Ohio Water Environment Association
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Buckeye Bulletin

REMEMBERING LARRY MOON

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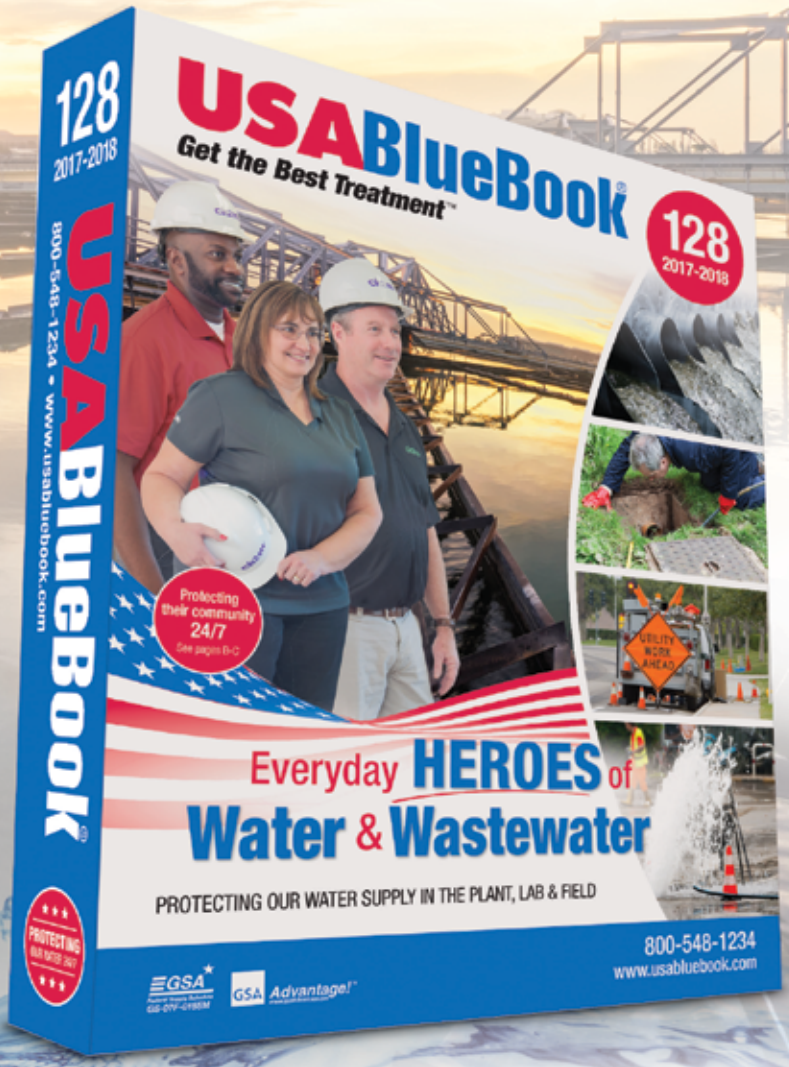
OWEA
OHIO WATER ENVIRONMENT ASSOCIATION



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Get Involved - Join a Committee Today

Contact OWEA at ***info@ohiowea.org*** or the chair of a committee that interests you for more information.

SAVE THE DATE

JUNE 20, 2018	ANNUAL BUSINESS MEETING	THE FAWCETT CENTER
AUGUST 27-30, 2018	ONE WATER TECHNICAL CONFERENCE	GREATER COLUMBUS CONVENTION CENTER
OCTOBER 11-12, 2018	PLANT OPERATIONS & LAB	NATIONWIDE HOTEL & CONFERENCE CENTER
OCTOBER 30, 2018	WATERSHED	THE FAWCETT CENTER
DECEMBER 6, 2018	BIOSOLIDS	NATIONWIDE HOTEL & CONFERENCE CENTER

Career Opportunities

No charge for job seekers.

No charge to post a position if you or a fellow employee are an OWEA/WEF member.

$170 for a 30 day posting if not a member.

$170 for a Professional Membership

We encourage you to join OWEA and reap all the benefits of membership. Same price as a posting!

Are you a social media guru? Find out how you can become part of OWEA's social media team. Email us at *info@ohiowea.org*

Welcome New Members

January 2018-March 2018

Cody Allison
Vinny Anderson
Brandon Averill
Greg Baldridge
Kelly Barron-Holcomb
James Boyes
Alan Burmeister
Scott Campbell
Mark Chandler
Kevin Conner
Rich Deluca
Saurabh Deshpande
Sarah Disario
James Fangman
Christopher Gilcher
Stewart Graf
AJ Gutz
Jeremy Hamel
Max Herzog
Ashley Hrin
Michelle Iannicca
Joby Jackson
Robert Jamieson
Michael Jankowski
Ronald Johnson
Blake Jordan
Steven Kaye
Jacion Kazmierczak
Dawn Sink Kennedy
Jason Kupfersmith
Marissa Lauer
Ange Layton
Doug Little
Dana Martin-Hayden
Brian Maynard
Cecilia Mazzei
Timothy Mick
Alyssa Miller
Kate Moran
William Nayer
Megan Patterson
Shawn Pickworth
Janet Popielski
Kristen Risch
Brandon Robinson
James Rossow
Yelena Ruban
David Rutter
Chris Rybak
Katie-Grace Sawka
Walter Schroder
Benjamin Schroeder
Emily Schroer
Jim Selerno
James Shamrock
David Sherwood
Alexandra Slawinski
Justin Waid
Jessica Wilson
Gabriel Wise
Jennifer Zajic
Thomas Zocolo
Bryana Zuiderweg

Thank you for joining the Ohio Water Environment Association and the Water Environment Federation.
We welcome your contribution to preserving and enhancing Ohio's water quality environment.

Visit http://www.ohiowea.org/memberships.php for OWEA membership information

FAREWELL, BUT NOT GOODBYE...

Jamie Gellner
OWEA President

One might expect a truckload of introspective thoughts and attempts at profound offerings in my last President's message.....there will be very little of that.

Much has happened since our last Buckeye Bulletin on a very important issue for our member utilities – NUTRIENTS. Hopefully, you've seen our email blasts on this. One of OWEA's primary missions is to support the interests of our members – we've had the opportunity to comment on the proposed changes to statewide nutrient requirements and we will continue to interface with OEPA and other organizations to provide objective information on the topic as this issue unfolds in the state legislature.

As Dawn details in her Office Offerings, OWEA attended the WEF Fly-in in April. Our team organized and attended numerous meetings with our local Representatives and Senators, offering information related to nutrients, Great Lakes restoration funding, and infrastructure funding. A special thanks to Dawn Kennedy, Jason Tincu, Fred Smith, Dale Kocarek, Doug Clark, Brian Gresser, and MaryLynn Lodor for representing OWEA this year.

ONE WATER planning is occurring in earnest, and many are hard at work. Many thanks to the planning committee and the volunteers putting in massive amounts of time to plan Ohio's largest water professional conference ever. Don't forget the dates: August 27-August 30th, 2018.

I had the opportunity to attend the first Student Design Competition, hosted by our Northeast Section in late April. Seven teams from local universities in NE Ohio competed this year. OWEA is sponsoring the winning team's trip to compete at WEFTEC later this year. We also provided student memberships to all participants. This was and is a fantastic opportunity to connect with the future leaders of the water profession. Based on what I saw at this competition, our future looks very promising! A special thanks to Krishna Chelupati and Paul Solanics for their efforts in organizing this competition.

A few thoughts on OWEA's future (and it's a bright one):

1) Fred Smith will be taking over as President at our Annual Meeting on June 20th, 2018 at the Fawcett Center at OSU (please mark the date if you have not already). I have been fortunate to work closely with Fred and Kim Riddell (who will be President-Elect) over the past year. OWEA is in extremely capable hands (and ones with a great vision for OWEA's future).

2) Dawn Kennedy came on board in January as our new Executive Administrator. I'm sure many of you have met Dawn, and when you did, it didn't take long to sense her energy, enthusiasm, and experience in leading our organization. With Chelsea and Megan, our team is one of the best among MAs. I see nothing but great things to come in our responsiveness to members and the Sections, and our expansion of services and reach in the years to come.

3) Our Executive Committee has weathered many challenges this year – and each member has pulled together, taken some calculated risks, and helped to improve the organization in the process (my sincerest thanks to each of you!). Most importantly, we debated but each time came together in a common direction. This unified approach to important decisions will serve OWEA well in the years to come.

I sincerely thank you for the opportunity to serve in this role for the last year. A huge thanks to my family – my kids and my wife (who is up for sainthood this year - she is the better ¾ of our family). I'm truly blessed!

As everyone said when I started on the EC seven years ago, it went fast. But, I've had the opportunity to make many friends and work with exceptional professionals in our business. I'll miss that part the most – getting to interact on a regular basis with those I respect a great deal. The adage that it's all about the people is absolutely true. It's what makes OWEA great now – and it's what will continue to make OWEA great in the future.

And by the way - I'm saying farewell, but definitely not goodbye – my youngest won't graduate from college until 2034!!!

Jamie is a Vice President with Hazen and Sawyer, based in Cincinnati (and Cleveland). Jamie is a registered PE in Ohio and specializes in wastewater treatment plant planning and design. He has a Bachelors degree in Civil Engineering from West Virginia University and a Masters degree in Environmental Engineering from Michigan State University. He and wife Lili have five children, ranging in age from 5 to 14. In his "free" time, he enjoys family camping trips and fitness. Contact him at *jgellner@hazenandsawyer.com.*

While this is my second "Office Offerings" article, I have recently been able to experience several firsts here at OWEA.

I was able to attend my first WEFMax. WEFMax is a multi-day meeting offered by WEF for the state member associations (MAs). There are four WEFMax meetings offered in various locations across the country. I attended the WEFMax meeting in Indianapolis, Indiana with SEOWEA delegate, Brandon Fox.

WEFMax provides an amazing opportunity for MAs to learn from leaders at WEF and each other. The meeting covered a variety of topics, from workforce development to different conference options. Much of the learning happens though networking. It is a great opportunity to hear what other associations are doing and help plan for the future of OWEA.

While at WEFMax, Brandon and I presented on social media. We focused on how OWEA is growing our Twitter and LinkedIn presence. It was a great discussion on how social media is here to stay and we need to be leading the game.

Speaking of social media, just a few days prior to WEFMax, I had another first. The OWEA Twitter account hit 1,000 followers! This was a goal I set shortly after starting this position and I couldn't be happier. We are currently at 1,057 and my new goal is 1,500 before our August One Water Conference. I need your help to reach this goal and am asking that if you don't follow OWEA, you start. You can find us on Twitter @ohio_wea. If you already follow us – THANK YOU. Please encourage co-workers that are on Twitter to take a moment and follow us, they just might see someone they know in the photos – themselves!

Another first for me, was our recent National Water Policy Fly-In during Water Week 2018. Water Week is a week-long event held every year in Washington, D.C. sponsored by thirteen water focused groups, including WEF, AWWA and NACWA. It provides an opportunity for a variety of organizations to work together to advocate for water. I was privileged to accompany six of our members to the Hill to meet with Ohio's elected officials. It was an amazing and inspiring experience to be in the company of hundreds of water warriors from across the country.

I am grateful to OWEA to allow me to experience these firsts. While I have only been in this position for five and half months, I have met some wonderful people and had some great experiences.

Now, in honor of firsts, I am going to challenge you to experience a first of your own. Take a moment and connect with OWEA in a way you haven't before. Whether that is following us on Twitter or LinkedIn, or attending a new workshop, or getting involved with your section. This is YOUR association and we need YOU – so please have a first with us.

Best,

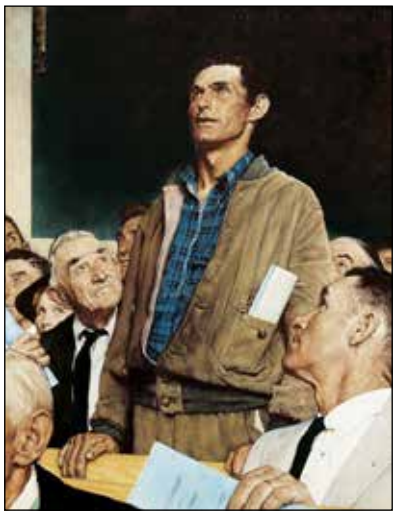
Dawn Sink Kennedy, CAE, Executive Administrator

Trusted News Reporting

by Dale E. Kocarek, P.E., BCEE, Past President 2010-2011

Freedom of the Press

I think that it is important that the US Constitution be studied in school. It is a masterful document which was as relevant when ratified by states in 1787 and 1788 as it is today. Recently, we have heard much about the 1st amendment (freedom of speech), 2nd amendment (right to bear arms), and 4th amendment (private property and search and seizure).



"Freedoms Series" by Norman Rockwell, 1943

The First Amendment to the U.S Constitution states that "Congress shall make no law abridging (limiting) the freedom of speech, or of the press…" Specifically freedom of speech is the liberty to speak openly without fear of government restraint.

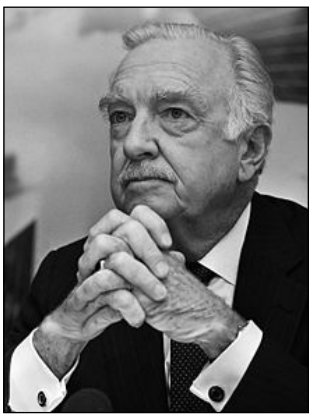
It is a largely held belief that freedom of the press is one of the greatest strengths of our democracy. Normal Rockwell (1894-1977) depicted this national freedom in a popular illustration in 1943.

Freedom of Speech continues to be a hotly debated topic today. The US Supreme Court has been very careful to not place limitations on "free speech" in any way.

The Most Trusted Man in News

During the 1960s and 1970s many Americans watched the Nightly News with Walter Cronkite (1916-2009). In 1962, Cronkite became anchorman of CBS Evening News. His tenure as anchor of the CBS, which ended in 1981, earned him the moniker "the most trusted man in news."

One of his most famous interviews was with President John F. Kennedy in September 1963. Cronkite pressed Kennedy on many questions including escalating US involvement in Vietnam. Years later many wondered about Cronkite's personal and political beliefs. His questions were so well presented that one could not tell.



Newsman Walter Cronkite

Cronkite and others of his generation were the penultimate symbol of professionalism and freedom of the press in a free society. He told the facts as he saw them with no spin or drama. He is well known for his departing catchphrase "And that's the way it is," followed by the broadcast's date.

It seems that we hear about "fake news" every day. Prior to the 2016 Presidential Election this term was not used much. According to Wikipedia, "fake news" is a type of yellow journalism or propaganda that consists of deliberate misinformation spread by print, broadcast or on line social media.

One may be surprised to learn that "fake news" was common in the 19th century. Tabloids from this era were notorious at mudslinging and presenting deliberate mistruths on people and issues. An example of this was the election of 1800, which pitted incumbent President John Adams (1735-1826) against his rival Thomas Jefferson (1743-1826). The level of insults levied by tabloid style reporters would land many of them in court today.

OWEA's Challenge

During the last decade, OWEA has established a goal to increase its relevance to our members and those in our industry. This means at times taking a risk that what we say may "ruffle a few feathers."

As a member of both section and state boards for the last 22 years, I can state with certainty that OWEA strives to provide information in the most accurate manner possible. We wish to be fair, balanced, and truthful. Like journalists, we often are under pressure to meet deadlines, which adds to the challenge of issuing a statement where the end may still be in the making. As a board, we start by asking ourselves the following questions:

- Is this information accurate and objective as we know it to be?
- Is it consistent with our mission statement to primarily educate, rather than lobby?
- Is this what our members need to hear?
- Is the material time sensitive, and how does this impact its release?

Answers to these questions are not always straight forward as opinions vary. Most of the time, we have a high agreement internally. However, there have been a few instances where we disagreed among ourselves on how and what we should say on a topic. If the answer is "yes," then our President authorizes its release.

OWEA's Real News

Most of us are not writers by trade, but can be persuaded to write pieces from time to time. The challenge is writing articles on a regular basis, which is what traditional journalists are required to do. Our readers are unaware

of repeated reminders issued by the OWEA office and Publications Committee that ask for articles by a certain date and leaves us scrambling at times.

If I was to provide a glimpse into a hypothetical OWEA newspaper, it might look something like this:

Nutrient Rule Update: OWEA is carefully watching the development of the nutrient rule as it begins to unfold. Under the Government and Regulatory Affairs Committee, President Gellner and OWEA issued one e-blast to discuss our meeting with the Ohio EPA on February 21, 2018, and others will be issued at the right time. Given that there is presently no draft rule, there is nothing to officially review. Ohio EPA Surface Water Chief Tiffani Kavalec gave a presentation at the One Water Government Affairs Workshop and touched briefly on some aspects of the proposed rule.

WEFMAX Meetings: Each year OWEA Board members attend WEFMAX meetings. These meetings are held in different areas of the country by Water Environment Federation (WEF) during March, April, and May and provide OWEA and other Member Associations an opportunity to meet in a small group setting with WEF Staff and Leadership. Over the years, these meetings have been valuable in sharing information and relationship building.

