table 2 – Scoring Definitions for Service Level/ Reliability

Service Level / Reliability Impact (Consequence)	
Evaluate likely impacts to service levels and reliability should the project not be implemented and/or positive impacts when the project is complete. Analyze such issues as: pressure, capacity, service outages, and redundancy.	
Score / Rating	Criteria
5	- Overall Rating – Major Impact / Catastrophic Consequence - Continuously cannot meet pressure or capacity requirements for customers, frequent service outages (breaks, boil water notices) that could impact many customers, no redundancy in existing design
4	- Overall Rating – Significant Impact / Major Consequence - Frequently cannot meet pressure or capacity requirements for customers, many service outages (breaks, boil water notices) that could impact many customers, no redundancy in existing design
3	- Overall Rating – Moderate Impact / Moderate Consequence - Frequently cannot meet pressure or capacity requirements for customers, several service outages (breaks, boil water notices) that could impact several customers, some redundancy in existing design
2	- Overall Rating – Low Impact / Minor Consequence - Occasionally cannot meet pressure or capacity requirements for customers, minor service outages (breaks, boil water notices) that could impact few customers, redundancy in existing design
1	Overall Rating – Minimal to No Impact / Insignificant Consequence
Also consider past history of documented breaks or boil water notices, and the size of the facility that is causing the impacts. For Project Benefits add 1 to 3 points if the project specifically adds or improves redundancy and/or allows for new customers to connect.	

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Table 3 – Pilot Projects and Priority Scoring

Project #	Project Name	Project Driver	Project Cost	Total Priority Score
1	I&I Gravity Sewer Replacement - Toho I	Collection	\$ 8,539,000	6.2
2	Lift Station Rehab - Toho III	Lift Stations	\$ 3,900,000	6.2
3	Western Reuse Pumping Facility Low & High Pressure Mains	Reuse	\$ 1,200,000	5.2
4	Western Reuse Pumping Facility	Reuse	\$ 7,250,000	5.0
5	Poinciana WRF #2 Phase I-B Design	WWTP	\$ 14,130,000	4.9

revisions to the business case templates to summarize more information on the first page and reduce some redundancy.

CONCLUSIONS

The use of asset management risk concepts and triple bottom line categories has been very successful for TWA to prioritize potential CIP projects including renewal and replacement, expansion and enhancement projects. These tools and forms were used for a substantial portion

of the FY12 budget and will be fully used in combination with reports from the CMMS system for the FY13 budget cycle. The methodology developed allows consistent decisions to be made based on standardized data when full funding is not available for each year of the program. The Business Case Template also provides a simple vehicle for internal and external stakeholders to understand the project drivers, importance, impacts, and alignment with the overall utility strategic

plan. Other utilities can easily adopt this type of a methodology to ease the burden of deciding which projects to fund and to transparently support the case for performing a particular project.

ABOUT THE AUTHOR

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LEED Certification Efforts for the Administration and Operations Gallery of the Dempsey E. Benton Water Treatment Plant

By Rachelle Rhodes, P.E., City of Durham, NC— Department of Water Management, formerly with Malcolm Pirnie – ARCADIS, Raleigh, NC; Shannon Dorsey, P.E., Hazen & Sawyer, Raleigh, NC; and Perry Allen, P.E., City of Raleigh, NC – Public Utilities Department

Construction began on the City of Raleigh's 20 MGD Dempsey E. (D.E.) Benton Water Treatment Plant in January 2007. In 2008 the City of Raleigh reaffirmed its mission statement, which includes its vision for economic, environmental and social prosperity. Along these lines, the City enacted standards for energy efficiency using the Leadership in Energy and Environmental Design (LEED) standards administered by the US Green Building Council (USGBC).

The City requested that the D.E. Benton Water Treatment Plant (WTP) project be evaluated for the ability to attain a LEED Silver certification. Several factors were considered by the design team in order to determine an economically feasible method for obtaining LEED certification. One option was incorporating LEED credits into the project during the early construction phase. These evaluations determined that the most cost-efficient method to attain LEED certification was through the Commercial Interiors (CI) version 2.0 rating system for the Administration and



Figure 1 – Aerial view of the D.E. Benton WTP showing the storage tanks painted with a high albedo paint to reduce the heat island effect.

Operations Gallery, which is the most regularly occupied portion of the WTP. The CI rating system allows the applicant to apply for LEED credits in a tenant space of a new or existing office space.

The LEED version 2.0 system allows an applicant to submit the project in one submittal after construction completion, or as design and construction submittals. There are six credit divisions within

the LEED-CI system with a total of 57 points attainable. These divisions focus on actions that reduce the impact to the building's surrounding site, efficient use of water for personal and landscaping use, conservative energy consumption, conservation of materials during construction and by staff, limiting potentially harmful emissions from interior fit-up materials, and innovative sustainable components incorporated into the design. The D.E. Benton WTP's LEED team focused on attaining points that were (1) intrinsic to the design, (2) easily attainable through changes during construction activities, (3) operationally cost-effective, and (4) economically feasible to implement. In addition, the cooperation and coordination with the contractor was an integral component to achieving time-sensitive changes to the LEED-CI area. The review found that 35 points could be pursued with a high likelihood of attaining a LEED Silver certification (**Table 1**).

The original WTP design incorporated several LEED credits prior to the LEED

Table 1. LEED for Commercial Interiors v2.0 Divisions and Point Breakdown

	Possible	Attempted	Earned
Total Points*	57	35	28
 Sustainable Sites	7	4	3
 Water Efficiency	2	2	1
 Energy & Atmosphere	12	6	5
 Materials & Resources	14	3	3
 Indoor Environmental Quality	17	16	14
 Innovation in Design	5	4	2

*LEED Certified 21+ points, Silver 27+ points, Gold 32+ points, Platinum 42+ points
(Portions recreated from www.USGBC.org)

accreditation effort, which included reduction of heat island effect using the two storage tanks (**Figure 1**), daylight and views (**Figure 2**), optimized energy performance of the HVAC system, Energy Star rated appliances, low-emitting carpet materials, and controllability of thermal and lighting systems. Design changes included low VOC emitting paints and sealants, optimization of lighting through occupancy sensors, fundamental commissioning of the HVAC system, water-efficient urinals, recycling of construction waste, and purchase of Green Power credits.

The D.E. Benton WTP LEED credit evaluation and documentation process was completed as a combined submittal during construction and was submitted to the USGBC after final completion of the project in September 2011. The USGB certified the D.E. Benton WTP with a LEED-CI version 2.0 Silver Certification in December 2011.



Figure 2 – View from the D. E. Benton WTP Control Room.

The Sustainability Features align with an issue's theme, and can include a brief description of a project, report, regulation, guideline, etc. in a paragraph or bulleted format, along with associated pictures, graphs, tables, or charts that provide a more visual overview to the reader. If you are interested in submitting an article or have questions or comments about this addition to our publication, please contact Tom Bach (Communication Committee Chair) at tbach@wsacc.org or Sherri Moore (Communication Committee Vice Chair) at moores@ci.concord.nc.us.

About the Author

Rachelle Rhodes is a licensed engineer with eight years of experience in the water and wastewater design field. She is currently working in the City of Durham's Department of Water Management where her primary duties include project management of water and wastewater plant construction projects. She previously worked at the Malcolm Pirnie- ARCADIS office in Raleigh, NC during the course of design, construction and LEED certification efforts of the D.E. Benton WTP.