April 17 & 18 Fly In: OWEA sent a group to Washington DC again this year on the annual "Fly In," which is part of National Water Week. President Elect Fred Smith led this effort on behalf of the Government and Regulatory Affairs Committee and working with OWEA staff and others on the Fly In to deliver a coordinated message "On the Hill," to our lawmakers.

Obituary: It is with deep regret that OWEA reports the death of our friend Larry D. Moon on March 21, 2018 at the age of 79.

In addition to serving as the long time Secretary-Treasurer of OWEA, Larry's position at the Ohio EPA included the oversight of the Ohio EPA Operator Certification Program, which included administering and proctoring the operator examinations for the Ohio EPA. In addition, he visited wastewater treatment plants across the state giving advice, and served as an ambassador for the Ohio EPA. Having worked with Larry briefly, I can attest that he was effective in this role.

Larry was an icon to our organization. His tenure of service is symbolized by the Larry D. Moon award for outstanding service to OWEA. This issue of the Buckeye Bulletin has other stories present in Larry's memory, so please be sure to read them.

Tom Fishbaugh

Dale Kocarek

Ted Baker

House of Delegates Spring Board Report

Activities since Mid-Year

Non-Routine work/activities of note:

-Draft updates to Policies and Procedures included with backup information.

-Delegate transition, ensuring information exchange and effective succession, focus on mentoring program.

Workgroup Recap:

-The Membership Relations Workgroup Sub-group has worked with Penny and Alison from WEF Staff to prepare a presentation on the WEFTEC Membership Initiative at each of the four wefmax's this spring. The other two sub-groups continue to work with WEF staff and the WEF Treasurer on providing messaging and tools for Delegates and MA's to utilize in communicating the recently developed Membership Dues Strategy. Tools will include talking points for Delegates to communicate the Strategy to MA Leadership as well as templates for communicating a dues increase to the MA Leadership and all members in the event WEF dues are changed in the future.

-The Operator's Initiative Workgroup continues to work with the Operator Advisory Panel (OAP) on pulling together information and materials to further the mission of the OAP. With the help of WEF Staff the national Operator Census is almost completed. The group recently underwent a change in leadership, with the new chair hitting the ground running. The group has prepared a presentation for each of the wefmax's and is continuing work to further visibility of the Operator Ingenuity Contest and prepare a gap analysis on WEF/MA operator content.

-The Student Chapter Workgroup has recently updated its workgroup charter to take a step back and working with the SYPC is re-starting with basics on student chapters. The group is conducting a national census of student chapters, is gathering information from MA leadership and delegates at each of the WEFMAX's and is preparing an analysis of roadblocks, challenges and successes to student chapters.

Committee Updates

- The Steering Committee continues to devote intentional time and thought each call toward optimizing HOD activities, elevating the importance and service of the Delegate, and maximizing communication potential and pathways. Based on these discussions, the draft update to the HOD Policies and Procedures is available with the board meeting material backup. Howard continues to develop a mentoring program and has conducted a survey of current delegates to see where we can provide mentorships/information to ensure a smooth transition from delegate to delegate.

-The Nominating Committee has prepared documents and recruiting materials to engage next year's committee members at each of the four WEFMAX's this spring.

-The WEFMAX Committee is planning a great program focusing on membership, engagement and workforce development for each of the four WEFMAX's. The Indianapolis meeting has taken place, and was very well received and tremendous discussion and exchange of information took place.

-The Outreach Committee continues to focus on improving communication potential and pathways not only within the HOD, but from the Delegate to the MA and back from the MA to WEF. They are pulling together resources and templates for Delegates to utilize with the intent of making communications simple and timely and is developing a delegate "job description".

-The Budget Committee had a great meeting at mid year. The workgroup has also worked with Penny and Jamie to prepare a presentation for each of the four WEFMAX's.

2018 Operator Ingenuity Contest

Water Environment Federation
the water quality people

SOMETIMES, YOU JUST TACKLE A PROBLEM USING WHAT'S AT HAND AND A BIG SHOT OF INGENUITY.

Enter at
http://www.weftec.org/ingenuity
Entries accepted until
June 1st, 2018.

All it takes is a short description of the problem you faced and the fix you found. Plus it would be great to get a photo or two showing your invention or improvement. Questions? Email us at innovation@wef.org.

ARE YOU OUR NEXT WEF DELEGATE??

The third Delegate position, currently held by Tom Fishbaugh, will become available this fall at WEFTEC. The Executive Committee will be appointing someone to that position at the June Executive Committee meeting.

This is a three year term including four WEFTECs. You must attend WEFTEC and it is recommended to attend one WEFMAX per year. You are the communication link between OhioWEA and WEF. You are expected to serve on two House of Delegates committees and assist fellow Delegates with an article in each Buckeye Bulletin.

Send your letter of interest and intent to

Michael Frommer at *mfrommer@co.delaware.oh.us* by June 1, 2018.

It is always a good idea to make sure you have your employer's endorsement. If you have any questions, contact Dale, Ted or Tom.

NWOWEA

Walter Ariss, President

We had a great section meeting on March 21, hosted by the City of Wapakoneta WWTP. A big thanks to all the employees at Wapakoneta for making their plant look spectacular for the tours. In traditional fashion for spring in northwest Ohio we received about four inches of snow the morning of the meeting. Luckily it was mostly melted by the time we were ready to make the trek back home. Thanks to everyone who braved the weather to come out. At the meeting we presented the Northwest Section awards for the Kathleen M. Cook award for a laboratory analyst to Ange Layton and the Moe Swaisgood award for collection system operations to Jim Rossow. Congratulations to our winners on this well-deserved recognition!

The northwest section also hosted a lab analyst committee training on April 26th, and our popular operator education day on May 4th. I would encourage any of our members who will be taking either the state exam or the ABC exam to attend one of these review sessions. We have several new trainers who have begun to incorporate both the intensive math required for the state exam and the somewhat more operations focus of the ABC questions into the review. We will also offer another review in the fall before the state exam.

Our annual Friends and Spouses day will be held this year at Cedar Point on August 3rd. Look for more information and registration for this in the coming weeks.

One thing I have noticed this year is a lot of new faces at our meetings. It is great to see that our organization continues to thrive even in the face of a lot of our members reaching retirement age. I challenge all of our leaders and more senior members to bring at least one new person with you to each OWEA event you attend. You never know what that spark will be that really draws a person into our organization. Maybe it's the learning, the networking, or just getting to know some truly genuine people with a passion for what they do.

Walter Ariss, Northwest Section President

SEOWEA

Kris Ruggles, President

Happy Spring! Though winter has been quite persistent, it seems spring has finally sprung. As an outdoorsman, my seasons go by what is "in season" Waterfowl (winter), Fishing (spring and summer), big game and upland birds (fall). As a steward for the environment both recreationally and professionally, I am constantly reminded in my outdoor pursuits how important our natural water resources are. Spring is the biggest reminder of just how critical our water quality is as I head out to the streams with my fly rod or hit Lake Erie after walleye. I cannot say enough about how proud I am to be a part of this great organization promoting healthy streams and waterways in Ohio, and for the rest of the country. As you head out this summer for family vacations, make your way to a state or national park, or even if you are just out driving to the next destination for work, remind those around you how important our work is toward a healthy environment.

I want to welcome and thank our Southeast Section's new Young Professional Committee chairs Jamie Mills with Strand Associates, Inc.; Cody Allison with Arcadis; and Tucker Randles with City of Columbus. By teaming up as a trio, their diverse backgrounds and professional roles will surely help increase membership from the next generation of wastewater professionals.

Our most recent Section meeting was held as our annual spring plant tour. Instead of one or two tours and classroom setting training hours, we annually do one meeting "on the road" spending the day touring and learning about plants and their various operations. This year we focused along the US 23 corridor visiting Chillicothe, New Holland, Circleville, and Ashville. The tours were very well attended and a lot was learned during the exchanges in ideas and operations along the way.

We are looking forward to this year's Friends and Family outing at the Columbus Clippers Stadium. Our outings have focused around sporting events and are very well attended. For those of you who have not been, I highly recommend it. It is a way for us to give back to our members as a Section with very affordable family priced tickets and food provided. This year's will be Friday, May 18th. Please see the OWEA website for more details.

And, as always, a big thank you goes out to the Southeast Section EC committee who does the scheduling, technical program, and venue coordination. We are very fortunate to have such a great group of volunteers involved. I also want to give a personal thanks to our past presidents Fred Smith, Brandon Fox, and John Owen for staying involved in the group and assisting. Their past and continued volunteer service brings a lot of experience and helpfulness to our group, even though their official tenure has past, and they have no official duty to do so. Thank you guys.

NESOWEA

Kathy Richards, President

It has been a very busy spring here in the Northeast Section (NES). Our January Operations Seminar and February Industrial Waste Seminar each hosted 250+ attendees and the presentations were ultimately approved for 6.25 contact hours per event. By the time this reaches your desk we will have wrapped up our April Laboratory Analyst and Watershed events, and a quick look at registration indicates they will be well attended also.

Additionally we will have determined the winner of the Student Design Competition! For those of you that were unable to join us for the presentations of their projects in April, I strongly urge you to look for the winning team when they present at One Water in August. After wowing the audience there, they will be on the way to WEFTEC to compete, courtesy of the State Executive Committee! I offer a huge thank you to Muralikrishna Chelupati (Krishna) and Paul Solanics for their heroic efforts in building this program!

Registration is up for our May 24th meeting in North Olmsted. It will include a plant tour, technical sessions, awards ceremony and business meeting. The North Olmsted facility is located adjacent to the Cleveland Metro Parks and has worked through some challenging situations due to that proximity. I can pretty much guarantee everyone in attendance will come away with some new insights or ideas.

And with spring well underway, can the NES Annual BioMass-ters be far behind? Make plans to spend a fun-filled sunny (please, oh, please) day at the Grantwood Country Club in Solon on July 13th. This event is consistently a sell-out for golfers and we are actively looking for sponsors. Registration will be up soon and if you are interested in sponsorship you can contact Mike Cook for more information. *michael.cook@ads-pipe.com*

Oh my goodness, what a whirlwind year this has been! So much is going on in the NE Section, I haven't really been able to process the fact that my term is almost over, and this will be my last opportunity to speak to you from this position. It has truly been a growing experience – I have learned much, met many incredible professional people and have an overall greater appreciation for the work that all the Ohio Water Environment Association volunteers provide 'behind the scenes' to make this organization one of the finest in our industry. I want to recognize all our committee chairs for their time and energy as well as the Young Professional members that are continuing to step up to serve on those committees.

And finally, one last shout out to the State Executive Committee and administrative staff for everything they have done and continue to do to make the work load at the Section level manageable. WE LOVE YOU GUYS!

Photos from the February Industrial Wastes Seminar

SWOWEA

Steven Reese, President

Attitude for Gratitude

We want to provide our Thanks to those at the State Level of OWEA that continue to support our members and provide outstanding educational opportunities. We wanted to point out that OWEA provides service in the water environment in Ohio for:

- 84 Counties
- 350 Communities
- 8 Major Metropolitan Areas
- Over 2,000 Water Quality Professional Members
- 10 Million Ohioans

OWEA provides many services from a small team of dedicated individuals including 3 full time OWEA staff members and volunteers across 12 executive committee members and 27 committees.

Thanks to our OWEA employees and many other volunteers across Ohio for providing service, education and supporting and encouraging our membership!

OWEA is currently offering 50 FREE ANNUAL WEF STUDENT MEMBERSHIPS on a first come first serve basis. Students should seize this opportunity to obtain free membership and allow them to interface with water quality professionals across the state! Students must be enrolled in a minimum of six credit hours and provide a form for proof of enrollment. Contact OWEA staff for more information and details.

OWEA is also coordinating with our section on a potential sludge workshop coming later this year. This will be an educational course including entry level training for activated sludge control and troubleshooting. We will keep our group informed as more details develop.

Successful Events

We are proud of our many successful events since 2018 began including the Industrial Waste Seminar in Mason at the end of January and the Winter LAC Meeting hosted in Fairfield in February. In addition, great times were had at the March Section Meeting held on March 15. Our Thanks to the City of Springboro and Veolia for hosting! The event consisted of awesome weather, a great venue, and fun brunch food! Great talks and presentations were given by Chris Puzzuto, the Springboro City Manager, as well as representatives from Veolia, YSI, Brown and Caldwell and FTC&H.

My Thanks to our several committees for organizing our events and for the exhibitors who support us. Our events are packed full of educational opportunities. The members in attendance allow our SW Section to continue to provide educational events at reasonable prices and sometimes even no cost!

Upcoming Events

We hope you are warming to the Spring season despite the wide weather swings by the day! We are gearing up for several exciting events over the next few months.

One very fun and FREE event we are looking forward to is our SWOWEA Networking and Social event, to be held Thursday, April 12 from 3PM to 6 PM at the Tap & Screw Brewery. Hope to see you there! More information and sign up is available online at the OWEA website. Please plan to attend to share in our Attitude for Gratitude as we celebrate our members.

Below is an active list of additional upcoming SWOWEA events.

- Plant Operations Nearly Free Seminar June 7
- Summer LAC Meeting July 12 at Fairborn
- One Water Conference August 27-30 in Columbus

For more details about these and other events, please visit the OWEA website at www.ohiowea.org or view our latest Southwest WAVE newsletter. It is a great resource for the membership!

Call to Action!

Maybe you are thinking as you read this...how can I get involved in this awesome group? Please feel free to email me at sreese@hazenandsawyer.com and I'd be glad to bring you on board with our group!

Best Regards,

Steven Reese sreese@hazenandsawyer.com

Certification Committee

by Kathy Richards, Certification Chair

Hello my acclaimed and auspicious analysts! I hope spring has finally arrived for you with balmy breezes and beautiful blooms! Ok, ok – enough with the alliterations.

With this update I am reaching out to those of you that are planning on taking the examination (any level) to gauge what the interest level would be if the Laboratory Analyst Committee were to put together a training/ review session prior to the test date. I have had a couple individuals ask about this, but at present don't have any real way to determine if it would be well attended or worthy of undertaking. At this time we are in the very preliminary stages of planning this and I have no way of judging when or where the first or subsequent events would occur.

So, I am asking you to please provide your Committee Chairs, at the section and state level, with some input. For instance, would a half-day be appropriate? Should there be separate tracks, one for Class I & II and one for Class III & IV? And very importantly, if you hold a Class IV Certification would you be available to assist with the training? You can find contact information here: *https://www.ohiowea.org/laboratory_analysis.php*

And along that vein, I would like to offer my deep appreciation to the individuals that have agreed to act as proctors for the exams, Cheryl Soltis-Muth, Mark Ciccone, Mike Dolsen & Kathy Beckett. These individuals will be working with experienced proctors to become familiar with the policies and responsibilities for administering the tests.

In closing I want to 'remind' all of you that May 14th is National Dance Like a Chicken Day (videos gleefully accepted)!

Any questions or comments, you know how to reach me.

Kathy Richards

Director, OhioWEA Board of Certification

KRichards@AkronOhio.gov

WATER WEEK 2018 RECAP

A Pilgrimage to DC: "A pilgrimage is a journey or search of moral or spiritual significance." No different than that of any religious pilgrimage, Water Week can be viewed in a similar way. Water industry reps, including the OWEA team, from all around our great nation embark on a journey to our nation's capital to honor our public servants, ask for representation, and engage in dialog about what it is going to take to protect our nation's most precious resource, water!

The Introductory Events: Water Week was kicked off on Tuesday by some of the nation's leaders in the industry via the Policy Fly-In Plenary Sessions. Here, participants were briefed about the state of the water industry and the week's messaging and planned events. From here, roundtable discussions ensued aimed at diving deeper into a plethora of topics including innovation, wet weather, nutrients, funding and so on.

The Water Week Team Bonding: Similar to any sports or organizational team, the OWEA team is only as effective as its internal bond. The team took advantage of opportunities across Water Week to network and bond with each other. The week's events provide a series of opportunities for team members to gain perspective, share stories, and get on the same page ahead of very important meetings 'on the Hill'. Your OWEA team did just that and it paid off in a big way throughout the week.

Meetings on the Hill: Wednesday's agenda included a kick off reception 'on the Hill' that included some of the nation's water leaders including a rousing address by former DC Water General Manager, George Hawkins. From there, meetings with representatives were to follow. The OWEA team participated in 10 meetings with various offices. Many of them included direct contact and dialog with the elected representative including representatives Marcy Kaptur, Jim Jordan, and Bob Gibbs. Of special note, the OWEA team was honored to spend a significant chunk of time (where we actually lost track of time) with Congresswoman Kaptur, the longest serving woman in House history, where she passionately spoke about her concern of and interest in solving the Western Lake Erie Basin nutrient/sediment/water quality issue. Ms. Kaptur's passion was inspiring! In addition, the OWEA Water Week team announced the 2018 OWEA Public Service award designation to Senator Sherrod Brown at their meeting with his office. We look forward to a formal award ceremony later with Senator Brown in 2018!

Water Week 2018 National Policy Fly-In: OWEA takes the Hill

Water Week is a week of water advocacy that takes place in Washington D.C. Water Week involves 13 supporting associations, including WEF, NACWA, AWWA and WRF. One of the key parts of Water Week is the National Policy Fly-In which gives representatives from the various associations the opportunity to meet with their elected representatives and discuss water related issues.

This year seven OWEA members traveled to D.C. to advocate for our most precious resource, water. Our group included: President Elect Fred Smith, WEF Delegate Dale Kocarek, SWOWEA Delegate Jason Tincu, Previous President Doug Clark, Member MaryLynn Lodor, Member Brian Gresser and OWEA Executive Administrator, Dawn Kennedy.

WATER WEEK 2018 COMMUNICATED THE VALUE OF WATER TO ENVIRONMENTAL PROTECTION, TO ECONOMIC DEVELOPMENT AND TO JOB CREATION.

In addition to learning the latest from various government entities, include the EPA, our group was able to meet with ten of our elected officials or their aides. OWEA advocated for water with Senator Sherrod Brown, Senator Rob Portman, Congresswoman Joyce Beatty (3rd District), Congressman Jim Jordan (4th District), Congressman Bob Latta (5th District), Congressman Bob Gibbs (7th District) Congressman Warren Davidson (8th District), Congresswoman Marcy Kaptur (9th District), and Congressman James Renacci (16th District).

We shared a message of the importance of water and wastewater to our environment and economy and that OWEA is a non-partisan technical resource that elected officials can look to for guidance. We presented three major issues during each visit, (1) the importance of funding the Great Lakes Restoration Initiative at the current $300 million level, (2) the importance of creating an infrastructure funding program to improve the water infrastructure and reduce the cost to our rate payers, and (3) the importance of creating broad programs aimed at non-point source contributions to reduce the amount of nutrients in our waterways.

Takeaways: Water Week left the OWEA team with the following takeaways. (1) Use your voice: Sometimes, it's not WHAT you know, but rather WHO you know. (2) The solvency and continuation of programs like the SRLF and WIFIA must be a priority in order to allow Ohio's communities to meet water quality goals. (3) Regulations must be effective and make common-sense and permitting must be flexible, as we look to solve challenging water-quality problems. (4) Our elected officials need OWEA to serve as a collaborating partner to meet our nation's water challenges. (5) Always wear tennis shoes when 'on the Hill' (cause you'll end up walking miles and miles and miles)!

Next Steps: The OWEA Water Week team will be participating in a debrief across the next few weeks to define lessons learned and schedule action items. OWEA membership may see various Water Week-related events come across the schedule later on into 2018!

Government & Regulatory Affairs Committee Update

by John Owen, PE, Vice Chair

On behalf of myself, John Owen, and the rest of the OWEA Government and Regulatory Affairs Committee, I want to thank all of our presenters and attendees of the March 8, 2018 One Water Government Affairs and Regulatory Workshop.

The workshop was held at the Nationwide Hotel and Conference Center in Lewis Center. This year there were approximately 215 registrations for the 6.0 contact hour/ PDH event. This is the second One Water Government Affairs workshop which continued to have an honorable showing compared to last year's event with over 200 event registrations.

This second joint Ohio AWWA and OWEA workshop featured presentations ranging from regulatory/ governmental updates to specific discussions of issues affecting both the water and wastewater industries. Ohio EPA Director Craig W. Butler could not attend this year's event, so in his place Mike Fraizer of the Governor's Office provided an update on both the State of Ohio and Ohio EPA's direction and goals with an emphasis on issues surrounding drinking water, lead and nutrients. Following Mr. Fraizer were two (2) presentations regarding communications challenges involving various means of social media. John Gonzalez of NEORSD and David Nash of McMahon Degulies each provided overviews of how to communicate and engage with social media to promote both water and wastewater issues and needs. Rounding out the joint morning session, Claudio Ternieden, Water Environment Federation's Director, Government Affairs, gave an update on current water and wastewater issues on Capitol Hill.

As like last year's event, the afternoon of the workshop was split into two tracks, the Water Track which was dedicated to Ohio AWWA-related topics and the Wastewater Track which was dedicated to OWEA topics. For the afternoon Wastewater Track, Tiffani Kavalec, Chief of the Division of Surface Water provided a divisional update with respect to rules, nutrient regulations and other programmatic issues. Following Tiffani was a joint presentation by Todd Danielson, Chief Utilities Executive of the Avon Lake Regional Water District and Jerry Rouch, Assistant Chief of Ohio EPA's Division of Environmental and Financial Assistance, on Avon Lake's development of in public/private partnership to eliminate clean water from private laterals entering public sanitary sewers. Following the afternoon break was Elizabeth Toot- Levy, who gave her presentation for making a case for integrated wastewater and storm water planning for Ohio communities. Rounding out the Wastewater Track was Desmond Cullimore, who gave his presentation regarding using Design Build and Construction Manager at Risk Methods.

For the Water Track, Jeffery Kauffman of Del-Co Water gave an overview of the Unregulated Contaminant Monitoring Rule (UCMR4), which was followed by Amy Jo Klei Chief Ohio EPA's Division of Drinking and Ground Waters who provided a divisional updated. Following the afternoon break, Kevin Campanella with Burgess and Niple gave his presentation entitled "Service Levels and Performance Management: Step 1 in Meeting Ohio EPA Asset Management Requirements?" Closing the afternoon OAWWA track was Susan Shell, Environmental Manager with the Ohio EPA, Division of Drinking and Ground Water and Linda Weavers, Co-Director of the Ohio Water Resources Center at OSU, with their joint presentation entitled "Development of Design Criteria to Supplement TSSs for a Selected Ohio EPA Emerging Technology."

Should any of the membership have topic suggestions for next year's workshop, which will be scheduled in early March of 2019, please contact GaRA Chair Dale Kocarek or GaRA Vice Chair, John Owen.

JRO

SAVE THE DATE

JUNE 20, 2018	**ANNUAL BUSINESS MEETING** THE FAWCETT CENTER
AUGUST 27-30, 2018	**ONE WATER TECHNICAL CONFERENCE** GREATER COLUMBUS CONVENTION CENTER
OCTOBER 11-12, 2018	**PLANT OPERATIONS & LAB** NATIONWIDE HOTEL & CONFERENCE CENTER
OCTOBER 30, 2018	**WATERSHED** THE FAWCETT CENTER
DECEMBER 6, 2018	**BIOSOLIDS** NATIONWIDE HOTEL & CONFERENCE CENTER

weftec 18
the water quality event™

About WEFTEC

Since its formation in 1928, the Water Environment Federation (WEF) has been holding annual meetings to provide a forum for knowledge and technology exchange within the water and wastewater fields.

Today, WEFTEC – WEF's Annual Technical Exhibition and Conference – is the best place for WEF members and water professionals from around the world to learn, connect, and explore new, regenerative ways to shape the future water.

WEFTEC Attendees

- Learn from sector leaders and their peers about the latest practices, technologies, solutions and regulations in the water quality field.
- Create your own WEFTEC experience with the most comprehensive 5-day technical and educational program available in the world.
- Earn up to 1.2 Continuing Education Units (CEUs) and 16.5 Professional Development Hours (PDHs) or a maximum of 36 Contact Hours.
- Network with thousands of the world's leading water and wastewater professionals.
- View the latest, cutting-edge technologies from more than 900 leading companies at the largest annual water quality exhibition in the world.

Who Comes to WEFTEC?

WEFTEC draws thousands of water and wastewater professionals from around the world each year, including:

- Collection Systems Managers
- Consultants
- Environmental Engineers/Chemists/Scientists
- Equipment Manufacturers and Representatives
- Top Executives, CEOs and General Managers
- Industrial Water and Wastewater Treatment Professionals
- Local, State, and Federal Regulators
- Researchers from Academia and Private Industry
- Public Officials
- Students
- Water, Wastewater, and Stormwater Utility Managers
- Water, Wastewater, and Stormwater Operators

and many more.

A Leading Source in Water Quality

An increasing number of abstract submittals from experts in the water quality field results in a world-class technical program of technical sessions and workshops that addresses a diverse and comprehensive list of contemporary water and wastewater issues and solutions including:

- **Collection Systems**
  Management, operations and maintenance, infrastructure, overflow reduction, wet weather planning, watershed approaches, and regulations
- **Energy Conservation and Management**
  Resource recovery, combined heat and power, biogas optimization
- **Nutrient Removal and Recovery**
  Watershed and facility level issues, facility design, process control, operations, research, shortcut nitrogen removal, carbon management, ultra-low phosphorus removal, nutrient recovery and reuse, modeling
- **Plant Design, Operations, and Treatment**
  Innovations, technologies, process design, and proven solutions in water and wastewater treatment; including nutrient removal and odor control
- **Regulations**
  Stormwater/MS4s, Nutrients, WIFIA, NPDES Streamlining, Lead and Copper Rule, TMDLs
- **Research**
  Leading edge process applications in water and wastewater treatment and recent developments
- **Residuals & Biosolids**
  Energy production, disposal, reuse through land application, research, regulations, politics, and public perception
- **Stormwater**
  Treatment, green infrastructure, wet weather management, modeling, policies and regulations, research, and operations and maintenance
- **Utility Management**
  Asset Management and financial planning for infrastructure, technology, regulatory compliance, workforce issues, and security, including environmental management systems (EMS)
- **Water Reuse/Recycling**
  Research, regulations, emerging technologies, proven processes
- **Water Quality & Watershed Management**
  Stormwater, wet weather, surface water, groundwater, and watershed issues including integrated management

The Water Quality Event

Throughout the years, WEFTEC has not only grown in the size of exhibits and technical sessions, but has become the leading water quality exhibition and conference.

In 1941, the then-known Annual Conference featured 5 sessions, 13 technical papers and an attendance of 556. By the 1970s, attendance had grown to almost 9,000 and featured 37 sessions with 146 technical papers. Growing steadily over the past four decades, WEFTEC continues to set new records each year.

Renamed WEFTEC in 1994 to increase both domestic and international recognition, WEF's annual conference is regularly recognized as a top trade show in North America and is the largest annual water quality exhibition and conference in the world.

15-YEAR SNAPSHOT

Year	Location	Net Square Footage	Number of Companies
2002	Chicago	201,540	793
2003	Los Angeles	192,390	801
2004	New Orleans	201,665	833
2005	Washington, DC	213,950	869
2006	Dallas	245,155	965
2007	San Diego	268,405	1,017
2008	Chicago	289,575	1,007
2009	Orlando	264,400	945
2010	New Orleans	295,405	985
2011	Los Angeles	284,150	923
2012	New Orleans	296,625	981
2013	Chicago	297,400	971
2014	New Orleans	303,075	1,028
2015	Chicago	311,800	1,033
2016	New Orleans	301,900	1,006
2017	Chicago	305,600	1,011

For more information, contact:

Water Environment Federation
601 Wythe Street
Alexandria, VA 22314

inquiry@wef.org
1-800-666-0206

Plant Operations Update

by Kim Riddell and Joe Tillison, Co-Chairs

Planning is in full swing for the 2018 Operations Challenge Invitational which will be held during the One Water Conference and Exposition on Monday, August 27th and Tuesday, August 28th. We are happy to announce that we have already heard from at least 4 out of state teams that intend to come to Ohio to compete. The deadline to register is Friday, July 13th. Registration is open and contest rules are available on the website so check it out or contact Kim or Joe to be put on a mailing list for all pertinent information. The Process Control and Laboratory events will be held on Monday at the conference hotel and the Safety, Maintenance and Collections events will be held on Tuesday at the convention center in the exhibit hall. Each registered team (up to five people) will get breakfast and lunch on Monday and Tuesday, tickets to the welcome reception on Monday and to the Meet and Greet Event on Tuesday evening. Awards will be at the Exhibitor reception in the Exhibit Hall on Tuesday evening prior to the Meet and Greet event. The cost for each team to register is still only $50! We look forward to seeing you there!

We are extremely excited to announce that our 2018 workshop will be held once again at the Nationwide Conference Center on Thursday, October 11th and Friday, October 12th. **PLEASE NOTE THE DAY OF THE WEEK CHANGE FOR THIS WORKSHOP!** We are working on a great line-up again this year! Topics will include plant profiles given by operators from each section, asset management, capital project management, inline instrumentation and automation, other operations innovation and disaster management presentations given by utility folks who've lived to talk about them and of course, the return of our much anticipated cocktail hour round table forum. So save some money in the training budget and be sure not to miss this great opportunity to learn from some Ohio "home-grown" best! We look forward to seeing you there!

We also have some other new training efforts in the planning and development stages, so if you are interested in putting a team together for Operations Challenge, becoming a member of the committee or assisting as a judge / volunteer for Operations Challenge, please contact Kim Riddell at 419-234-4507 or *kim.riddell@alloway.com* or Joe Tillison at *JTillison@bgohio.org* or 419-354-6274. We would love to have you onboard!

Test Your Knowledge – Take the Operations Quiz

1. The term that refers to the material remaining on the filter paper after a sample has been filtered? The filter is also dried during this test.
a. Settleable Solids
b. Total Dissolved Solids
c. Total Suspended Solids
d. Total Volatile Solids

2. The temperature of an anaerobic digester should be changed slowly in order to:
a. Avoid overloading the heat exchanger
b. Allow bacteria time to adjust
c. Allow the digester walls time to adjust
d. Avoid excessive heat loss

3. Hardness is defined as the sum of the ____ and ____ ions, although any divalent metal ion can contribute to harness.
a. Calcium and Sulfate
b. Struvite and Sodium
c. Magnesium and Sodium
d. Calcium and Magnesium

4. The most abundant source of pollutants entering natural waterways is:
a. Nonpoint source waste
b. Domestic sewage
c. Hospital waste
d. Industrial waste

5. In addition to high energy costs, excess dissolved oxygen in the activated sludge system can cause:
a. Solids to float to the top of the aeration basin
b. Filamentous growth
c. Damage to the floc particle from excess aeration
d. Denitrification in the clarifier

Answers noted below.
Have questions, comments, or want to submit a suggested question? Email OWEA at *info@ohiowea.org.*

Answers: 1–C; 2-B; 3-D; 4-A; 5-D

Plant Operations Committee

Co-Chair
Kim Riddell

Co-Chair
Joe Tillison

Co-Chair elect
Walter Ariss

Past Co-Chair
Jim Borton

Maintenance Event Coordinator
Doug Sayre

Laboratory Event Coordinator
Melodi Clark

Collections Event Coordinator
Kevin Givins

Safety Event Coordinator
Ed Nutter

Committee Members
Denise Seman
Alyssa Mayer
Kristi Babcock
Dave Reinker
Bill Hill
Nathan Coey
Bryan McNutt
Mark Chandler
Jason Tincu
Matt Boone
Todd Saums
Dave Wilson

Ladder Safety: The Art of Falling and Other Things to Avoid

Safety Committee Update

by Travis Cooper, City of Dayton, SW Section Safety Chair

"The art of falling?" What's this nonsense about? What kind of a title is that? Why am I talking to an article in the Buckeye Bulletin?!

Well aren't you an inquisitive and wonderfully odd reader! This article will hopefully give you some ladder history and safety information. All wrapped up in a fun, informative, fantastically worded article that you can quote to family and friends.

I fondly remember this 40+ year old wooden ladder that my grandparents used whenever they needed anything dealing with height. Usually that meant finding wiffle balls amongst an old farm style garage or getting wiffle balls out of trees. I was a very avid wiffle baller. Back to the topic, this ladder was skyscraper-like in height. Ok, maybe it was only 6 feet, but I've never been on a ladder that felt taller or scarier at a mere 72 inches. This 182.88 centimeters tall ladder was a very old wooden design. That means thin legs that wobbled and steps that couldn't have supported a lot of weight. It was thrilling to be around to say the least. This ladder was not the first ladder to ever have been built. In fact, it was top of the line safe compared to the first ladders.

The earliest recorded use of a ladder was found on cave paintings that are approximately 10,000 years old. It appears to be constructed out of a type of grass. Surprisingly, this early ladder design is roughly the same used for modern rigid/extension ladders.

Now, you may be asking yourself, "What is this ladder thing exactly?" A ladder is a vertical or inclined set of rungs or steps. There are two main types of ladders: Rigid ladders that are self-supporting or that can be leaned against an object and flexible ladders that are usually made out of rope and can bend around objects.

Now, the discussion that we've all been waiting for, ladder safety! Staying safe while using a ladder can be difficult at times, but it is definitely not impossible. There are 7 simple ways to stay safe on a ladder. They are:

- Always extend the ladder 3 feet above the construction surface
- Tie off the ladder to a surface, if possible
- Maintain a 3-point contact with the ladder at all times while climbing
- Inspect the ladder before every use. If there is any damage or missing pieces, do not use it
- Secure the base of the ladder
- For every 4 foot of ladder height used, move the ladder back 1 foot. (Approximately at a 75 degree angle)
- Never carry tools or materials on the ladder

If you follow these guidelines, ladder safety can be easily obtained. Thank you for taking the time to read this article. If possible, I'd ask that you re-read it but this time use Morgan Freeman's voice as your inner monologue.