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Submitted by Ray Cox, Chair, Endowment Committee

NC AWWA-WEA's collective efforts to increase awareness and grow the corpus fund of the NC Safewater Endowment Program gained significant momentum in 2012. As of the end of the year, the number of individual donors had reached 108, the number of corporate donors had reached 17, and the program's pledges exceeded \$350,000. Thank you to all who have invested time and/or money in the future of our profession by supporting the Endowment Program. A list of all donors as of December 31, 2012 is included below:

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By the time this article is published, the Endowment Committee and the Public Education Committee will be in the process of awarding \$5,500 in scholarships to students and educators in the water industry for 2013. We are grateful to the NC AWWA-WEA members and friends who have provided ongoing support. Building on the momentum of 2012, the Endowment Committee has set a goal to grow the assets of the NC Safewater Endowment Program to \$600,000 by December 31, 2013. This increase in assets will allow the level of annual scholarship funding to rise by a factor of approximately four.

Special opportunities to give are planned throughout the year, including a chance to win a week in Aruba (donated by George and Eva Raftelis), along with a \$1,000 travel voucher. Tickets are available now, and only 200 tickets will be sold at a cost of \$75 each. At the Spring Conference in Wilmington in April, one lucky person will win this travel package valued at approximately \$6,000. Contact committee chair Ray Cox at rcox@hiepc.com to purchase a ticket.

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- A cross-connection exists if a connection leads from a _____ line to anything other than a _____ connection.**
a) potable, non-potable
b) non-potable, potable
c) potable, potable
d) non-potable, non-potable
- Before any repair is started to a hydrant, the _____ must be notified.**
a) fire department b) neighborhood association c) NC DENR d) NC AWWA
- Using a service clamp, when making a tap, eliminates the chance of the pipe**
a) bending b) splitting c) straightening d) clogging

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- c) p. 292, AWWA, Principles & Practices of Water Supply Operations, Water Transmission & Distribution, 4th edition.
- c) p. 272, AWWA, Principles & Practices of Water Supply Operations, Water Transmission & Distribution, 4th edition.
- a) p. 177, AWWA, Principles & Practices of Water Supply Operations, Water Transmission & Distribution, 4th edition.
- b) p. 421, AWWA, Principles & Practices of Water Supply Operations, Water Transmission & Distribution, 4th edition.

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Exam Dates:
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Certification Commission

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Exam Dates:
6/13/13 (Postmarked by 5/12/13)
9/12/13 (Postmarked by 8/13/13)
12/12/13 (Postmarked by 11/12/13)

Responsible for Wastewater Certifications
(Animal Waste, Biological WW, Physical/
Chemical, Land Application, Spray Irrigation,
Collections, Subsurface, and OIT)

WASTEWATER CERTIFICATION QUESTIONS

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

- Nocardia sp* is a filamentous bacteria. Excessive growth in the MLSS can cause high levels of foaming and scum in aeration basins and secondary clarifiers, and potential TSS carryover to the plant effluent. Which of the following is not a normal contributing factor for promoting growth of nocardial bacteria?**
a) High MCRT b) Low F/M c) High FOG d) Foam trapping e) Low DO
- In a bioreactor, the biomass that develops in response to the input of wastewater is composed of microorganisms that use phosphorus for energy transfer, cellular synthesis, and bio-oxidation of organics. Microorganisms such as *Acinetobacter* and *Pseudomonas* release stored phosphorus under an anaerobic condition by accumulating what?**
a) Ammonia b) Colloidal BOD c) Soluble BOD d) Nitrate
- Confined space areas are very common in and around wastewater treatment plants. Testing for oxygen is a prerequisite for entering a confined space. According to 20CFR 1910.146(b), what percent of oxygen is defined as a hazardous area?**
a) < 15.5% b) < 19.5% c) > 15.5% d) > 19.5%
- In a Biological Nutrient Reduction Plant (BNR), several oxygen conditions are found in the activated sludge system. As a simple rule, an aerobic condition implies that the microorganisms obtain their oxygen needs from free dissolved oxygen. An anoxic condition implies that microorganisms can obtain their source of oxygen from dissolved and/or combined forms of oxygen such as nitrate, nitrite and sulfates. What do anaerobic conditions imply?**
a) Absence of free dissolved and combined forms of oxygen. b) Absence of combined forms of oxygen only.
c) Absence of free dissolved oxygen only. d) Presence of both free dissolved and combined forms of oxygen.
- If the plant flow is 5.0 mgd and you have two clarifiers with diameters of 80 feet, what is the clarifier surface loading rate in gpd/ft² of each clarifier?**
a) 10,048 gdp/ft² b) 995 gpd/ft² c) 498 gpd/ft² d) 249 gpd/ft²

Answers:

- e) Low DO
- c) Soluble BOD
- b) < 19.5%
- a) Absence of free dissolved and combined forms of oxygen.
- c) 498 gpd/ft²

MAINTENANCE TECHNOLOGIST QUESTIONS

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

1. A rectangular equipment shell is to be hoisted and transported to another location. An accurate estimation of its weight is required to perform the job safely. The shell is six feet wide, fourteen feet long, and eight feet tall with a solid top but no bottom. It is constructed of 1/8" thick plate steel. From a table in The Audel Mechanical Trades Manual you know that this material weighs 5.1 lbs per square foot. What is an accurate estimation of the shell's weight?
a) 1,632 lbs b) 2,060 lbs c) 2,489 lbs d) 1,244 lbs
2. A single-reduction gearbox is to be replaced for a piece of driven equipment. The data plate is missing from the gearbox housing and no records can be found for it. A mechanic pulls the inspection panel and counts 10 teeth on the input gear and 50 teeth on the output gear. What is the reduction ratio for the gearbox?
a) 60 to 1 b) 500 to 1 c) 10 to 1 d) 5 to 1
3. The ORC of a water treatment plant asks if a new 110-Volt AC piece of equipment rated at 2,000 watts can be added to an existing circuit in the water quality laboratory. Using the power formula (watts = voltage x amperes) you find that the existing 15 amp circuit breaker is adequate.
a) True b) False
4. A low-pressure boiler has a maximum allowable working pressure (MAWP) of
a) 15 psi. b) 25 psi. c) 7.48 psi. d) 74.9 psi.
5. If one of the five belts on a multiple-belt drive breaks, then
a) only the broken belt should be replaced.
b) all five belts should be replaced.
c) none of the belts need to be replaced. That is why multiple belts are used.
d) the broken belt and any belt next to it should be replaced.

Answers:

1. b) 2,060 lbs (404 square feet of plate steel multiplied by 5.1 pounds per square foot)
2. d) 5 to 1 (For every five revolutions of the input shaft there will be one revolution of the output shaft.)
3. b) False (Arranging the Power formula to calculate Amperes, $\text{Amperes} = 2,000\text{W} \div 110\text{V} = 18.18$ Amperes. The piece of equipment would draw a current exceeding the breaker capacity and the breaker would trip, protecting the circuit wiring.)
4. a) 15 psi (Ref. Industrial Maintenance, Third Edition – Chapter 7.)
5. b) Replace all five belts (Newer belts are not the same size as used belts because they have not been stretched during use. If the belts are different sizes, one belt carries the majority of the load, resulting in premature failure of the belt and overall loss of power transfer. Ref. Industrial Maintenance, Third Edition – Chapter 9.)