Safety Committee Contact Info

Safety Committee Co-Chair
Mike Welke
City of Warren
mwelke@warren.org

Safety Committee Co-Chair
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Northeast Representative
Julie Cindia
City of Akron
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SE Section Science Day

by Nathan W. Coey, City of Pataskala, OWEA Safety Co-Chair, Operations Committee,
SE Section 2nd Year Director

The Water Environment Science Award is sponsored by OWEA with section representatives serving as district science day judges across the state. The Southeast Section of OWEA provided judges for six district locations. The goal is to encourage Ohio's youth to engage in academic opportunities to protect the environment through science and technology. It is an opportunity to introduce youth the career potentials in the water industry. The selected projects received a certificate from OWEA along with a $100 check for their efforts. Excellent projects were encouraged to apply for the WEF Stockholm Junior Water Prize.

As with many programs and initiatives at the state and section level, positive outreach cannot be accomplished without knowledgeable professionals in our great organization. Professionals volunteer their time to encourage and engage youth with a great message of support from the organization. I was privileged to interact with the following professionals who served as district judges in 2018.

District 7 - Columbus State Community College, Kimberly Seidelmann, ARCADIS

District 8 - Ohio University Lancaster, Dale Kocarek, Stantec

District 9 – Zane State, CJ Gilcher, Southwest Licking Community Water and Sewer District

District 12 – Ohio University Athens, Paul Matrka, Smith Environmental, Inc.

Thank you judges for your time and work on this outreach initiative.

District 7 Water Science Award Winner Katherine Radwanski

Project title "How Does a River's Chemistry Fluctuate with Rainfall"

The student collected river samples over a 3 month period and tested for a wide range of pollutant factors. The student had a good understanding of the relationship between rain fall and observed pollutants in the river. This student provided a great deal of data and research as it related to the project.

Judge: Kimberly Seidelmann

District 8 Water Science Award Winner Mekala Stiffler

Project title "The Effects of Water Pollution on Daphnia Magna"

The student measured the mortality rate of Daphnia magna with synthetic wastewaters which included pollutants such as gasoline, oil, and fertilizers.

Judge: Dale Kocarek

District 9 Water Science Award Winner Emma Ward

Project title "The Scoop on Poop"

The student studied information on which manures provided the most beneficial use based on nitrogen values and soybean growth rates. The focus of the project was land application rates, agronomic rates, and beneficial use values. The student also focused on beneficial use and soil improvements.

Judge: CJ Gilcher

District 12 Water Science Award Winner Tina Zhang

Project title "Nutrient and Alkalinity Budget in Dow Lake "

Judge: Paul Matrka

District 14 Water Science Award Winner Danielle Jenkins and Madison Williams

Project title "Ohio River CSO Effects on Pimephales Promelas"

The students worked together on this project to study the mortality rate and gonads in relation to body weight. They collected samples from CSO points in the Ohio River. The Pimephales promelas were tested in 5 tanks with 11 fish each with aeration. The tanks ranged from 100% CSO by volume to 25% CSO by volume. Make up water included distilled water. The students had excellent knowledge on why we should eliminate CSO's and their data collection and research was equally impressive. The efforts to study the fish post mortem was incredible.

Judge: Nathan Coey

District 16 Water Science Award Winner Dayton Male

Project title "Weather Effects on Drinking Water"

The student conducted research and testing to detect what changes may occur to drinking water sources during precipitation events. The student sampled 15 locations including rivers, ponds, ground water wells, municipal water supply, and bottled water as test blank. The sample parameters included alkalinity, hardness, pH, nitrates, nitrites, chlorine, copper, and lead over a month period. The student had a great deal of research and data collection in the project and expertly communicated the Ohio EPA drinking water standards and the health effects.

Judge: Nathan Coey

NE Section Science Fair

by Krishna Chelupati

The Northeast section of the Ohio Water Environment Association sponsored special awards for the 2018 Science Day events conducted in Northeast Ohio. OWEA members graciously volunteered their time to judge water and environment related projects presented by students at various locations. Our judges reviewed the projects and selected eight (8) students for first place and nine (9) students for the honorable mention awards. The first place winners were awarded a certificate, a letter of appreciation and a $100 check. Students who received an honorable mention were awarded a $50 check along with a letter of appreciation. Below is the list of students who won the awards at the 2018 Science Day events. In addition, we would like to thank the following OWEA members for volunteering their time as special award judges at the Science Day events.

District	OWEA Special Award Judges
Akron Public Schools STEM Expo	• Kathy Richards, *City of Akron* • Todd Taylor, *ms Consultants*
Ohio District 13 Science Day	• Rodney Dray, *Stark County Sanitary Engineering (Retired)* • Steve Baytos, *City of Avon Lake* • Mary Ann Driscoll, *Burgess & Niple*
Northeastern Ohio Science and Engineering Fair	• Chuck Allen, *OEPA* • Kim Colich, *NEORSD* • Janet Popielski, *NEORSD* • Steve Baytos, *City of Avon Lake*
Western Reserve District 5 Science Day	• Keith Riley, *OEPA (Retired)* • Krishna Chelupati, *Stantec* • Meredith Cariglio, *Stantec*
Lake-to-River Science Day	• Mike McMillon, *City of Warren* • Todd Taylor, *ms Consultants* • Angelina Joseph, *EnviroScience*
Mohican District Science Day	• Marc Morgan, *City of Canton* • Janet Kern-Vannoy, *Stantec*

2018 Ohio Water Environment Science Award - Winners				
Event Date	**District**	**Location**	**Student Name**	**School**
1/27/2018	APS STEM Expo	North High School	Akarapohn Chuthpatomchai	National Inventors Hall of Fame
1/27/2018	APS STEM Expo	North High School	Emily McGuire	National Inventors Hall of Fame
3/10/2018	Ohio District 13	University of Mount Union	Savanah Cramer	Malvern High School
3/13/2018	Northeastern Ohio Science and Engineering Fair	Cleveland State University	Bryan Rego	University School
3/17/2018	Western Reserve District 5	University of Akron	Bryan Rego	University School
3/24/2018	District 15 Lake-to-River	Youngstown State University	Alaina Metzler	Geneva High School
3/24/2018	District 15 Lake-to-River	Youngstown State University	Pendleton Evans	Valley Christian School
3/24/2018	Mohican District	Ashland University	Samantha Geiger	Columbia Middle School

2018 Ohio Water Environment Science Award - Honorable Mentions				
Event Date	**District**	**Location**	**Student Name**	**School**
1/27/2018	APS STEM Expo	North High School	Kaylee Kovach	Innes CLC
1/27/2018	APS STEM Expo	North High School	Alaya Doungpanya	Innes CLC
3/10/2018	Ohio District 13	University of Mount Union	Brendan Smith	Academy of St. Adalbert
3/10/2018	Ohio District 13	University of Mount Union	Caroline Denny	Alliance Middle School
3/13/2018	Northeastern Ohio Science and Engineering Fair	Cleveland State University	Mariana Maddox	Saint Raphael School
3/13/2018	Northeastern Ohio Science and Engineering Fair	Cleveland State University	Madison Sanders	Beaumont School
3/17/2018	Western Reserve District 5	University of Akron	Jake Pentasuglio	St. Vincent St. Mary
3/17/2018	Western Reserve District 5	University of Akron	Jillian Wilde	Incarnate Word Academy
3/24/2018	District 15 Lake-to-River	Youngstown State University	Owen Schroeder	Geneva Middle School

Lab Analysis Committee Update

by Denise Seman and Melodi Clark, Committee Co-Chairs

Wow! Has this year been moving fast. Are you ready for summer? I'm thinking beaches, cool water, umbrella drinks...

From Denise: I have a small announcement: I am officially retired! Of course, I still wake up before dawn, but that's okay. I don't have to go anywhere, lol.

SW LAC – Karen Tenore and Jim Davis

We wish to thank the City of Fairfield WWTP for hosting and for providing lunch for the Winter Laboratory Analysis Committee on February 15th 2018. We had a great turnout with 51 people attending. Attendees could earn up to 4.0 contact hours for the meeting. We had speakers who presented on the following topics:

- Data Management in Small Laboratories – Jim Carroll, Hach Company
- PERRP, Lab Safety, and Chemical Hygiene Plans - Kim Mitchem, Ohio Public Employment Risk Reduction Program
- Rapid Technologies for Monitoring and Managing Wastewater Processes – Kathy Miklas, Modern Water
- Benefits of technological advancements and its effect on workflow - Robin Shafer, Metropolitan Sewer District
- Autosampler Basics – Jerome Wright , City of Dayton Water Reclamation
- Tour of the City of Fairfield WWTP

The SWOWEA LAC meeting on April 12, 2018 was hosted by Montgomery County Environmental Services. Scheduled topics included Phosphorous testing and removal, US EPA method update rule and MDL overview, nutrient loads in the Great Miami River Watershed, Eastern Regional Phosphorus Removal, and a tour of the Eastern Regional WRF (concentrating on the phosphorus removal process).

Upcoming LAC Meetings include:

- Thursday, July 12th , Hosted by City of Fairborn WRC
- Thursday, November 1st, Hosted by YSI, Inc.

To inquire about being added to our e-mail list or to get information about attending, hosting, sponsoring or presenting at a future LAC meeting, please contact one of the co-chairs listed below or a committee member:

Committee Members:

Craig Clements, City of Fairfield

Lori Kyle, Greene County

Gregg Mitchell, City of Sidney

Roger Rardain, City of Fairborn

Teresa Shinkle, Greene County

Rob Smith, YSI

NE LAC – Beverly Hoffman and Tom Zocolo

A free training session was held at the Akron WRF on April 13th. This session was approved for 2.25 contact hours. A light lunch of sandwiches and refreshments was provided.

- Control Charts, by Marcy Bolek (Alloway) with support from Radek Bolek
- Understanding Nutrients - Nitrogen Cycling, Phosphorus Species, and Wastewater led jointly by Denice Johnson and Paul Skerl (NEORSD)
- We are looking forward to offering more meetings and contact hours during 2018

If you would like to be added to the NES LAC membership directory, please contact us at NESOWEALAC@gmail.com

Committee members:

Marie Simon: marie@northcoastlabs.com

Amy Starkey: ajstarkey@co.stark.oh.us

SE LAC – Melodi Clark

Hello all. So the SE LAC had an April meeting at Alloway Labs in Marion, Ohio! It was for 3.5 contact hours and was free! I am also looking at having a LAC meeting in July at YSI again and this meeting will be free as well! Just a reminder we are inching closer to One Water on August 27th here in Columbus! I hope to see all of you there. It is going to be epic!! There are a lot of things planned for One Water and as of right now we are looking at having an entire day of lab technical sessions which is amazing! I will also be looking to hold one more LAC before the end of 2018 to make it a total of 3 for the year and again it being a free event so if you have any ideas or suggestions please feel free to reach out to me at MLClark@columbus.gov.

NW LAC – Terri Brenner and Tony Hintze

Hello again from the Northwest Section. As I write this, we are in the final stages of planning our April meeting and already have some things in the works for the next meeting as well. We are also working on an exciting opportunity I know many of you will be very interested in, so make sure to stay tuned for more information!!

Our Email List and the NWOWEA Lab Analysis Committee group on Facebook continue to grow. Don't miss out, come join us. If you are interested please send us an email. Tony Hintze (*thintze@fremontohio.org*) or Terri Brenner (*tbrenner@ci.perrysburg.oh.us*).

If anyone has a topic they would like to see presented or if you know of someone who would like to present a topic at one of our meetings, please let us know!

We look forward to seeing you at the next meeting, and

of course always remember working in the lab is just like cooking in your kitchen, just don't lick the spoon!

Committee mission statement:

The OWEA Laboratory Analysis Committee (LAC) strives to provide relevant and timely information on laboratory regulation and policy for the collection and analysis of wastewater and surface water samples. We strive to provide training in a relaxed, stress-free manner, to ensure the ability for participants to gain knowledge and skills to benefit them in their professional environment.

LAC Contact Info

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Co-State Chair & SE Chair
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NE Co-Chair
Bev Hoffman
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NE Co-Chair
Tom Zocolo
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Join Your Section's Lab Analysis Committee

Certified wastewater analysts are a valuable resource to the industry. Network with and learn from other certified wastewater analysts in your area. Learn how to become certified by contacting the LAC Chair in your section.

Young Professionals Committee Update

by Lindsey Hassenauer, OWEA YP Committee Chair

Are you under 35 years old or do you have less than five years of experience in the wastewater field? If so, you are a Young Professional! There are lots of exciting opportunities around the state, so be sure to check out the updates from each section below. The Southeast and Northwest sections have new YP committee chairs, so please join me in welcoming them to these roles.

Be sure to stop by our YP booth at this year's One Water Conference in August! We are planning several YP activities, so stay tuned for details closer to the conference.

ATTENTION STUDENTS! Did you know that OWEA is offering free WEF memberships? Visit *https://www.ohiowea.org/membership.php* to sign up!

Southeast OWEA Young Professionals Update

Jamie Mills, SE YP Chair

Hello fellow Southeast Section members! My name is Jamie Mills and I am very proud to be serving as the Young Professionals Chair for the Southeast Section. I grew up in Ashville, Ohio and attended The Ohio State University where I studied Microbiology and Civil Engineering. During my last year in school, I interned at Strand Associates, Inc. and started full time immediately following graduation from graduate school in 2015. I am an Engineer in Training as well as a Wastewater Operator in Training.

My first assignment at Strand was a biogas conditioning study to convert digester gas to a biogas based fuel for compressed natural gas vehicles. Since then I have worked on various water and wastewater projects. I live in Groveport, Ohio and my passions beyond my career include hunting, fishing and kayaking, which is another reason why I am so passionate about our water resources and being a good environmental tenant.

I have had the pleasure of working with incredible people within this organization and am excited for the years to come. For young professional opportunities, Co-Chairs Cody Allison with Arcadis and Tucker Randles with the City of Columbus and I are planning to schedule two events for the 2018 year, with one event this spring and the other in the fall. These events will likely include a tour of a wastewater facility and a networking-social hour following. My intent with these events are to provide education and training opportunities and a chance for members to connect with other likeminded individuals within the community.

I am looking forward to serving as your Sections Young Professional Chair and meeting more members. My goals are to kickstart membership growth for young professionals and provide opportunities for individuals to get more involved with the Section. I sincerely appreciate your time and welcome any comments for future events or training topics. Please feel free to contact me at any time, and send me an email at *Jamie.Mills@Strand.com* if you'd like to receive YP event emails.

Southwest OWEA Young Professionals Update

Lindsey Hassenauer, SW YP Chair

The Southwest section YP committee had a great 2017. We are looking forward to hosting several activities this year. We're planning a plant tour in May, a river cleanup in June, a brewery tour in July (joint event with SW OAWWA), and more later in the year! Watch your email for details. If you'd like receive emails about upcoming YP events or if you're interested in participating on the committee, please email me at *lhassenauer@hazenandsawyer.com.*

Northwest OWEA Young Professionals Update

Kevin Connor, NW YP Chair

I would like to introduce myself as the new YP Chair for the NW section. I am currently the Chief Operator for the City of Defiance Water Pollution Control and have just over four and half years' experience in the wastewater field. If you are looking to attend future NW YP meetings or networking events feel free to email

kconnor@cityofdefiance.com to get on the mailing list. Anyone that is 35 years of age or younger or has less than 5 years' experience are encouraged to attend. I am excited to get involved with the YP group and am looking to organize an event sometime this summer. We are hoping to have a WWTP tour and a social event afterwards. If anyone has any specific activities they would like our section to do, please email me your ideas. Keep an eye out for future emails!

Northeast OWEA Young Professional Update

Ashley Williston, NE YP Chair

To receive the NESOWEA YP emails to hear about our upcoming events and other YP information send me an email to *ashley.williston@burgessniple.com*.

Our last YP Event for 2017 was a joint event with the northeast OAWWA YP group. After work on November 16th a big group of us met at the Great Lakes Brewing Company Beer Symposium for a tour of their facility. The tour was great, and some of our members that brew beer had a lot of great questions! After the tour, we walked around the corner to Nano Brew where we gathered to network and enjoy appetizers. It was a great event to end the year.

We are now in the process of planning events for 2018.

OWEA 2018 Student Design Competition

The Northeast Section of the Ohio Water Environment Association (NESOWEA) launched the 2018 Student Design Competition (SDC). This competition is modeled after the WEF Student Design Competition held annually at WEFTEC. The purpose of the competition is to promote "real world" design experience for students interested in pursuing an education and/or career in water and environment science and engineering. The competition is typically geared towards upper class students and/or graduate students, however all students are encouraged to participate.

Cleveland State University (CSU) initiated a new inter-disciplinary course in Spring 2018. The Twenty (20) students who enrolled in this class participated in the 2018 Student Design Competition to meet the class requirements. Paul Solanics and Muralikrishna Chelupati developed the competition guidelines and advised CSU faculty in developing the class syllabus. Students were asked to form teams and select a problem statement provided by NESWOEA. A kick-off meeting was held with students and faculty from CSU and Case Western Reserve University (CWRU) on January 17, 2018 (photos o the upper right). We would like to thank Dr. Sanda Kaufman, Dr. Walt Kocher and Dr. Julie Wolin from CSU and Dr. Kurt Rhoads from CWRU for their support and encouraging their students to participate in the SDC. In addition, we would like to thank Tom Voldrich, Shakthi Varman Jayavelu, Thomas Zocolo, Sarah Sullivan, Alexis Killinger, David Gleason, Taylor Mackey and Meredith Cariglio for graciously volunteering their time to advise the students. Many thanks to Kathy Richards and NESOWEA Executive Committee for their support and funding for the competition.

Seven teams competed against each other presenting their innovative ideas at the final competition to a panel of NESOWEA judges on Friday, April 27, 2018 at Cleveland State University.

Public Education Committee Update

by Kevin Stilwell, PE,

Public Education Committee Chair

We just wrapped up our Science Fairs across the state, and I would like to personally thank all the volunteers who take time out of their weekends to judge these events. It allows us to encourage children of all ages to be interested in the water/wastewater industry, and we always get good feedback from the students as well. I was encouraged by the wide range of ages we had of winners across the state. There were also a lot of 2nd and 3rd place finishes from kids in junior high and in their early high school years. I'll be excited to see them advance their Science Fair projects in the coming years, and hopefully allow our great state to have a strong Stockholm Junior Water Prize candidate soon.

Another initiative our group is looking at is K-12 involvement in Imagine A Day Without Water 2018. We are looking to find schools that are interested in participating in events throughout that day to educate our future generations on the importance of water and the industry that we work in every day. We are still very early in the planning phase, but if you would like to be involved in the planning or finding schools that are interested, please let me know!

Thank you.

Kevin Stilwell, P.E., American Structurepoint

kstilwell@structurepoint.com

Operator Quandaries

Know Low Flow?

by Jon VanDommelen, Ohio EPA, Compliance Assistance Unit

Water used to be cheap. Not anymore. I know my water bill has only increased over the years despite installing water-saving devices in my house: low-flow bathroom plumbing; a water-saving dishwasher; and the one that really amazes me, the low-flow washing machine (I think my clothes are still clean!). But water conservation is a good thing. Right? Well…it depends…

As a member of Ohio EPA's Compliance Assistance Unit (CAU), I go to many small systems that are having compliance issues. Several years ago, I received a rush of calls from operators who ran the wastewater treatment plants (WWTPs) at rural schools. They all had ammonia noncompliance. Through investigation, I determined that the violations were all caused by insufficient alkalinity.

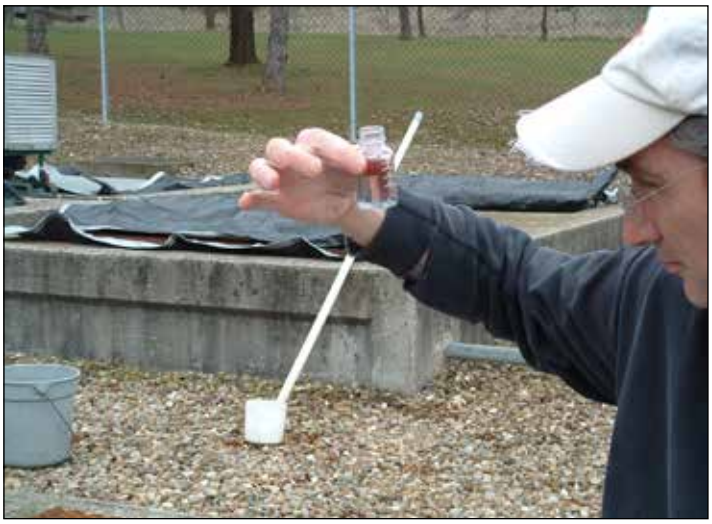
Remember that nitrifying bacteria are autotrophs. This means that they get their energy from the oxidation of inorganic nitrogen sources (ammonia) and they utilize inorganic carbon (bicarbonate) for a carbon source for growth. In this process for every mg/L of ammonia that is oxidized, about 7.1 mg/L of alkalinity (bicarbonate) is depleted.

I could easily troubleshoot this problem by performing a simple field alkalinity test. In my field kit, a small vial is filled with clarifier effluent or the supernatant from a settleometer. It is dumped into a slightly larger bottle. A couple of drops of bromocresol green-methyl red indicator is dissolved in the sample (the sample turns blue). Then 0.035 N sulfuric acid is added dropwise until the indicator changes from blue to pink at the endpoint of the titration. Each drop neutralizes the equivalent of 20 mg/L of alkalinity. It takes about a minute.

The CAU recommends that the alkalinity in an aeration tank should be 80-100 mg/L (4-5 drops of acid with my field test kit) when the ammonia concentration in the same sample is less than 1 mg/L. If the ammonia concentration is high, simply multiply the ammonia concentration by seven and then add 100 to that number for the required alkalinity that is needed in the aeration tank to sustain complete nitrification. For instance, if the aeration tank ammonia is 15 mg/L, and the alkalinity in the same sample is 40 mg/L, then the recommended alkalinity would be 15 x 7 = 105 mg/L plus 100 mg/L for a buffer, resulting in a goal alkalinity concentration of 205 mg/L.

How do you increase alkalinity? For a small package plant, the best, and safest source is sodium bicarbonate. This is easily obtained in 50-pound bags at a feed store (they mix it in the feed for cattle operations) for around $15 per bag. For a small system simply fill a 5-gallon bucket about half full of water (or clarifier effluent) and mix in a couple of coffee cans full of the bicarbonate powder. The sodium bicarbonate is not very soluble in water, so I strongly recommend wetting it, mixing it and then dumping it into the aeration tank, where the nitrifying bacteria are trying to convert ammonia to nitrate. If the powdered product is dumped into the aeration tank, I don't believe that it is as effective as wetting it. After pouring in the bicarbonate/water mix, wait 10-15 minutes and check the alkalinity with a test kit to see that the alkalinity is beginning to increase. If the alkalinity deficit is fairly large, it will take several bicarbonate batches to get the concentration to the desired level.

Another option is available if the WWTP has sufficient excess capacity (as many package plants do) and if the alkalinity deficit is close to what is necessary. If denitrification can be established in the treatment system, half of the alkalinity that is depleted can be



recovered when nitrate is converted to nitrogen gas. This can be accomplished if an anoxic environment can be established in the aeration tank. The cheapest and easiest way to do this is by cycling the air ON and OFF by use of a timer on the aeration tank blowers. When the blowers cycle ON, the ammonia is converted to nitrate. When the blowers turn OFF, as the mixed liquor begins to settle, the dissolved oxygen (DO) will begin to be depleted in the developing sludge blanket. If there is still soluble carbon (raw wastewater) in the water column, there should be enough soluble carbon for the denitrifying bacteria to do their thing: convert the nitrate to nitrogen gas, and in the process, alkalinity is recovered. If there is not soluble carbon in the water column, then as the sludge blanket continues to develop without DO, some of the bacteria will lyse and release carbon to drive the denitrification process. This may take some time. One drawback is that when the aeration tank blower is OFF, the return activated sludge (RAS) airlifts are off as well. If denitrification occurs in the clarifier, then solids loss can occur, and sand filters will need to be cleaned more frequently.

Getting the air ON and OFF cycles right relies on spending enough time at the WWTP, and performing enough process control, so the operator will know what is happening biologically and chemically in the treatment system. At a minimum, an ammonia test kit and an alkalinity test kit would comprise the tool kit to set up aeration cycles. To do this systematically, run the blowers (adding bicarb if necessary) until the ammonia is low and note the alkalinity concentration. Then turn off the blower, note the time, and let the mixed liquor settle. A settleometer or a core sampler can be used to determine when settling is pretty much done. Then wait maybe 30 minutes from when the sludge stops settling but usually no longer than 45-60 minutes. Turn the air back on, wait five minutes so the water column is thoroughly mixed, and check the alkalinity. If the alkalinity has increased a bit, then there was denitrification. If not, give the air OFF cycle a little more time and repeat the test sequence. Be certain that the air ON cycle is sufficiently long to completely oxidize the aeration tank ammonia. Also watch that the clarifier sludge blanket doesn't become too high due to the RAS airlift not receiving air during the OFF cycle. It is sometimes beneficial to schedule an air OFF cycle during a higher flow part of the day to take advantage of the soluble carbon entering the aeration tank to drive the denitrification.

So, what does all of this have to do with my water bill? There is a reason rural schools were experiencing alkalinity problems. Back in the early 2000s the State of Ohio provided funding to construct new schools. Many of Ohio's rural communities took advantage of this funding and constructed fabulous new buildings on the school-owned property where the original school was constructed. However, the new schools frequently used the same existing package plant to treat the sewage from the newly constructed school. But the new school was constructed with modern plumbing, much of which is designed for water conservation. This is where the unintended consequence of water conservation comes into play. The load of ammonia and cBOD5 coming down the collection system from the new school did not change. But the water carrying the waste stream did change. It was greatly reduced. And where does the alkalinity that the nitrifying bacteria need to function come from? It comes with the carry water that flushes toilets and rinses hands and spills down drinking fountain drains. With this decrease in water usage due to these modern fixtures, there is insufficient alkalinity in the influent waste stream to support the complete nitrification of the ammonia.

So, yes, water conservation is a good thing. However, with many small package plants, some minor changes in process control and the addition of alkalinity testing can avoid significant noncompliance due to water conserving plumbing.

OPERATOR QUANDARIES –IMPLEMENTING SOLUTIONS FOR DAILY OPERATOR CHALLENGES

Attention Operators, Lab Technicians, and Maintenance Mechanics! OWEA invites you to share a challenge that you faced at your facility and the ingenious solution you found!

Each wastewater treatment plant is unique. The basic treatment method might be the same, some of the challenges might be the same, but each facility may approach the challenge differently. These challenges must be overcome to ensure proper facility operation. The solutions to these challenges are not always found in a WEF manual. An offspring of necessity is invention. Treatment facility operators, laboratory technicians, and maintenance mechanics are the most valuable resources in this great field. The unsung heroes of the daily mission of clean water are made possible through fantastic skills sharpened by every day experiences. At every facility there is an enormous amount of experience and expertise that keeps the water flowing.

What quandary have you faced and what have you implemented to create a success story? What projects or procedures of ingenuity have you implemented to attack a specific issue? Did your efforts result in plant optimization, a simplified procedure, eliminate a safety hazard, or the coveted reduction in operational expense? Operator quandaries are not limited to a plant, collection system, day of the week, or even the weather. No matter how large or small your solution, let's get your experience out to our readers of the Buckeye Bulletin. Let's take time to brag about your efforts behind the scenes. Your shared solutions may benefit other facilities. Consider sharing any details and pictures to create an article to share in the Buckeye Bulletin.

If you have a quandary turned solution, please reach out to Nathan Coey via email at *ncoey@ci.pataskala.oh.us*

MICHAEL L. STINEHELFER

Michael Stinehelfer, 73, of Solon passed away in the comfort of his home during the first weekend of April 2018. Mike was a loving husband to his wife Debby for 50 years. They have two wonderful daughters, Michelle and Anne, whom Mike was so very proud.

Mike grew up in Bucyrus, Ohio and received his Bachelor's and Master's Degree in Civil Engineering from the University of Texas at Arlington. He started his career with Floyd Browne & Associates, worked with Harry Baker & Associates, and retired from CT Consultants, Inc. after 30 years where he served as Department Manager, Vice President and shareholder of the firm. His area of expertise was in water and wastewater design, regulatory requirements and conceptual planning. As an Ohio PE, Mike worked closely with clients and public agencies on a variety of projects and also served as City Engineer for the City of Solon, OH. Michael also was the recipient of the prestigious "Life-time Engineering Achievement Award" from OWEA.

He proudly served his country in the United States Air Force.

In addition, Mike was a member of the Cleveland Engineering Society, Water Environment Federation, American Water Works Association, 5S Society, H3O (Hands, Hearts and Homes Outreach), served on the Publications Committee for the Buckeye Bulletin and was active with his church (Our Redeemer in Solon, Ohio). Mike enjoyed spending his free time with family, church, fishing, golf, and traveling.

ROLL CALL

DO YOU OR A COWORKER HAVE AN UPDATE?

WWW.OHIOWEA.ORG/MEMBERSHIP.PHP

JOSH BROOKS, PE

With more than 16 years of municipal water and wastewater consulting experience, Josh Brooks, PE, has joined the ms consultants team. Josh has extensive experience working on and managing a variety of sanitary and stormwater collection system projects, including large diameter sewer assessment and rehabilitation, inflow and infiltration detection and mitigation, CSO and SSO relief sewer design, and green infrastructure stormwater controls. Josh has completed assessment of more than a quarter million feet of sewer greater than 60-inch diameter and studied sewersheds totaling in excess of 23 square miles.

CONECT WITH OWEA

SAVE THE DATE - OCTOBER 11-12, 2018

PLANT OPERATIONS & LABORATORY WORKSHOP

Water Utility Rx

How many operators does it take to run your facility? A look at the trends.

by Jeff Theerman

In the 1990s, the U.S. water industry took a long, hard look at itself and drastically reduced operating staffs in response to a nationwide push toward privatization. As a result, millions of dollars in labor were saved simply by reducing operating crews to minimum levels.

Before this operational shift, facility staffs resembled those of the 1970s, when American water and wastewater plants had little to no automation, or SCADA systems.

So why talk about operating staffing today? Problem solved, right?

Not so fast.

The staffing reductions of the '90s relied on an old staffing model to trim head count— i.e., picking the low-hanging fruit. We now operate in an age during which instrumentation and control is more advanced, and it's possible to re-engineer the staffing tree.

So the question becomes not how many operators we need, but rather does the old definition of an "operator" still hold true.

Can we go unattended?

Some utilities have continued to use technology to further reduce their operating staff. Although saving money is certainly a driver, other reasons include fewer people who want to do shift work or competitive forces that create a scarcity of certified operators.

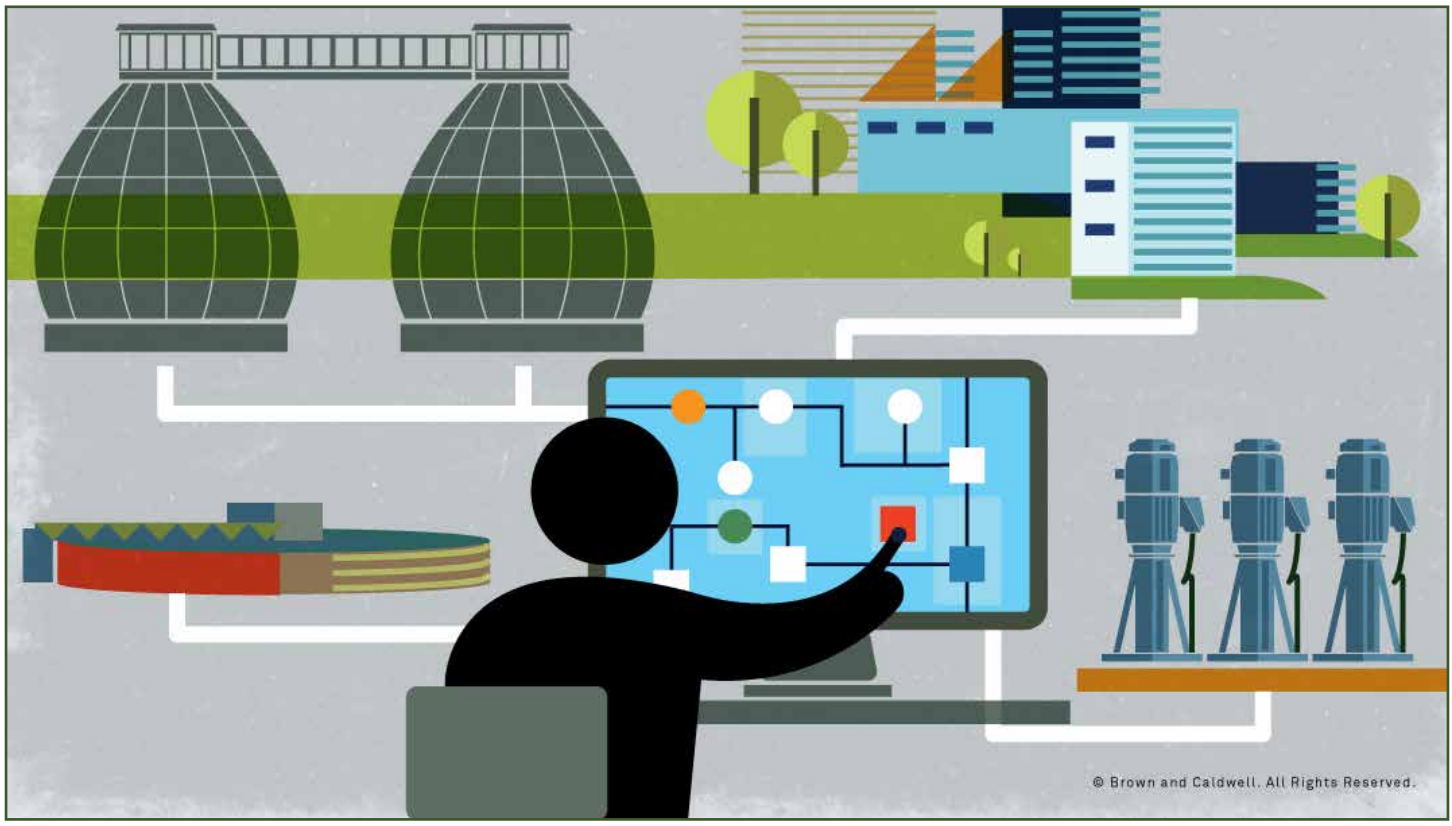
Today, wastewater treatment plants are handling 30 to 40 mgd flow rates with just a single operator on shift. Likewise, a 20 mgd advanced treatment facility can largely operate unattended, except during peak times, such as weekdays. In general, this move to one or no operators on a shift was predicated on the need to operate solids dewatering processes. New technology, internet-based cameras and SCADA systems have made it possible for even dewatering to start up remotely.