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Welcome New Members!

The following professionals joined NC AWWA-WEA in October, November or December 2012. We welcome these new members and look forward to meeting them at upcoming events and working with them on committees and projects.

American Water Works Association (AWWA)

Adam Belcher, Water Guard Inc.
 Lloyd Brown, Vaughn & Melton Consulting
 Allison Carroll, ABB
 Jack Creamer, Schneider Electric
 Rob Currey, ABB Inc.
 Greg Czerniejewski, CDM Smith
 Steve Dellies, Town of Wrightsville Beach
 Howard Dewes, ABB
 Carolyn Dumas, City of Raleigh Public Utilities
 Lawrence Ferguson
 Greg Flory, Piedmont Triad Regional Water Authority
 Anthony Grubbs, Schnabel Engineering
 Jamie Guerrero, Johnston County Public Utilities
 Joyce Huang
 Anthony Laughter, Town of Weaverville
 Shihong Lin, Civil and Environmental Engineering
 Shelley Maness, Union County Public Works
 Heather Martin
 Kevin Monk, Custom Controls Unlimited, Inc.
 Caleb Peeler
 Nathaniel Powell, Custom Controls Unlimited, Inc.
 Marcela Sion, Hazen & Sawyer, P.C.
 CK Smith, Southern Products & Silica Company, Inc.
 Jack Smith, Key Chemical, Inc.
 Lawrence Wasserman
 Thomas Weinandy, ABB
 David Whritenour
 ABB (Organizational Member)
 Custom Controls Unlimited, Inc. (Organizational Member)

Water Environment Federation (WEF)

Trae Farthing, Ferguson Plan Division
 Richard Keagy, URS Corporation
 Dominic Libera
 Marcela Sion, Hazen & Sawyer, P.C.

Guy Chapman, Tencarva Machinery Company
 James Ballance
 Michael Moler
 Ruth May, Hanesbrands Inc.
 Yi Wang
 Tim Ratay, Crowder Construction Co
 Ronald Ruocco, Golder Associates NC, Inc.
 Brian Hair, Charlotte-Mecklenburg Utilities
 Gregory Claffey, Xylem Inc.
 Kathy Moses, King Mountain Pilot Creek WWTP
 Randall Bard, Xylem Inc. -Flygt
 James Bercik, MR Systems, Inc.
 Jordan Hughes, City of New Bern
 Dawn Padgett, City of Charlotte
 Keith Shirley, Charlotte Mecklenburg Utilities
 Donna Slachciak, City of Charlotte
 Tony Spinkle, Wieland Copper Products
 Rachel Burris, O'Brien & Gere Engineers Inc.
 Thomas Kirk
 Patrick Rienks, Ingersol Rand
 Alesandra Reed
 Timothy Beasley
 Andy Hilton, Xylem

NC State Level Association Members (NC SLAM)

Jeremy Anderson, City of Raleigh
 Bryan Badey, Rummel, Klepper & Kahl, LLP
 Troy Bailey, Town of Nashville
 Noah Bergeron, Town of Newport
 Jeffrey Bullard, City of Raleigh
 Aubrey Butler Jr, City of Raleigh
 Tamara Byers, City of Charlotte
 Ricky Byrd, Town of Apex
 Kevin Campbell, Archer Daniels Midland
 Allen Charette, AC WasteWater
 John Clevenger, Wake Technical Community College
 Jimmy Cornell, Town of Apex

Seth Cotton, Town of Apex
 John Crowder, Southeast Rural Assistance Project Inc.
 Dean Eggers, Town of Boone
 Ronta Freeman, Town of Ahoskie
 Maurice Gallarda, Pluris Holdings LLC
 Stacy Goff, Utilities Inc.
 Wendy Gresham, City Of Raleigh
 Teresa Harris, Warren County Public Utilities
 Tiffanie Hawley, Cape Fear Public Utility Authority
 Justin Hill, City of Raleigh
 Karl Holley, Town of Ahoskie
 Eric Howard, Two Rivers Utilities
 Donald Johnson, Town of Benson
 Thomas Johnson, Town of Apex
 Marcus Kiser, City of Winston-Salem
 Oris Knight, Town of Apex
 Alex Lancaster, Town of Apex
 Mark Little, Town of Morehead City
 Christina Massengill, Town of Newport
 Coy May, Town of Gibsonville
 Sedric McMillan, City of Winston-Salem
 Phil O'Quinn, Town of Apex
 Alan Perry, P & L Utilities LLC
 Rick Raynor, Town of Ahoskie
 William Robertson, Jar Management
 Scotty Rollins, Town of Newport
 Philippe Sebastien, City of Raleigh
 Randall Shepherd, City of Raleigh
 Ben Silvers, City of Charlotte
 Marc Smith, Town of Apex
 Adam Stanley, City of Raleigh
 Martin Stephenson, Town of Ahoskie
 Rueben Tedder, Johnston County Public Utilities
 Keith Tew, City of Raleigh Public Utilities
 Eugene Viviano, Lubrication Engineers Inc.
 Anthony Vogt, City of Raleigh
 John Webb, Hepaco Inc.
 Howard Woodall III, Rummel, Klepper & Kahl, LLP 



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Award Winners

NC AWWA-WEA members work every day to protect the public health and the environment. The Association's awards program is designed to recognize individuals and organizations that go above and beyond expectations. This issue of *NC Currents* highlights award winners from 2012.

With over 3,000 members across North Carolina it is difficult for awards committees to know about the great work of every individual and organization. NC AWWA-WEA's awards committees depend on members to step forward and nominate coworkers and facilities that deserve recognition. If you are aware of someone who fits the criteria of one or more Association awards please visit the Awards page of www.ncsafewater.org to download the 2013 Award Nomination Packet and learn how to submit a nomination. The packet includes award applications, deadlines, and submission information. **Please be aware that most award application deadlines fall on or before August 1, 2013.**

Please note that the information listed with each award was current as of November 2012.

Collection System of the Year Award

The mission of the North Carolina Collection System of the Year Award is to identify and recognize the municipality that protects the public health and natural beauty of the environment through proactive practices of management, operations and maintenance beyond what is required of its NC DENR collection system permit. There are four categories of the award – ranging from micro (100 miles or less in collection system) through small (100-250 miles in collection system), medium (250 – 500 miles in collection system), and finally, large (over 500 miles in collection system).



Michael Kirby presenting the award to Thurman Green from OWASA.

Medium Collection System of the Year: Orange Water & Sewer Authority

They maintain 322 miles of pipe, 21 pump stations and have 13 full-time staff dedicated to the collection system and an additional 23 who assist.



Michael Kirby presenting the award to Mike Stamey and Ken Stines from MSD Buncombe County.

Large Collection System of the Year: Metropolitan Sewerage District of Buncombe County

They maintain 967 miles of sewer and have 53 full-time, certified Operations and Maintenance staff.

Select Society of Sanitary Sludge Shovelers (5S)

The North Carolina Select Society of Sanitary Sludge Shovelers Chapter was formed in 1986 to recognize those members who have contributed their time and energy for the betterment of their Water Environment Association.