In some cases, a state's environmental rules about the responsibility of operators can get in the way of reducing staff. If a state requires that a certain class of operator must be in charge of the plant at all times, this sets the mark at where staff reduction efforts stop.

Surprisingly, there are some accounts of rules interpretation in which a certain class of operator is required if the facility is staffed, but the facility is not required to be staffed 100 percent of the time. This leads to a scenario where by not staffing the plant, there is no need for an on-site certified operator — clearly not the intent of the original rule.

The People Place

This Buckeye Bulletin series focuses on the people side of our industry, hence the title: The People Place. Traditionally, the Buckeye Bulletin comes loaded with mountains of technical pieces: plant profiles, industry trends, regulatory insight, project overviews, etc., which, without proper 'people-care' would not be possible! After all, your organization can only be as successful as the health, wellness, and productivity of your people and culture. Focus areas of this series are topics such as leadership, management, health and wellness, succession planning, work/life balance, recruiting/retaining, change management, knowledge transfer, career laddering/branding, etc. We hope you enjoy this series as much as we are excited to bring it to you! If you are interested in submitting an article or specific focus area, please contact Jason Tincu. *(jtincu@brwncald.com)* Thank you!



http://www.brownandcaldwell.com/1water/index.asp

So if we can go unattended, why don't more facilities consider doing it? The primary reasons include risk of non-compliance, poor reliability of equipment, and protecting an expensive asset.

In short, it boils down to risk. Just because we can do something doesn't necessarily mean that we should do it. The level of reliability and automation required to go unattended is an important consideration.

Not only is an unattended operation adding some measure of risk (particularly if it's not maintained), it also adds costs in installing and maintaining the automation necessary to make it work. You don't get to go unattended for free. The care and feeding of automation cannot be ignored.

Do we need a different operator?

Large water facilities have embraced the concept of dedicated operations staff for decades. But that is not the model everywhere. Across the country, numerous smaller facilities are operated by dedicated operators that share a common characteristic: multi-skilled individuals who operate and maintain their facilities.

Let's face it: The majority of the time that an operating staff spends at work is uneventful. We tend to focus on the times when things are stressed to the limit, but usually the facility is not under peak loading, equipment is operating appropriately and much of the mundane work has been engineered out of the operator's job. When we think about reducing the number of operators on shift, it's also time to rethink their role in the overall success of the facility.

Routine maintenance activities, instrument calibrations and preventive maintenance tasks are all necessary activities in today's water facilities. Often, these tasks fall prey to the day-to-day events that disrupt the facility's maintenance staff. These types of tasks do not have to be completed like clockwork, but rather have to be done within a given period of time.

As facilities get their asset management houses in order, condition assessment is an area that requires periodic attention. Although some condition assessment involves specialized skill and equipment, most of these activities are done through the traditional senses of sight, sound and feel. There are no reasons that properly trained operators cannot assist an overtaxed maintenance staff by doing these tasks during their shift. After all, who has a more vested interest in things running smoothly than the operators?

How to reason through operator staffing

1. **Understand the labor cost of operations, including overtime.** This is essential to deciding if the risk of reduced staffing is worth the reward.

2. **Break out of the old paradigm.** Even relatively large facilities can operate successfully with unattended or small operating staffs.

3. **One size doesn't fit all.** The crew size and whether to fill

a shift vacancy has a lot to do with the operating situation in the plant. If you are not dewatering solids on the night shift, do you need a full crew? If a vacancy occurs on a quiet shift, do you need to fill the slot with overtime?

4. Add new assignments. Rather than stretch out on the ragged edge of your risk tolerance, keep operators in place but consider new, important work to be done on shift. Use work orders to ensure that the work is completed and properly documented. Don't forget that this requires a training investment — don't short-change this important area.

5. Consider alternative shifts. Creativity in shift scheduling can allow for some unattended or reduced attendance operations.

6. Work with your unions. As your operating staff turns over and becomes younger, you will see different attitudes about shift work, overtime, weekends, etc. You may find that they are more receptive to the idea of changes than in the past.

7. Introducing these concepts to your facility staff will take time and patience. Your staff may have been doing things the same way for their entire careers. Maintenance will have to become comfortable with turning over some of their work, too. Operations may have new accountabilities requiring more education as well.

It may be necessary to get outside assistance in challenging the staff's thinking and opening up possibilities. You will need to make allowances for missteps and errors as things change. In the long run, though, an optimized operating staff can save money and reduce risk.

The bonus: You won't find yourself monitoring the plant on your laptop during Thanksgiving dinner because you transitioned to unattended operations.

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Ohio EPA Update

NEW CSO Notification Requirements for the Lake Erie Basin

By: Elizabeth A. Wick, P.E.

Class III certified operator | Ohio EPA, NWDO | Division of Surface Water

U.S. EPA passed a new public notification rule for CSO discharges in the Great Lakes Basin that became effective February 7, 2018. This new rule, which only applies to CSO communities in Ohio's Lake Erie basin, has three major components:

1. Public Notification Plan
2. Timely notice and meaningful follow-up of CSO events
3. Annual Report

The full rule package can be accessed at this link: *https://www.epa.gov/npdes/combined-sewer-overflows-public-notification-requirements-great-lakes*. This article is a summary of the rule requirements. Details can be found in the rules.

A Public Notification Plan must be developed and submitted to Ohio EPA on or prior to August 7, 2018. The public notification plan shall describe how the permittee will ensure that the public receives adequate notification of CSO occurrences and impacts. The permittee must provide notice of the availability of the plan and periodically provide information on how to view the notification plan. The plan must be updated and submitted as part of each permit renewal application. It must:

1. Identify the location of CSO outfalls and potentially impacted public access areas that require notification signs;
2. Describe protocols for maintaining signage (for example, inspections at set intervals);
3. Identify (with points of contact) the municipalities, public drinking water supplies, public parks with water access, and other sensitive area(s) identified in the permittee's long-term CSO control plan, that may be impacted by the permittee's CSO discharges;
4. Summarize significant comments and recommendations raised by the local public health department;
5. Identify other affected public entities whose waters may be impacted by a CSO discharge and provide a summary of their significant comments and recommendations;
6. Describe protocols for the initial and supplemental notice to public health departments and other public entities;
7. Describe protocols for the initial and supplemental notice to the public;
8. Describe, for each CSO discharge point, how the volume and duration of CSO discharges shall be either measured or estimated. If the permittee intends to use a model to estimate discharge volumes and durations, the plan must summarize the model and describe how the model was or will be calibrated. CSO permittees that are a municipality or sewer district with a population of 75,000 or more must assess whether re-calibration of their model is necessary, and recalibrate if necessary, at least once every five years;
9. Describe protocols for making the annual notice required by the rule available to the public and to the Director; and
10. Describe significant modifications to the plans that were made since it was last updated.

The notification plan must be implemented by November 7, 2018.

To meet the second requirement of timely notice and meaningful follow-up of CSO events, the permittee must provide initial notice of CSO events to the local public health departments and other potentially affected entities as well as the public "as soon as possible, but no later

than four (4) hours after becoming aware a CSO discharge has occurred." Other potentially affected entities could include public drinking water utilities, and state and county parks and recreation departments whose waters may be impacted. The initial notification can be via text, email, social media, radio, tv or posting on a website. It must include the name of the affected water body, the location of the discharge and identification of the public access areas potentially impacted, the date and time that the discharge started, or the permittee became aware of it starting, whether the discharge is continuing or has stopped, and permittee contact information for questions or follow-up.

Within seven (7) days after becoming aware that the CSO discharge(s) has ended, the permittee must provide the following information to the public health department and affected public entities who received the initial notice, as well as the public.

- The measured or estimated volume of the dicharge(s).
- The approximate time the discharge stopped.

Beginning in 2019, by May 1 of each calendar year, an annual report of data pertaining to CSO activity must be published. Ohio EPA and U.S. EPA must be provided with instructions on how to access the annual report.

Examples of information required in the annual report include:

- CSO locations, dates, times, volumes, and causes for the past year;
- Descriptions of public access areas affected by CSOs;
- CSO monitoring and precipitation data;
- Summary of Nine Minimum Controls implementation strategy.

This rule is effective immediately and applies to all CSO communities within the Lake Erie basin. As NPDES permits are renewed, the requirements will be included in Part II of the permit. If you have any questions regarding the rule's implementation, contact David Brumbaugh in Ohio EPA's Central Office at *David.Brumbaugh@epa.ohio.gov.*

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2. FILL OUT THE PAPER FORM EVEN IF YOU ARE NOT A CERTIFIED OPERATOR This form works as an attendance verification for Professional Engineers or any other certification. If you do not fill out this form, we will not have attendance verification for you should you ever need it.

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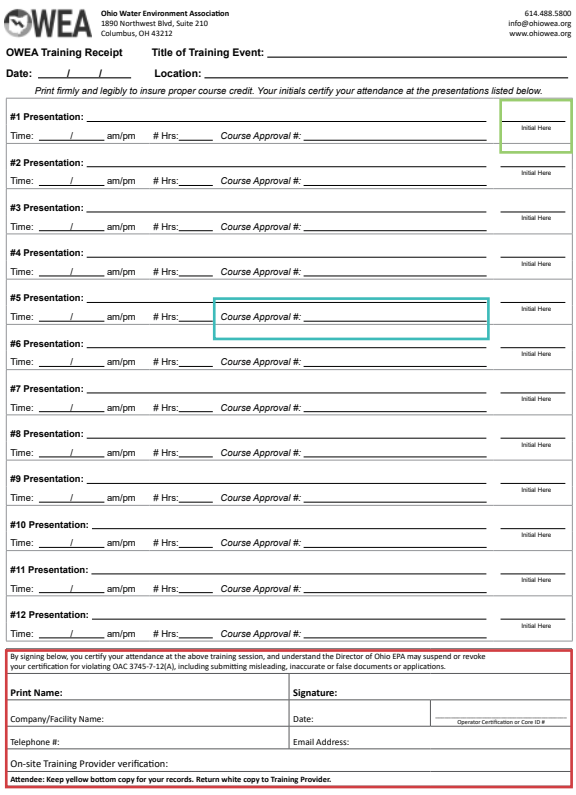

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IF YOU HAVE ANY QUESTIONS OR CONCERNS, PLEASE CONTACT THE OWEA OFFICE AT 614.488.5800 OR INFO@OHIOWEA.ORG

WEF Utility Partnership Program Member Utilities

The WEF Utility Partnership Program (UPP) is designed to allow Ohio utilities to join WEF and **OWEA** while creating a comprehensive membership package for designated employees. Utilities can consolidate all members within their organization on to one account and have the flexibility to tailor the appropriate value packages based on the designated employees' needs. Key benefits include:

- UPP is fully customizable, based on the needs of each utility, and a WEF team member will be on-hand to walk each utility through the enrollment process.
- ALL members at the utility will be enrolled, with synchronized begin and end dates, on ONE invoice, for an easy one-time per year payment.
- All members, who were already WEF members, retain original membership number, credit for all years of membership, and remain a full-voting WEF member.
- ALL employees at the UPP utility will be eligible for membership registration rates at WEFTEC, as well as the early-bird rate for Premium and Standard WEFTEC registration at anytime throughout the registration period.
- ALL employees at the UPP utility will also be eligible for member rates for the OWEA Technical Conference and Exposition, OWEA Workshops, and events.
- All employees at the utility will be eligible to register for a WEFTEC Exhibition-only pass at NO-Charge.
- WEFTEC registrations can be included in the UPP Membership transaction, at the time of enrollment or can be grouped and submitted closer to WEFTEC.
- UPP also includes a special, NO-Charge membership for Public Officials designated by the Utility, at their discretion.
- Up to five new WEF/OWEA members can be added by the utility each year, at no charge for the first year of membership.
- UPP utility will be eligible for distributor pricing on all WEF products and services – that's 40% off list pricing. In addition to traditional items this discount also extends to online learning in the new WEF Knowledge Center.
- UPP members will be eligible for special discounted registration for other WEF Conferences and events.

OWEA currently has 29 municipalities signed up for the Utility Partnership Program.

To learn about the benefits for your utility visit ***http://www.wef.org/UtilityPartnership/***

Or contact OWEA, *info@ohiowea.org,* 614.488.5800

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Clermont County Sewer District
Delaware County Regional Sewer District
Fairfield County
Lake County Dept. of Utilities
Metropolitan Sewer District of Greater Cincinnati
Northeast Ohio Regional Sewer District
Sanitation District No 1

North Olmsted Wastewater Treatment Plant

The Wastewater Treatment Plant is responsible for the operation and maintenance of the City's Wastewater Treatment Plant as well as the sanitary sewer system which maintains 159 miles of sanitary sewers and 5 lift stations. This facility was originally built in 1959 and sits on a 16-acre site on the City's southeastern border, next to the Cleveland Metroparks. The plant was expanded in 1973 and again in 1986, and again in 2012. It is designed to treat 7 million gallons of wastewater per day. The Wastewater Treatment Plant operates 24 hours a day and 7 days a week with an average daily dry weather flow of 5 million gallons of waste water the collection system staff responds to residential and industrial sanitary sewer problems ranging from flooded basements to odor complaints.

Responsibility to the Environment and Community

A good working relationship with the Cleveland Metroparks is essential. Outdoor education in Cleveland Metroparks also means recreation – from backpacking and canoeing to swimming and fly-fishing. North Olmsted's outfall contributes to the preservation of the Rocky River. Through strengthening this relationship, the mission of conservation, education, and recreation is upheld.

Plant Profile

The North Olmsted Wastewater Treatment Plant (WWTP) is located at 23775 Mastick Road next to the Cleveland Metroparks Rocky River Reservation. The plant is classified as a Class III facility by the Ohio Environmental Protection Agency.

The City's original plant was constructed in the late 1950's as a single stage activated sludge treatment facility. The original plant was constructed concurrent with intercepting sanitary sewers in the unsewered but heavily developed, poorly drained area in the north eastern and central portions of the city.

Aerial view

A report on sewerage for the City of North Olmsted, Ohio in 1957 recommended that the City construct a complete wastewater treatment works to serve the city. The 1957 recommendations presented a long term, phased program for constructing a separate sanitary sewer system throughout the City, as well as a large, centralized wastewater treatment plant to serve a projected 37,000 population.

Beginning in the late 1960s, higher water quality standards and expansion of the North Olmsted sanitary sewer system required expansion and upgrading of the original WWTPt. Between 1968 and 1973, the City completed construction of its major sanitary intercepting sewers by extending sanitary sewer service to the west and southwest. Advanced secondary wastewater upgrading became necessary to protect Rocky River water quality as the City's service area population increased.

The plant was greatly expanded in the early 1970s to provide activated sludge treatment for a design flow rate of 9.0 million gallons per day (mgd) because of additional growth in the sanitary sewer system service area.

Beginning in the early 1980s, the WWTP underwent additional improvements targeted toward providing for a tributary population of 60,000 through the year 2000. These improvements were designed to allow the treatment facility to meet increased removals of ammonia nitrogen for the plant effluent and to reduce odors from the solids handling facilities. This treatment was required by the Ohio EPA following enactment of more stringent allowable in-stream ammonia toxicity concentrations. It was also intended to minimize odors in the thermal conditioning unit process.

The thermal conditioning unit process was removed in 2000. In its place a centrifuge was installed. It operates by rotating at a very high speed in order to separate the liquids from the solids.