5S Committee (Back, L-R) Bill Brewer, Terry Houk, Mark Wessel, Thurman Green, TJ Lynch, Mike Osborne, Jon Lapsely
2012 5S Recipients (Front, L-R) Melinda King, Don Safrit, Bob Fritts, Crystal Broadbent

Melinda King, City of Greensboro

- Chair of Students & Young Professionals Committee
- Instructor at Collection & Distribution School
- NC State curriculum development
- Member of Local Arrangements and Nominating Committees

Don Safrit, Secure Resources

- Chair of the Water Reuse Committee
- NC Water Resources Association Board
- Member of the Government Affairs and Communications Committees
- Statewide Director, Professional Engineers of North Carolina

**Bob Fritts,
Charlotte Mecklenburg Utilities**

- Chair of the Plant Operations & Maintenance Committee
- Vice-Chair of the Maintenance Certification Program
- Played a key role in creating the Maintenance Certification Program and is now an instructor at the Maintenance Technologist Schools
- Organizer of the Operations Challenge

**Crystal Broadbent,
Hazen and Sawyer**

- Secretary of NC AWWA-WEA Board of Trustees
- Chair of the NC Water For People Committee
- Member of the Sustainable Outstanding Nimble Anticipatory Responsive (SONAR) Task Force
- Recipient of the Kenneth J. Miller Founders' Award

**Wastewater Collections
Operator of the Year**

The Outstanding Wastewater Collection System Operator of the Year Award is given to an individual who has



contributed much to the successful operation and maintenance of sewage collection systems.

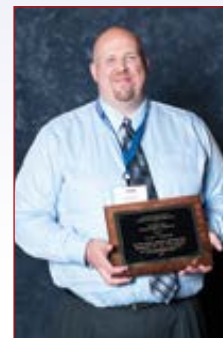
**Thomas
Johnson, City of
Raleigh**

**Water Distribution Operator
of the Year Award**

The Water Distribution Operator of the Year Award is given to an individual who has contributed much to the successful

operation and maintenance of a water distribution system.

Ivan Thomas, City of Asheville



Ivan has spent 16 years working for the City of Asheville and is currently the water maintenance superintendent. He holds the following certifications: A-distribution operator, A-meter,

and cross connection. He has developed key programs for the department, including a water department emergency operations manual, in-house certification preparation courses, and a fire hydrant training course for city and county firemen. He has assisted in the development of a weeklong



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safety-training program and in the development of the men's and women's tapping teams. Ivan serves as the Chairman of the Buncombe County Utilities Committee. His employees commend him for helping develop a strong and positive morale.

Outstanding Industrial Wastewater Treatment Plant Operator of the Year

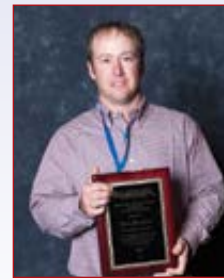
This award recognizes any Industrial Wastewater Treatment Plant Operator in North Carolina who has exhibited outstanding efforts, knowledge and innovation in the successful operation of an industrial wastewater treatment facility; or who has contributed his/her time and efforts toward the training, education, and professionalism of wastewater treatment plant operators; or who has devised, discovered or invented devices or techniques that enhance the science of plant operation.

Two awards may be presented: one to the operator of a Direct Discharge or Non-Discharge Facility (Non-Discharge Permitted facility or NPDES) and one to the operator of an Indirect Discharge Facility (pretreatment).



Indirect Discharge Facility (pretreatment):
Raymond Price, Smithfield Foods

Ray is a Grade IV Operator and serves on the NC AWWA-WEA Industrial Committee. He also manages to find time to volunteer with a youth group that traveled to Kenya to expand a water system for the village of Karim.



Direct Discharge Facility:
Josh Batchelor, Butterball - Mount Olive Facility
Josh holds the following licenses: Grade IV wastewater, spray

irrigation, collections II, land application, animal waste, physical-chemical, C-well water, B-distribution, and subsurface wastewater. He was first employed by Butterball in 2004 and has worked as the Wastewater Farm Manager since 2010. He has successfully managed the solids programs, providing more than \$250,000 in earned income each year. He has made a number of operations and maintenance improvements, including a redesign of the C12 to meet future fecal control limits, and the installation of an upgraded dissolved air flotation (DAF) system for improved effluent. He has also cross-trained employees to run both the farm and the wastewater process.

WWTP Operations & Maintenance Excellence Award

The Wastewater Treatment Plant Operations & Maintenance Excellence Awards are given in recognition of the operations and plant personnel of an eastern, central and western region wastewater treatment plant (WWTP) who have served their respective communities with a high degree of professionalism and diligence in operations and maintenance.



Eastern Region:
City of Goldsboro Water Reclamation Facility
The City of Goldsboro provides reclaimed water that is used for irrigation, reducing

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Charter Machine Company	KLa Systems, Inc.	Schwing BioSet, Inc.
Combs Technologies, Inc.	Koch Membrane Systems, Inc.	Varec Biogas
Cook Legacy Water & Energy	MN Water Treatment Products	Viking Chains, Inc.
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2012 NC AWWA-WEA AWARD WINNERS

the nutrients entering the Neuse River and conserving the city's potable water supply. The reclamation facility produces Class A exceptional quality compost distributed as a soil amendment under the brand name of Goldsboro Compost.



Central Region:
North Cary Water Reclamation Facility

Modifications to the re-aeration zone resulted in a 20% reduction in effluent total nitrogen. Effluent total nitrogen concentrations now average

an amazing 2.37 mg/L. The North Cary Water Reclamation Facility staff is responsible for the design and installation of a new biofilter, using oyster shells as

the media. Staff members exemplify the spirit of the Professional Wastewater Operators Committee in their approach to education, participation, environmentalism and public service.



Paul Ray, representing the Town of Cary.

Facility has a consistently high level of treatment, achieving better than 99% removal rate for biochemical oxygen demand (BOD) and total suspended solids (TSS) for eight consecutive years.

Western Region:
Town of Boone Jimmy Smith Wastewater Treatment Facility

The Town of Boone Jimmy Smith Wastewater Treatment

Kasey Monroe Outstanding Service Award

Each year the outgoing chair of the Board of Trustees has the opportunity to give special recognition to an individual who has demonstrated outstanding service. In 2011 outgoing chair, John Kiviniemi, renamed the Outstanding Service Award after long-time active member Kasey Monroe in recognition for her work with the Association. In 2012 the new Kasey Monroe Outstanding Service Award was presented to George Simon.



George Simon, McKim & Creed

George is a quiet and unassuming person who has always answered 'yes' to every request to take on responsibilities for NC AWWA-WEA. He is a thoughtful, thorough chair of the Public Education Committee, member of the SONAR Committee and member of Joint Public Education Task Force. He has provided outstanding leadership in every setting, including coordinating the growth of the Public Education Committee's Science Fair involvement; creating thoughtful and innovative models for committee measurement and reporting for SONAR; and developing both strategy and materials, including videos, for the Joint Public Education Project on which NC AWWA-WEA, North Carolina Rural Water Association (NCRWA) and North Carolina Waterworks Operators Association (NCWOA) are collaborating.