In 2012, the WWTP underwent the largest overhaul and update since the construction of the original plant, converting the plant from conventional activated sludge to an extended aeration plant with biological nutrient removal capabilities. In addition, to a major overhaul of the biological process the plant was automated and modernized creating a state of the art facility serving the residents of North Olmsted, parts of Fairview Park, and the northern half of Olmsted Township.

Pretreatment - Screening Facility

The first unit process at the WWTP are two Andritz Perforated Plate Screens. One quarter inch fine screens were selected at North Olmsted to provide superior screenings removal and to prevent maintenance issues downstream. Material removed by the screen is dewatered,

bagged and placed in a dumpster for conveyance to landfill. A bypass channel with a manually cleaned bar screen is provided as redundancy. The Andritz perforated plate screens rated at 20 MGD each, use close fitting perforated plates to remove floating and suspended solids. The panels are shaped to form steps which are carried on heavy duty chains. The captured screenings are elevated from the channel on the stepped plates to the top of the screen and ejected through an enclosed discharge chute. High pressure spray water and a rotary brush ensure debris is removed from the panels. A dedicated screw compactor is provided for each screen.

Pretreatment - Grit Removal

After screening, inorganic solids such as sand and gravel, and non-putrescible organics (coffee grounds, fruit rinds and seeds) are removed.

The Grit Removal Process consists of:

- Grit collection (Headcells)
- Grit separation (Slurry Cups)
- Grit washing and dewatering (Grit Snail)
- Grit pumps, and
- Grit storage (Disposal for landfill)

A stacked tray system, manufactured by Eutek, provides grit separation from the flow stream, through vortex movement. Flow is introduced tangentially and establishes a vortex flow pattern causing solids to settle to the center of the tray. Degritted effluent flows out of the trays, over a weir and into an effluent trough.

Grit concentrates in the center of the tank and is pumped out by a Fairbanks Nijhuis recessed impeller pump to grit separation also called a Slurry Cup. Grit is washed and discharged to the Grit Snail where it is dewatered and discharged to a 8-cubic yard roll-off dumpster. The system is designed to handle a peak flow of 50 MGD through two individual treatment trains. The system provides 95% removal of 110 micron and larger grit.

Biological Treatment

After an initial round of treatment at the pretreatment facility the wastewater moves through a distribution chamber where it can be channeled to one or more, of eight tanks depending on the desired pathway and level of flow. The North Olmsted WWTP is an activated sludge system utilizing a Vertical Loop Reactor (VLR). The VLR is constructed similarly to a conventional plug flow tank, however, the tank is separated into an upper and lower pass with a horizontal divider baffle.

Mixing and aeration is provided by orbal aeration discs. In addition to the orbal discs, a system of coarse bubble diffusers is located at the bottom of each VLR tank. As flow is conveyed around the VLR at a high rate, coarse bubble aeration is applied at one end of the horizontal baffle plate. The bubble and flow travel along the plate and then move to the upper level of the reactor. Air bubbles are retained in the VLR longer than in a conventional activated sludge basin, thereby increasing oxygen transfer in the system.

The VLR tanks are rectangular aeration tanks. The tanks at the WWTP are concrete and consist of four small tanks (1-1,1-2,2-1,2-2) and four large tanks (1-3,1-4, 2-3,2-4). The four large tanks were part of the original Aeration Process and were modified in the 2012 improvements. Collectively all eight tanks provide a total influent detention time of 13.0 hours at a design flow rate of 7.0 MGD.

Each tank contains an intermediate (horizontal) baffle

which provides the ability of the flow to "loop" inside each VLR tank. The orbal discs, located at the top of the tank, cause the tank contents to flow over the top of the baffle in one direction, enter a turning vane (located at one end of the tank) that directs the flow down and under the intermediate baffle. The baffle is sloped upward as the flow travels to the end of the tank. The upward slope with the flow path is to provide for air to release at the opposite end of the tank.

- **Rotor Assembly with Orbal Discs:** The discs supply the mechanical mixing and impart the energy that recirculates tank contents at a rate of two feet per second. VLR tanks 1-1, 1-2, 2-1 and 2-2 have one (1) complete rotor assemblies while VLR tanks 1-3, 1-4, 2-3 and 2-4 have two (2) complete rotor assemblies. Each rotor assembly has 40 Orbal discs, 4.5 feet in diameter. The discs are split in half so that each disc can be adjusted, removed or attached without requiring any shaft disassembling. Each rotor has a 25 hp, 1,750 rpm drive motor with a Variable Frequency Drive (VFD) allowing the rotor speed to vary from minimum speed of 29 rpm to a maximum speed of 52 rpm. The aeration disc submergence varies between 11 inches and 17 inches.
- **Weatherhoods:** 3/16" fiberglass reinforced plastic steel weather and splash hoods are provided with each rotor assembly to prevent the wetting of the bearings and drive units from the disc spray. Also, the hoods are provided to prevent icing of the discs during cold weather. Finally, the weather hoods provide UV protection to the Orbal discs.
- **Coarse Bubble Diffusers:** Each VLR tank is provided with coarse bubble diffusers. VLR tanks 1-1, 1-2, 2-1 and 2-2 are provided with 32 diffusers (a total of 128) while VLR tanks 1-3, 1-4, 2-3 and 2-4 are provided with 114 diffusers (a total of 456). The diffusers are located near the turning vane where the mixed liquor is first turned down under the intermediate baffle. The release of air at entry point of flow beneath the baffle causes the longest possible "bubble path" in the mixed liquor. The long bubble path results in the coarse bubble diffusers providing extremely high oxygen transfer rates for coarse bubble diffuser while still providing low maintenance and trouble-free performance. The optimum air flow rate is 5.0 scfm per diffuser.

- **Air Release Plate:** An air release plate is provided between the turning vane and the intermediate baffle at the upflow end of each VLR reactor. The air release plate is provided to shear and disperse the air bubbles releasing from beneath the intermediate baffle. The air release plate further improves oxygen transfer and reduces localized turbulence at the end of the tank.
- **Blowers and Air Piping:** One (1) positive displacement blower is dedicated to supply air to the entire VLR process. Valving is provided in the Blower Building to allow two additional blowers to operate as swing to either the VLR or EQ tanks. The blowers are manufactured by Aerzen Corporation and have a capacity of 700 SCFM. The blowers supply air to the VLR process through a 10 inch common discharge header which services each VLR through a 8 inch butterfly valve and 8 inch drop pipe to a 4 inch distribution manifold for the coarse bubble diffusers.

Final Clarifiers

The North Olmsted WWTP is equipped with three (3) Final Clarifiers (105 feet wide and 16 feet deep) to provide sufficient retention time for suspended solids separation from the waste stream. Clarified water leaves via the overflow weirs located around the perimeter of the tank. Each clarifier is equipped with scum baffles located in front of the weirs to contain any floating scum or debris within the clarifiers. The clarifier equipment is manufactured by Walker Process Equipment.

Return Activated Sludge and Waste Activated Sludge

Return Activated Sludge (RAS) is returned to the RAS conditioning tank (at the Preliminary Treatment Facility) to continue the biological treatment process.

The RAS/WAS Pump Station consists of five (5) centrifugal pumps. These pumps are rated for 2,500gpm. The pump suction for RAS Pumps 1, 2 and 3 come from Final Clarifier #2 and #3. The suction for RAS Pump 4 and 5 come from Final Clarifier #1.

Each set of pumps discharge to a 16-inch force main which conveys flow to the distribution box at the RAS conditioning tank. Flow through each of the RAS lines are monitored separately with dedicated flow meters.

Final Effluent Building

The wastewater next travels to the plant's final effluent building for advance filtration, disinfection, and a final inspection.

Tertiary Filtration

The tertiary filters receive secondary effluent from final clarifiers No. 1, 2, and 3. Solids are retained on the inside of the filter panels, which consist of a series of 20 micron-panels. As solids accumulate, the water level in the discs begin to rise, triggering a level sensor to backwash the filters. Backwash is discharged to the Plant Drain Pump Station. The filter equipment is manufactured by Kruger.

Tertiary filtration has been used at North Olmsted WWTP since 1970 to polish secondary effluent. Previously the plant had five cloth tertiary filters (roughly 100-200 microns), which were replaced in 2012 with three (3)

(20 micron) units. Each unit is sized for 15 MGD firm capacity and 22.5 MGD total capacity.

The filters can handle a max flow of 22.5 MGD. A downward opening motorized slide gate, opens to limit the flow to the tertiary filters and protects them from rupture. During a high flow event, filter effluent and bypass flow is blended prior to disinfection.

After filtration, flow proceeds to UV disinfection.

Ultraviolet Disinfection

The WWTP disinfects by ultraviolet (UV) irradiation from April 1 through October 31 prior to discharge to Rocky River. The UV disinfection system is located in the Final Effluent Building and is the last step in the treatment process. The UV system is a 3000 plus manufactured by Trojan Technologies.

At the plant's maximum flow, the approximate contact time for ultraviolet treatment is four seconds, compared to the typical contact time for chlorination of 30 minutes.

Final Checks

During wastewater's journey through the North Olmsted Wastewater Treatment Plant each step is controlled and monitored by a Supervisory Control and Data Acquisition computer control program called SCADA. The SCADA system also monitors and samples, through a flow pace automatic sampler, the quality of the final treated water before discharge to the Rocky River.

The platform for the North Olmsted Wastewater Treatment Plant is Visio-Citect. The developer and primary support for Citect is Schneider Electric. Installation of the SCADA system, HMI screens, and CPUs was performed under supervision of Dmytryka Jacobs Engineering. Local installer and support of the SCADA system, HMI, and CPUs is provided by Systems Group Technologies.

Biosolids - Sludge Holding

During treatment of the wastewater, Waste Activated Sludge (WAS) is produced as a result of the biological treatment in the activated sludge process. A large portion of the WAS is biodegradable and at the WWTP it is further treated in the aerobic sludge digestion process. The main purposes of the digestion process are to make the treated sludge suitable for ultimate disposal and to reduce the quantity of sludge needing disposal.

There are two (2) sludge storage tanks, both measuring 50 feet in diameter and a depth of 28 feet. The WAS is removed from the secondary settling process by two (2) WAS pumps located in the RAS/WAS Pumping Station and transferred to the sludge storage tanks via a 4 inch line. At the Sludge Storage Pump Room (located between the two tanks) the line splits into two (2) lines, one for each tank, which goes over the top of the side wall and expands to a six" (6) line that is discharged at the bottom of the tank.

The sludge storage tank contents are aerated by a coarse bubble aeration system and a floating mixer is used to keep the contents mixed while in storage.

The Pump Room contains the decant pumps (one for each tank), sludge grinders and sludge transfer pumps. two (2) blowers used for aeration of the tanks are located adjacent to Sludge Storage Tank 2.

Biosolids - Sludge Dewatering

The Waste Activated Sludge (WAS) stored in the sludge storage tanks is dewatered prior to final disposal by two (2) dewatering centrifuges manufactured by GEA Westfalia Separator.

The sludge is pumped out of storage, blended with polymer and sent to the centrifuges for dewatering. Polymer enhances the dewatering capability of the solids. One centrifuge is located in the Solids Handling Building near the sludge storage tanks, and the other centrifuge is located in the sludge load out area.

The centrifuge spins at a rate of 4,300 rpm to utilize centrifugal force to separate water from the feed sludge. The water, known as centrate, is discharged by gravity to the Plant Drain Pump Station where it enters the wet stream treatment process. The dewatered cake is discharged to a screw conveyor and then onto the Belt Conveyor, in the sludge load out area, for disposal by truck.

The WWTP currently hauls all biosolids with the use of in-house staff. The operational goal is to haul material offsite for beneficial reuse. The major site for beneficial reuse is quasar's Three Creeks Facility, where biosolids

are converted first to methane and then to electricity.

Influent Odor Control System

The quantification of treatment criteria for odors is often difficult. Perception of odor by the public is difficult to gauge and the sensitivity of the residents surrounding a plant can vary depending on prevailing winds, humidity, operation of the plant, and location relative to the primary odor sources. Although no specific criteria have been discussed, reduction of odors to minimal levels at the fence line is a common goal. This criterion does require a high level of odor treatment – normally above 99% for most constituents. A wet scrubbing (dual stage tower) was installed for the application. This technology has been used successfully by many to control odors.

The North Olmsted Wastewater Treatment Plant is equipped with 2 standalone wet scrubber odor control systems located at the plant's Preliminary Treatment Facility (PTF) and solids handling building.

Odor control in the PTF collect air flow from the screens, channels and grit headcell. Under this scenario, air is pulled through the headcell, then through the screenings room and finally exhausted to odor control. The new odor control system is located in the existing Mixing Flocculation Building. The wet scrubber is provided with a sodium hypochlorite and caustic feed system.

Odor control at the solids handling building is located in a separate room, immediately adjacent to the plants' centrifuge/conveyor equipment. Similar to the preliminary treatment odor control, a two stage, modular wet scrubber was installed. This wet scrubber is also equipped with a sodium hypochlorite and caustic feed systems.

OWEA Fast Facts

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OWEA

The Case for Integrated Wastewater and Stormwater Planning for Ohio's Communities

By: Elizabeth Toot-Levy, Geosyntec Consultants, etootlevy@geosyntec.com
and Adam Blandford, University of Cincinnati Economics Center, blandfam@ucmail.uc.edu

As we approach 50 years since the infamous burning of the Cuyahoga River and more than 45 years since the Clean Water Act (CWA) amendments to the Federal Water Pollution Control Act, communities still struggle to meet the fishable and swimmable (at all times) goals set forth in the CWA. This struggle led to sewer overflow enforcement actions and long-term control plans that are unaffordable for many communities. U.S. EPA responded with a potential solution – integrated planning for wastewater and stormwater. This article addresses:

- Background on integrated planning
- A User's Guide for conducting integrated planning
- Financial capability and Ohio's economic circumstances

BACKGROUND ON INTEGRATED PLANNING

U.S. EPA ramped up CWA enforcement efforts in 2008 to push municipalities into remedying chronic dis-investment in both combined and separate sewerage systems. The resulting "siloed" enforcement approach failed to recognize how regulatory inflexibility was leading to economic consequences (dis-investment in stormwater and drinking water infrastructure) and environmental consequences (lack of meaningful improvements in water quality).

In response to increasing enforcement, the U.S. Conference of Mayors and other stakeholders engaged U.S. EPA and the Department of Justice (DOJ) to articulate the unintended consequences. The U.S. EPA responded with two new policies, Integrated Municipal Stormwater and Wastewater Planning Approach Framework (June 2012) and Financial Capability Assessment Framework for Municipal Clean Water Act Requirements (November 2014). These new policies have the potential to modernize CWA enforcement actions throughout the country and may facilitate the rebuilding of our nation's infrastructure more cost-effectively.

Embodied in these two policy memoranda is a new, potentially more sustainable approach to obtaining CWA compliance. Integrated planning, as outlined in the June 2012 document, recognizes that communities should prioritize CWA-related projects based on mitigating adverse human health and water quality impacts within a community's unique financial circumstances. Integrated planning allows communities to include social considerations and explore a broader understanding of the technical and scientific information available for CWA decision making. This may result in environmental solutions that achieve multiple benefits, leading to more comprehensive approaches that not only address water quality issues but enhance community vitality and support other economic and quality of life attributes for communities as wastewater treatment plants move to "utilities of the future".

In the framework memoranda, the U.S. EPA outlined six overarching elements that each integrated plan should contain. The key principles of integrated planning are detailed in Table 1.

Element 1	Water Quality, Human Health and Regulatory Issues
♦ Describes the challenges a community selects to included in the integrated plan ♦ Includes identification of human health threats, water quality standards, wasteload allocations, total maximum daily loads, etc.	
Element 2	Existing Systems and Performance
♦ Description of existing wastewater, stormwater and other utility programs being included in the integrated plan ♦ Includes evaluation of the current performance of the utility systems	
Element 3	Stakeholder Involvement
♦ Focuses on the stakeholder process necessary to gain public and regulatory consensus for the integrated plan ♦ Includes open channels of communication for input from relevant stakeholders	
Element 4	Evaluating and Selecting Alternatives
♦ Developing decision criteria to prioritize investments and select projects for the renewal of systems ♦ Can include green infrastructure for more sustainable solutions	
Element 5	Measuring Success
♦ Identifies performance criteria that will be used to determine success of the integrated plan ♦ Includes various monitoring and evaluation programs	
Element 6	Improving the Plan
♦ Identification of additional projects or modifications to the plan ♦ Adapting to changing circumstances	

Table 1: The elements of an integrated plan

USER's GUIDE FOR INTEGRATED PLANNING

As communities consider whether to embrace the elements of integrated planning, many questions arise. To help communities determine if an integrated plan is the appropriate path and to further understand how integrated planning is working and not working, the Water Research Foundation (formerly the Water Environment and Reuse Foundation) funded a research project (SIWM9R14) that included the development of a User's Guide for Integrated Wastewater and Stormwater Planning, that will be publicly available in late spring.