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Arthur Sidney Bedell Award

The Arthur Sidney Bedell Award acknowledges extraordinary personal service to the Member Association, based on organizational leadership, administrative service, membership activity, and stimulation of technical functions or similar participation. This year's recipient is Angela Lee, Charlotte Mecklenburg Utilities.

Raymond E. "Red" Ebert Award

The Raymond "Red" Ebert Award was established in 1988. It is presented annually to a member who has made significant contributions to the practice of operating a water distribution or wastewater collection system.



Angela Lee, Charlotte Mecklenburg Utilities

Angela has worked with the Charlotte Mecklenburg Utility Department

since 1989, currently as the Field Operations Superintendent since 2004, and before that as Water Distribution Superintendent from 1992-2004. She is the Operator in Responsible Charge for the Water Distribution System and holds a Grade A certification. Angela manages more than 300 employees and more than 8,000 miles of water and sanitary sewer pipe. Over the years, she has developed procedures and programs to ensure effective and efficient operation. She mentors and trains staff to help them excel and succeed. She has served as a member of the NC AWWA-WEA Board of Trustees as a Water Environment Federation (WEF) Delegate from 2009-2012. She has presented at the WEF Collections Program Symposia. Angela is a past chair of the Collection & Distribution Schools Committee and the Water Board of Education and Examiners. Her contributions have been recognized in the past with awards, including 5S membership and a Golden Manhole Award.

William D. Hatfield Award

The William D. Hatfield award recognizes an individual for outstanding wastewater treatment plant performance and distinguished professionalism. The recipient pursues an advancement of the art and knowledge of wastewater treatment.



Kim Neely, Charlotte Mecklenburg Utilities

Kim is the operator responsible in charge (ORC) of McAlpine Wastewater

Management Facility (WWMF) in Charlotte, National Association of Clean Water Agencies (NACWA) Gold Winner for several consecutive years. Kim has 33 years experience in wastewater treatment. He has served as a mentor to operations staff and peers. He has presented at several workshops, conferences and schools, passing his knowledge, leadership and experience on to others in the profession. He is fully dedicated to protection of the environment and public health.

Wastewater Laboratory Analyst Excellence Award

The Wastewater Laboratory Analyst Excellence Award recognizes an individual for outstanding performance, professionalism and contributions to the water quality analysis profession.



Angela Boswell, City of Rocky Mount

Angela is the Compliance Manager for the City of Rocky Mount. She is the holder of a number of certi-

fications: lab analyst II; industrial pretreatment IV; wastewater operator III; land application; and water treatment operator C. Angela

is past co-chair of the Eastern Outreach Section of the Lab Analyst Committee and is the NC Pretreatment Consortium (NCP) past secretary. She is also a Board member of the Certification Board for NCP.

George Warren Fuller Award

The George Warren Fuller Award is presented annually to an American Water Works Association (AWWA) member for distinguished service to the water supply field, in the commemoration of sound engineering skill, brilliant diplomatic talent, and constructive leadership; all features that characterized the life of George Warren Fuller.



Bill Dowbiggen, CDM Smith

Bill is a longtime member of NC AWWA-WEA and a 5-S member. He has over 24 years experience in the water and wastewater profession as a pro-

fessional engineer and has designed over 40 water plant and distribution projects. Not only does he design, this recipient also teaches at UNC Chapel Hill as an adjunct professor. Bill is highly respected as one of the leading resources in drinking water in North Carolina.

Water For People Kenneth J. Miller Founders' Award

The Kenneth J. Miller Founders' Award honors individuals for their outstanding service to Water For People.



Kraig Kern, WK Dickson

Kraig joined the NC Water For People Committee two short years ago and jumped into contributing by

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organizing the first-ever CLIMB FOR WATER in 2011, scaling Mt. Kilimanjaro. This year, he led a team up Pike's Peak. His efforts on these two climbs have paid off with a total of \$29,724.95 raised for Water For People's projects around the world.

Donald E. Francisco Educator of the Year Award

The Donald E. Francisco Educator of the Year Award is given annually to a member who demonstrates outstanding service to the Association and the water and wastewater industry through the education and training of water and wastewater professionals.



Dwight Lancaster,
NC Rural Water Association

Dwight has tirelessly given of himself to provide training in the water

and wastewater industry since 1976. He has Grade A water surface, Grade IV biological wastewater operator, subsurface operator, and land application operator certifications. He has been an active teacher at both certification and continuing education schools for many years. He was a member of the NC AWWA-WEA Board of Trustees as the Professional Wastewater Operator Representative. He is past chair and board member of the Collection Validation and Examination Committee – Association of Board of Certification.

Safe Water Maintenance Technologist of the Year Excellence Award

The Safewater Maintenance Technologist of the Year Award recognizes hard-working maintenance professionals involved in the day-to-day maintenance and upkeep of North Carolina's water and wastewater plant assets, and includes mechanics, electricians, automation technicians, instrumentation and control

technicians, facilities maintenance staff, preventative maintenance staff, and maintenance helpers.



Dell Harney,
City of Greensboro

Dell has shown true dedication in his work ethic in the field of maintenance. He is mentor to many coworkers in the

maintenance field. He is very active in NC AWWA-WEA and works very hard as vice chair of the Plant Operations & Maintenance Committee and on the Maintenance Technologist's Curriculum Subcommittee. A very knowledgeable and highly skilled man with a true passion for his profession, Dell is a founding member of the Maintenance Technologist School, where he is also an instructor and Maintenance Technologist School leader. Dell embodies the values of NC AWWA-WEA.

4th Annual NC Water For People - 5K Fun Run

Saturday, May 11, 2013 - Charlotte, NC



Times

Registration: 7:30am

Start Time: 8:30am

Registration Fees

Before March 31 = \$20

March 31 - May 11 = \$25

Race Day = \$30

Registration & More Information

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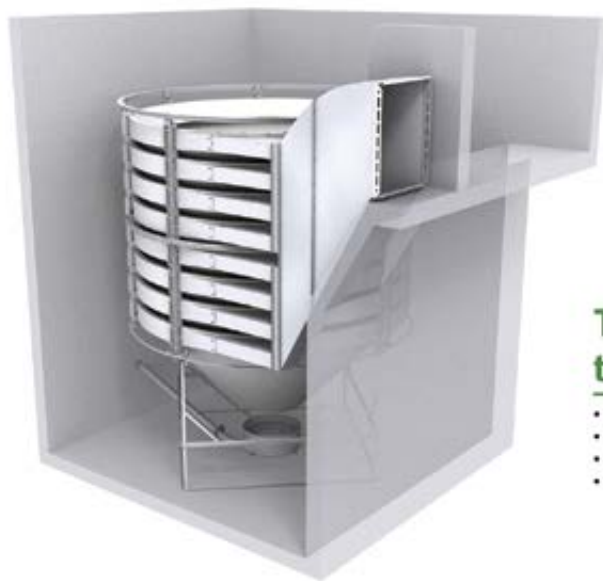
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The following awards were not given in 2012, but nominations are being accepted for 2013:

Golden Manhole Award

The Golden Manhole Society is a method of recognizing those individuals who are significant contributors to the advancement of the systems design, education, training, certification, construction, operations, maintenance, and management of water distribution systems or wastewater collection systems. This award provides permanent recognition of efforts that promote professionalism and pride among those involved in collection and distribution systems activities.

Disaster Preparedness

The Disaster Preparedness Awards are presented to utilities in acknowledgment of outstanding achievement in advancing disaster preparedness initiatives, thereby

strengthening our preparedness and increasing our resolve to prepare for, respond to, recover from, and mitigate the effects of natural disasters, man-made disasters, and acts of aggression against our locality, county, state, and nation.

George W. Burke Safety Award

The Burke Award honors George W. Burke, Jr. for his years of service, both to the water pollution control field and to WEF. The safety program and safety record of municipal and industrial wastewater facilities are the primary criteria for this award.

Walter J. Courmon Safety Award

The Courmon Award honors Walter J. Courmon for his service to NC AWWA-WEA and the City of Greensboro, where he served as the safety specialist. Municipal and industrial water treatment facilities that exhibit com-

mitment with excellent updated safety programs and well-maintained plants are considered for this award. [XG](#)

Correction to the Operations Challenge Results

The results of the Operations Challenge Process Control Event that took place at the 2012 Annual Conference were printed incorrectly in the Winter issue of *NC Currents*. The correct results are below.



City of Rocky Mount

- 1st: City of Rocky Mount
- 2nd: Flow Motion
(MSD Buncombe County)
- 3rd: Slayers (CMUD/UCPW)

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News and Notes

2013 Sponsorship Program

Our 2013 Sponsorship Program offers opportunities for recognition throughout the year and at our popular Spring and Annual Conferences. Sponsorship for additional activities, such as those of the NC Water For People and NC Public Education Committees and the NC Safewater Endowment, are available, and companies may be contacted separately about these and other opportunities. While the Spring Conference is around the corner, it is not too late to add your support as an Annual Corporate Sponsor or an Annual Conference sponsor. Annual Conference sponsorship includes recognition in most of our print publications (including *NC Currents*, distributed to our 3,000+ members) as well as on the homepage of www.ncsafewater.org, which had over 17,000 unique visitors in the last half of 2012. At our 2013 Annual Conference, expected to draw over 1,100 attendees from across NC, there are two new sponsorship opportunities. The first is an exclusive advertising spot on the outside back cover of the Annual Conference Program, which is distributed to all attendees at conference check-in. The program is every attendee's key to conference attendance, as it lists all the details of the events taking place, technical sessions with CEU approvals, and awards. The second new sponsorship opportunity is being one of four companies to supply branded gifts (lanyards, bags, cups/bottles, notepads and pens) to all attendees as they pick up their registration packets. To learn more about these opportunities, or to sign up, visit http://www.ncsafewater.org/resources/_sponsor_index/.

Bookstore Announcement

As of January 1, 2013, books corresponding with courses offered by NC AWWA-WEA can no longer be ordered through the NC AWWA-WEA bookstore. A limited number of books will be for sale at each school, and further instruction for purchasing books at a school will be provided with the registration information for that school. For your convenience, a list of recommended books, along with the name and contact information for a vendor that has offered the material in the past, is available at www.ncsafewater.org. You may be able to find the materials from other sources, such as Amazon or college bookstores, but the list provided gives you a starting point for ordering.

2012 Model Water Tower Competition Results

The fourth annual Model Water Tower Competition took place on Saturday, October 20, 2012 at the Neuse River WWTP. Twenty-six teams of middle school and elementary school students descended upon the WWTP to present their water towers for judging. The towers were judged based upon hydraulic efficiency, structural efficiency, cost efficiency, and design ingenuity. The competition was made possible by our wonderful volunteers from NC State's student chapter of NC AWWA-WEA, City of Raleigh employees and others from the Raleigh area. This year's competition was sponsored by the City of Raleigh, Hazen and Sawyer, ClearWater, Inc., Combs & Associates, Inc., The Crom Corporation, GHD, and EW2. First place in the elementary school division was won by Abby, a student at the Montessori Community School in Durham, with her Purplepus water tower. First place in the middle school division was won by Larkin, Zoe and Marelle, students at Exploris Middle School in Raleigh, with their Raleigh 2020 tower.

The fifth annual competition will take place in Fall 2013. If you would like more information about sponsoring, volunteering or entering a child as a competitor, please contact Maggie Hennessy at mhennessy@hazenandsawyer.com.



MWT Elementary Winner



MWT Middle School Winner

Directory Listing for Honorary Members

In the 2013 Membership Directory, the Honorary American Water Works Association (AWWA) and Water Environment Federation (WEF) members listed below were marked appropriately as AWWA and/or WEF members, but were missing the designation for Life or Honorary Members. NC AWWA-WEA apologizes to these long-time, dedicated members and ensures them that steps have been taken to avoid this error in the future.

AWWA Honorary Members

Francis A. DiGiano
Mark M. Bishop
Anthony T. Rolan
Michael Zihal

WEF Honorary Members

Donald E. Francisco
George D. Simpson

Employer Changes for NC AWWA-WEA Board of Trustees Members



As of December 31st, David Saunders retired from his position as City of Winston-Salem Utilities Director and took a position with HDR Engineering in January. David is a Trustee on the NC AWWA-WEA Board of Trustees.



As of February 13th Leslie Jones, a Trustee on the NC AWWA-WEA Board of Trustees, is working with GHD as a Project Manager.

We congratulate David and Leslie on their next steps in their careers.

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EPA Releases Memo to OK Electronic CCRs

According to the AWWA Washington Office, on January 3, 2013, the US Environmental Protection Agency (EPA) released a memorandum explaining ways utilities can distribute their annual Consumer Confidence Reports (CCRs), including ways for sending such reports electronically. Paper CCRs must still be sent to customers who request them or if a utility is aware of a customer's inability to receive the CCR electronically.

Acceptable delivery methods for CCRs include:

- Traditional land mailing a hard copy of the Consumer Confidence Report to each bill-paying customer.
- Traditional land mailing a notice that the CCR is available on a website. This can be in the customer's regular bill. Such a notice must have a clearly marked URL that goes directly to the complete CCR.
- Utility e-mailing a web address for the CCR to each bill-paying customer. This must be a notice that the CCR is available and provide a URL that goes directly to the CCR on a publicly available website. A URL that goes to a site where a customer has to search for the CCR or enter additional information is not acceptable.
- E-mailing the CCR as an attachment. For example, the utility may e-mail the CCR as an electronic file attachment in pdf.
- E-mailing the CCR as an embedded image or text. For example, a utility can send the CCR text and tables inside the body of an e-mail.
- Additional electronic delivery that meets the 'otherwise directly deliver' requirement of the Safe Drinking Water Act. (This category is set out to encompass different or new methods or technologies not listed above. Utilities should consult with their primacy agencies when considering new tools to make sure they meet the SDWA's requirement that the CCR is delivered directly to customers.)

The EPA memo also discusses other important considerations that utilities and primacy agencies must take into account, such as how to organize opt-in and opt-out lists. In all instances, paper copies must be provided to those who request them, and a phone number must be provided to facilitate such requests.

The regulatory oversight of electronic delivery will occur at the primacy agency level. Therefore, utilities should contact their primacy agencies for information on how they will be implementing this interpretative memo, as there may be variability from state to state.

Small-system waivers and good faith requirements to reach consumers who do not receive a bill are not affected by this memo, although it is possible that primacy agencies may modify their use of these tools as electronic delivery is implemented.

AWWA-sponsored research has indicated that up to 44,000 trees and \$20 million will be saved nationally per year through electronic delivery, resulting from reduced paper use and reduced printing and postage costs.

EPA's memorandum is available at <http://water.epa.gov/lawsregs/rulesregs/sdwa/ccr/regulations.cfm>.

In the session of Congress just concluded, US Rep. Bill Young, R-Fla., and US Sen. Pat Toomey, R-Penn., introduced bills in the House and Senate respectively to explicitly allow electronic

delivery of CCRs. AWWA's Water Utility Council endorsed the measures and the Association had extensive discussions with congressional staff and EPA staff over the last few months on this issue. Toomey's bill was almost attached to the 2012 Farm Bill as an amendment, but that effort fell short by just a handful of votes.

As always, please call your AWWA Washington Office if you have questions or comments.

Recruiting and Training Veterans for Careers in the Water Sector

Studies show that over one-third of the water and wastewater utility workforce will be eligible to retire in the next five to 10 years. Veterans transitioning into the civilian workforce may offer water and wastewater utilities with a recruitment opportunity. Many veterans possess technical skills and training that are directly transferable to water sector careers. The Department of Veterans Affairs (VA) and other state agencies administer programs that help to transition veterans to civilian careers and oversee funding to pay for education and job training. The US Environmental Protection Agency (EPA), American Water Works Association (AWWA) and Water Environment Federation (WEF) are working with VA to promote these programs to prepare veterans for water sector careers.

For more information about how these programs can be accessed to help recruit and train veterans for your utility, view this informational guide on the Work for Water website (a joint AWWA

and WEF website): <http://www.workforwater.org/uploadedFiles/Home/Veterans%20Final%205-2-12.pdf>

Annual Conference NC Safewater Endowment Raffle Winners

Attendees of the Annual Conference who took the short walk down the street on Monday evening to The Oxford were treated to free desserts and live music by Ray Cox. The main purpose of this great evening was to raise money through a raffle for the NC Safewater Endowment Fund. A total of \$8,799 was raised and the raffle winners are listed below. Thank you to everyone that participated! We look forward to your support at the Spring Conference Aruba raffle and in any 2013 Annual Conference fundraising activities.

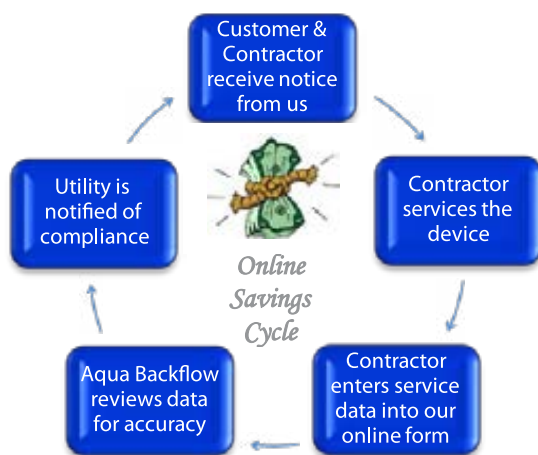
- Bob Pittman's painting - Tommy Esqueda
- Myrtle Beach Condo - Chuck Willis
- \$500.00 cash prize - Michael Wicker
- iPad - Joe McGougan
- Dinner with Robert Walters - Linnell Stanhope

News from Schnabel Engineering, Inc.

Schnabel Engineering, Inc. is pleased to announce the opening of its Raleigh, NC office. Schnabel's Raleigh office will focus its efforts on providing all of Schnabel's services, with local personnel having extensive geotechnical and environmental engineering experience.

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The office will be managed by Mr. Nigel Miller, PE, an Associate with the firm. Mr. Miller has more than 15 years of experience in transportation, energy, and infrastructure projects, including work for North Carolina Department of Transportation, Progress Energy, and major universities in the area.

Mr. Miller has experience on highway bridges, roadway pavements, airport runways, retaining structures, high-rise buildings, earth dams, energy transmission lines and large-diameter pipelines. He has managed, reviewed, and performed design and construction phase engineering duties for projects with technical challenges such as soft soils, deep excavations, high seismic loads, landslides, dewatering, corrosion, and rock excavation.

Schnabel, an employee-owned company, is an ENR Top 10 geotechnical engineering firm, employing more than 300 in offices coast to coast. Schnabel specializes in geotechnical, geostructural, dam and tunnel engineering, as well as environmental, geophysical, geosciences, construction monitoring, and resident engineering services. For more information, please visit us at schnabel-eng.com.

News from HUBER Technologies

HUBER Technology, manufacturer of stainless steel municipal and industrial wastewater treatment equipment, was recognized by Business North Carolina and Cherry, Bekaert & Holland (CB&H) among the companies on the list of the 2012 NC Mid-Market Fast 40.

This honor was awarded to privately-held companies, head-

quartered in North Carolina, based on a combination of revenue and workforce growth from 2009 to 2011. With 32% revenue growth and 26% employee growth during the preceding three years, HUBER was awarded 29th place and was the only durable goods manufacturer represented. According to Dana Hicks, President of HUBER Technology, "[The surge in business] placed some stresses and challenges on the organization, but I am very proud we kept up with the growth."

Frank Scriver Promoted to Director of Sales

Frank Scriver has been promoted to Director of Sales for Huber Technology, Inc. He will be responsible for driving sales of Huber's broad product portfolio to municipal and industrial customers in North America. As the Northeast Region Sales Manager since 2009, Frank significantly increased Huber's sales and market share in the northeastern US and eastern Canada.

About HUBER Technology, Inc.

Headquartered in 23,640 sq. ft. of office and manufacturing space in Huntersville, N.C., HUBER Technology, Inc. is a member of the HUBER Group, as a wholly owned subsidiary of HUBER SE, based in Bavaria, Germany. HUBER serves the municipal and industrial wastewater treatment market with high quality liquid/solid separation technology. Founded in 1872, HUBER is a solidly established manufacturer. Known as an innovator, HUBER SE is the holder of multiple patents and has proven experience and expertise with over 25,000 installations worldwide. For more information, visit www.huber-technology.com. 



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2013 Schedule of Events

The following schedule is current as of March 18, 2013. For updates or more information please contact the organization listed with each event. If no organization is listed it is an NC AWWA-WEA event, and details may be obtained by calling the NC AWWA-WEA office at (919) 784-9030 or visiting www.ncsafewater.org.

April 2013

- 14-16 NC AWWA-WEA Spring Conference: Spring Into Operations**
Wilmington, NC
- 29-3 NC AWWA-WEA Eastern Biological Wastewater Operators School**
Raleigh, NC
- 30-3 NC AWWA-WEA Physical/Chemical Wastewater Operators School**
Raleigh, NC

May 2013

- 5- 11 National Drinking Water Week**
AWWA 800-926-7337
- 7 Lab Technology Day**
Raleigh, NC
NCWOA (252) 764-2094
- 9 Professional Wastewater Operators Committee Meeting – Eastern Region**
Wallace, NC
- 11 NC Water For People 5K Fun Run**
Charlotte, NC
- 14 NC AWWA-WEA Seminar: Emerging Contaminants**
Raleigh, NC
- 30 NCWTFOCB Exams (application deadline 30 days prior)**
Kinston, Morganton, and Raleigh
NCWTFOCB (919) 707-9040

June 2013

- 9-13 AWWA ACE Annual Conference**
Denver, CO
AWWA (800) 926-7337
- 13 NCWPCSOCC Exams (application postmarked by 5/12/13)**
Kenansville, Morganton, Raleigh, Salisbury, & Williamston
NCWPCSOCC (919) 807-6353
- 20 NC AWWA-WEA Seminar: Emerging Technologies for Wastewater Treatment (tentative)**
Raleigh, NC area
- 27 NC AWWA-WEA Seminar: Emerging Issues in Emergency Preparedness, Safety & Risk Management**
Clemmons, NC

July 2013

- 15-19 NC AWWA-WEA Western Biological Wastewater Operators School**
Morganton, NC
- 15-18 NC AWWA-WEA Western Maintenance Technologist School & Exam – Grades 1 & 2**
Morganton, NC
- 30 NC AWWA-WEA Seminar: Drinking Water Rules & Regulations**
Raleigh, NC

August 2013

- 5-7 Advanced Utility Management Institute**
Raleigh, NC
Chuck Christensen (801) 281-0107
- 8 Professional Wastewater Operators Committee Meeting - Eastern Region**
Wilson, NC
- 12 NC AWWA-WEA Western Collection & Distribution School**
Morganton, NC
- 29 NC AWWA-WEA Seminar: Improving Operator Effectiveness Through Automation**
Huntersville, NC
- 29 NCWTFOCB Exams (application deadline 30 days prior)**
Kinston, Morganton, and Raleigh
NCWTFOCB (919) 707-9040

September 2013

- 4 NC AWWA-WEA Seminar: Advanced Topics in Wastewater Operations**
Greensboro, NC
- 9-11 Advanced Utility Management Institute**
Durham, NC
Chuck Christensen (801) 281-0107
- 12 NCWPCSOCC Exams (application postmarked by 8/13/13)**
Kenansville, Morganton, Raleigh, Salisbury, & Williamston
NCWPCSOCC (919) 807-6353
- 16-19 NC AWWA-WEA Eastern Maintenance Technologist School & Exam – Grades 1 & 3**
Raleigh, NC

October 2013

- 1 NC AWWA-WEA Seminar: Water Distribution**
Clemmons, NC
- 5- 9 WEFTEC**
Chicago, IL
WEF 800-666-0206
- 14-18 NC AWWA-WEA Coastal Collection & Distribution School**
Morehead City, NC
- 31 NCWTFOCB Exams (application deadline 30 days prior)**
Kinston, Morganton, and Raleigh
NCWTFOCB (919) 707-9040

November 2013

- 4 NC AWWA-WEA Seminar: Construction Issues**
Raleigh, NC
- 10-13 NC AWWA-WEA Annual Conference**
Concord, NC
- 14 Professional Wastewater Operators Committee Meeting - Eastern Region**
Moore County, NC
- 12 NCWPCSOCC Exams (application postmarked by 11/12/13)**
Kenansville, Morganton, Raleigh, Salisbury, & Williamston
NCWPCSOCC (919) 807-6353

Membership

What You Get...

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- **Join National AWWA**
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- **Join National WEF**
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12th Annual Spring Conference:
Spring into Operation
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Wilmington Convention Center
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Onsite registration opens at 7:00am
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At the conclusion of the Spring Conference, most
presentations from the technical sessions will be
available at www.ncsafewater.org.



The active participation of our members is the key to our success. Each member can make a contribution by sharing a small amount of time to help with the Association's work. Please look over the list of committees and choose a few that are of interest to you. To join a committee complete the Volunteer Form (available at www.ncsafewater.org), contact the NC AWWA-WEA office or contact a committee's chair directly.

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Membership Services
Public Education
Water For People
Students & Young Professionals

Technical Program Council - Seminars & Workshops Committees

Seminars & Workshops
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Finance & Management
Industrial
Regulatory Affairs
Residuals Mgmt/GW
Risk Management
Sustainability
Col & Dist Systems
Water Reuse

Schools Committees

Col & Dist Schools
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WW Lab Analyst
WW Operators Schools



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NC Currents Future Themes & Submission Deadlines

NC Currents is the official publication of the 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 issues-specific theme. Submission of an article does not guarantee publication. The editorial committee will review and select all articles, and authors will be notified of the status of their submission.

Summer 2013 Theme: Outreach/Water For People (Submission Deadline April 8, 2013)

As water and wastewater professionals, we recognize the importance of clean water and sanitation and its impact on our health and overall quality of life. NC AWWA-WEA and several of its members are actively involved in outreach projects, helping to bring the necessities of clean water and sanitation to those living without it. Most notable is our relationship with Water For People (WFP) and its mission to help build a world where all people have access to safe drinking water and sanitation, and where no individual suffers or dies from a disease related to water or sanitation. Specifically, we as water and wastewater professionals need to understand that the overall WFP vision is for volunteers, people and partners to continually focus on improving in the areas of water quality, sanitation and general hygiene, including experimenting with new ideas and providing quality resources in order to multiply WFP's impact in these developing countries. For many years, several NC AWWA-WEA members have been involved with a variety of WFP activities, providing expertise in the areas of utility engineering, operations and maintenance. This particular issue of NC Currents will feature and explore different projects, studies, or awareness activities that develop innovative and long-lasting solutions to problems with water, sanitation and general hygiene noticed throughout the world. Theme Leaders: Tom Bach (WSACC, tbach@wsacc.org, 704.786.1783x228), Sonya Hyatt (Davidson Water Inc, shyatt@davidsongwater.com, 336.731.5560), Wade Shaw (City of Raleigh, wade.shaw@raleighnc.gov, 919.795.2100)

FALL 2013 Theme: Emerging/Potential Contaminants* (Submission Deadline July 8, 2013)

According to an article in the November issue of the *Water Technology* magazine, the Environmental Protection Agency (EPA) lists more than 83,000 chemicals in its Toxic Substance Control Act (TSCA) inventory. Of course not all of these chemicals apply to drinking water quality, but many of them do. And the list definitely keeps growing. In the past several years, pharmaceuticals and personal care products have found their way into our drinking water. And a big issue in the news this year is hydraulic fracturing, or hydrofracking, which has raised concerns about drinking water contamination. In this edition of NC Currents, we invite authors to explore emerging and potential contaminants, offer their perspectives and insights on the potential hazards, and highlight the many ways in which municipal systems are addressing these issues. Theme Leaders: Marianna Boucher (McKim & Creed, mboucher@mckimcreed.com, 910.343.1048x206), Adrienne Coombes (McKim & Creed, ayecoombes@mckimcreed.com), Marco Menendez (Dewberry, mmenendez@dewberry.com)

WINTER 2014 Theme: Succession Planning* (Submission Deadline October 1, 2013)

*Description for this theme will be posted at www.ncsafewater.org once it becomes available. Theme Leaders: Lori Brogden (Schnabel Engineering, lbrogden@schnabel-eng.com, 919.818.8072), Jonathan Ham (Cape Fear Public Utility Authority, jonathan.ham@cfpua.org, 910.332.6634), Steve Hilderhoff (GHD, steven.hilderhoff@ghd.com), Vicki Westbrook (City of Durham, vicki.westbrook@durhamnc.gov, 919.560.4381x35266)

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