This User's Guide is intended to help a community determine if it should undertake integrated planning, and if so, provide considerations to develop a successful integrated plan. The guide is based on a survey completed by 69 communities regarding tools, problems, and gaps associated with integrated planning. The survey examined the decision-making process, priorities and challenges associated with integrated planning, and details regarding how communities are addressing each of the six elements detailed in Table 1. The survey results were used to inform the selection of seven communities to serve as case studies to represent the range of community experience with integrated planning, from those with completed plans to those who ultimately decided not to pursue integrated planning. This includes wastewater collection, wastewater treatment, stormwater, drinking water, and recycled water. The survey and case study findings, along with other critical topics that should be considered, are all contained within the User's Guide.

Identified **Potential** Barriers to Integrated Planning

- Concerns of additional obligations
- Perceived increased enforcement risk
- Uncertainty about outcomes
- Lack of knowledge by state regulators
- Lake of state flexibility or support
- Lack of EPA flexibility

Community priorities for integrated planning include three main categories: environmental and public health benefits, utilization of resources, and financial capability and affordability. Communities are seeking to maximize water quality benefits by addressing the associated challenges (Figure 1) while simultaneously addressing other community needs. They need to be able to prioritize and reprioritize projects to achieve efficiencies and better allocate resources while implementing cost-effective solutions.

The project also provides a look at the lessons being learned by communities as they prioritize resources and maximize services with the integrated planning process. In some cases, uncertainty makes it difficult for communities to dedicate the necessary resources to effectively complete the process, especially as they struggle with the information gaps between the historical enforcement-based paradigm and today's more flexible approach. Some communities continue to be hampered by inconsistent reactions from regulators, but many are inclined to invest the resources into the integrated planning process to achieve widespread, innovative, and cost-effective solutions.

FINANCIAL CAPABILITY AND OHIO'S ECONOMIC CIRCUMSTANCES

As part of U.S. EPA's commitment to addressing the CWA in a more sustainable manner, the agency issued a second memorandum, Financial Capability Assessment Framework for Municipal Clean Water Act Requirements (FCA) in November 2014. This updated FCA summarizes a range of information related to the ability to afford CWA infrastructure that may help provide a more complete picture of a community's financial capabilities. It expands the use of benchmark indicators of community and utility affordability and focuses on how the flexibility in the CWA can be used to prioritize and sequence projects identified through integrated planning while also providing for the incorporation of other community specific economic factors.

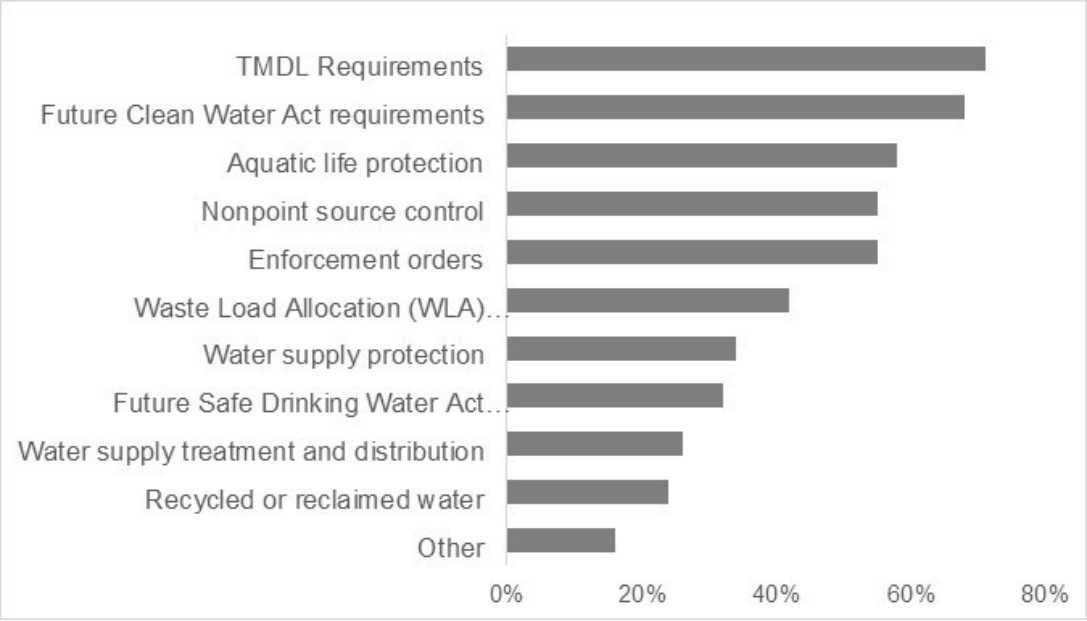

Figure 1: Clean water act challenges being addressed by communities. Percentages indicate the percent of the 69 communities that responded the WE&RF Community Insights Survey addressing each of the issues.

As in many other states, Ohio has communities facing harsh environmental and economic realities. As of September 2017, 72 Ohio communities are still mitigating CSOs either directly through National Pollutant Discharge Elimination System (NPDES) permits or via other enforcement orders. Many communities are struggling to control stormwater and there is widespread economic disparity within communities and throughout the state. While some areas in Ohio continue to prosper and grow, others face stagnant or declining incomes and populations. These communities have legacy infrastructure and the accompanying maintenance issues that are then borne by fewer ratepayers who may be struggling economically.

Ohio's clean water needs are estimated to be close to $27 billion based on the results from the 2012 Clean Watershed Needs Survey and the 2011 Drinking Water Infrastructure Needs Survey and Assessment, both conducted by U.S. EPA and shown in Figure 2.

U.S. EPA's 2014 FCA opens the door for the consideration of different, more descriptive measures of affordability that communities more fully considered as they look to address their clean water needs. Communities now have a heightened ability to include more creative measures of affordability that have always been embedded within the CWA but have not always been carried out by regional enforcement authorities, such as evaluations of poverty rates and residual income.

U.S. EPA's FCA guidance relies heavily on the two percent of the median household income (MHI) test. The FCA framework emphasizes that this is not the "bright" line for defining the community's ability to pay for wastewater services. Simply by definition, half of the households in a community have incomes that fall below the MHI. The MHI alone does not consider income inequalities or what percentage of the population spends more than two percent. This test fails to consider the impact on low-income populations. MHI provides a snapshot view of economic conditions but may obscure a community's overall affordability challenges. As many communities are experiencing declining populations and median incomes, what may be affordable now may not be in the future.

Table 1: The elements of an integrated plan

Evaluating the community population with incomes at or below the poverty rate provides more information than reviewing the MHI alone but has other short-comings. To its credit, the poverty rate specifically pertains to low-income households, has some credence for income inequality, and is widely accepted among most means-tested government programs to measure poverty. However the poverty rate does not adjust for the standard of living or geographic variation and are determined by identifying three times the cost of a minimum food diet in 1963 (updated for inflation and change in family structure). This historic mechanism excludes many factors including available assistance programs, the changing costs of non-food goods such as healthcare and housing, and the burden of high cost of living areas on households with incomes above the poverty rate.

Complex measures, such as residual income may more appropriately assess affordability, but prove challenging to analyze as more detailed data is required. The Residual Income Approach provides for measures of self-sufficiency, as it evaluates affordability based on the income needed to meet basic needs without relying on assistance and compares it to the predominant household earnings of different types of families in an area. This approach looks at the income remaining after housing, child-care, food, transportation, healthcare, taxes, and other miscellaneous needs are paid for. Evaluating residual income can account for differing family dynamics, geographic cost differences, and other site-specific impacts. The approach also benefits from bypassing abstract measures and looking specifically at household budgets and the financial realities real families face. The percentage of the residual income necessary to pay for clean water costs can then be determined to identify affordability issues in the area.

The intent of integrated planning is to provide for additional community-specific flexibility in the development and adoption of plans to address CWA issues. Initial suggestions indicated a disconnect between the concepts presented in the integrated planning approach and the direct implementation of an integrated plan. However, as an increasing number of communities embrace integrated plans, the barriers to the development of such plans are becoming more manageable. Adequately addressing economic issues communities face is likely to continue to be problematic. Integrated planning is providing for the development of more intricate methods to evaluate community affordability. These methods allow for a better understanding of the true economic impacts of addressing clean water issues. As Ohio's communities face economic disparities and pressing environmental needs, integrated planning provides a methodology to develop comprehensive and adaptable solutions.

GREG BRECKLER
Operations Manager
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LARRY MOON

1939-2018

Larry Moon, 79, returned to his heavenly home on March 21, 2018, after having blessed his family with a life well lived. His love of family and firm belief in God provide us peace upon his passing. Larry was born to the late Orland and Beulah Moon, in Sylvania, OH on January 22, 1939. He was a Mason and an active member and volunteer of the Church of the Redeemer United Methodist Church in Reynoldsburg, OH. He was a volunteer firefighter in Sylvania, and served 30 years for the State of Ohio, retiring in 1989 as an employee of the Ohio EPA. Larry served for 22 years as Secretary-Treasurer of the Ohio Water Pollution Control Association. Larry's life was joined to that of his bride Lois 56 years ago on August 12, 1961. They were blessed with two children (Shari and Garry) and with a lifetime of wonderful memories. His children and wife remember him as a loving Dad and Husband, who cared deeply for his family. He is dearly missed by his loved ones, who celebrate that he is at peace with his creator. Larry is survived by his wife, Lois; his son, Garry (Julia) Moon; his daughter, Shari (John) King; his grandchildren, Anna Moon and Gavin Moon; his brother, Charles (Pat) Moon, sister-in-law, Norma Moon, and many nieces and nephews. He is preceded in death by his brother Del (Norma) Moon and his parents.

Published in The Columbus Dispatch on March 23, 2018

It is with great sadness that OWEA brings the news of Larry Moon's passing. Larry was a friend to many of us and was also an important part of OWEA. So important, in fact, that OWEA re-named the Outstanding Service Award The Larry D. Moon Outstanding Service Award in 1988. Larry served the communities of Sylvania, Greenfield, and Van Wert before joining Ohio EPA. While Larry worked for Ohio EPA in the Division of Water Pollution Control (now called Division of Surface Water) as the head of the Technical Assistance/ Operator Certification Group, he was very dedicated to OWEA, serving as our Secretary/Treasurer for 22 years. Our organization was a bit smaller in his day We didn't have the diversity or number of programs and activities we have today, but he did everything our paid staff does today. It wasn't long after Larry retired, it became very clear we needed an Executive Director and paid staff. He was the founder of Operations Challenge and very proud of the work operators do to keep the public safe. Because of his dedication to operators and OWEA, the award was re-named. This award is selected by the President of OWEA and presented to a member who has put forth special efforts or extended service to OWEA. He, himself, won the Outstanding Service Award in 1986.

Those that knew Larry called him a friend, a mentor, an ambassador, a genius, and a man who cared about everyone. The rest of this article is made up of memories and tributes to Larry.

FROM STU BRUNY, OWEA PRESIDENT 1986-1987 AND LARRY MOON AWARD WINNER 1993

For many years Larry led Ohio EPA's operator certification program. He was instrumental in building the program to what it is today. Several other states benchmarked with Ohio as they developed and improved their certification programs. As Secretary to the Advisory Board of Examiners, I had the pleasure of working with

Larry on an almost daily basis for several years. We poured over exam applications and exams twice a year. Larry prepared the letters and documents and I would sign them. Larry felt strongly about operator education and certification. It was not just his job... he lived it and truly believed in it. Few if any, were more dedicated to helping operators improve their rightful standing in our water environment business.

I also had the pleasure of working closely with Larry for several years as officers in what we now call the Ohio Water Environment Association. As Secretary/Treasurer, Larry helped and guided me in so many ways, as I was going through the chairs in the mid 1980's. His 22 years of service to our member association is likely unmatched in our history. Larry liked to attend WEF meetings. We had great fun traveling together to meetings in Washington D.C., Los Angeles, Toronto, Ontario and New Orleans. This issue of the Buckeye Bulletin is not large enough to relate all the memories from our travels.

Larry was not only an active member, but a leader in his church for many years. He was well known as a great father, husband and family man.

FROM KATHY COOK, OWEA PRESIDENT 1993-1994 AND LARRY MOON AWARD WINNER 2009

Larry was my friend. He and Lois were so helpful to me. When my career began in 1974 I was the only woman in OWEA. He helped direct me to be successful and grow. I was honored with the Larry Moon Award in 2009 and it means so much to me. Thank you, Larry!

FROM JIM GREENER, OWEA PRESIDENT 1996-1997 AND LARRY MOON AWARD WINNER 1986

I don't remember all the details, but as soon as there was an opening in the new Ohio EPA, Tom Hagerty actively recruited Larry to manage the Wastewater Operator Certification Program. As program manager I just had to approve the hiring. I don't know if Stu Bruny will share the Phyllis Diller story. I know Larry & Lois (Secretary-Treasurer), Stu (President) and Phyllis Diller were roomed on the Top Floor of the Bond Court Hotel, East 6th St., Cleveland. Very fancy suites on the top floor. I was told she took a liking to either Stu or Larry. Apparently, they were invited to parties in her room, etc. While in Cleveland she threw a 90th birthday party for Dorothy Fuldheim (long-time Cleveland TV personality). They were invited and invited me and Gerri (my wife). About 500 TV personalities in the ballroom with the best food I have ever seen on tables. There was a pig with apple, caviar, tenderloins, pheasant, etc. The food was so good, the free bars were empty. I could not get to the food because the circles of people around the tables had no beginnings and nobody left. Stu can probably fill in the missing information.

In 1974, Larry and Lois and Gerri and I were sent to what is now WEFTEC in Denver with Ira Whitman, Ohio EPA Director, Larry OWEA Secretary/Treasurer; me, Public Wastewater Division Chief. The Moons had a relative living in Colorado. This relative drove the 4 of us from Denver to Colorado Springs. The relative took the high scenic road instead of the freeway. The roads were fair (gravel, dirt, etc.), the heights high (1000's of feet up), many sharp curves, and few guard rails. Larry noted that our bowels were all tested on the trip. With no map we wound up in a ghost town on the wrong side of Pike's Peak.

Larry and his wife, Lois

We occasionally played cards at lunch at Ohio EPA. Larry liked to compete with the young engineers. Larry and Lois were always together at house parties, conferences, etc. They had a great marriage. Larry was smart, proud and committed to our profession, friendly, helpful, conscientious, persistent, likable, fun, etc. He was a perfect OEPA employee for the time and a great hire. As his manager, I didn't have to do anything with Operator

Certification, except take all the calls when my entire staff left to manage the semi-annual operator tests.

FROM KEITH RILEY, OWEA PRESIDENT 2000-2001 AND LARRY MOON AWARD WINNER 2007

Ron Bell and I served as volunteer test monitors twice a year for the Wastewater/Water Operator Exam from 1980-1994. For most of these years, Larry Moon managed and administered the yearly exams. He represented a high standard of integrity for the licensed professional operator at all times. As I became a more seasoned professional, I witnessed his persistent volunteer spirit for the mission of OWEA that up lifted our Ohio EPA Agency operator relationships. Larry Moon certainly served as a model for other agency employees to emulate.

FROM DALE KOCAREK, OWEA PRESIDENT 2010-2011 AND LARRY MOON AWARD WINNER 2013

I first met Larry Moon when I worked for the Ohio EPA, Central District Office in January 1983. At that time, I was working as a District Engineer. A portion of this job involved reviewing plans and PTI applications, NPDES permits, and otherwise responding to complaints and compliance investigations. It was on one of those occasions that my supervisor asked Larry Moon to come along with us to a wastewater treatment plant that was reportedly having problems. From this initial meeting, it was evident to me how proud he was to be a licensed wastewater operator and how much he enjoyed the profession. He presented the profession as an exclusive club.

Larry's position at the Ohio EPA included the oversight of the Ohio EPA Operator Certification Program, which included administering and proctoring the semi-annual operator examinations for the Ohio EPA. At other times, Larry visited wastewater treatment plants across the state giving advice and served as an ambassador for the Ohio EPA.

Shortly after first meeting Larry in January 1983, I joined the Water Environment Federation and immediately signed up to attend the 1983 Annual Conference, which was held in Cleveland at the Bond Court Hotel. It was at that time; Larry and I shared an experience that we joked about for a long time. Shortly after arriving at the hotel, my colleague and I went to a bistro in the basement of the Bond Court Hotel and were almost immediately approached by the late comedian Phyllis Diller (1917-2012). She was in Cleveland to attend a 90th birthday celebration for local celebrity, journalist, and news anchor/reporter Dorothy Fuldheim (1893-1989). We talked with Phyllis for about ten minutes on several topics. During this conversation Phyllis said that she was from Lima. We talked about what we did for a living, and the taste of drinking waters in different cities. She then concluded by telling us one of her trademark jokes about her fictitious husband "Fang." Later, Larry told me that Phyllis spent much of the evening in his hospitality suite "partying." As evidence, Larry produced a personally autographed photo of Phyllis a few weeks later.

Years later, I was on track to become the Southeast Section Vice President in 2001 and President in 2002. I told Larry that once I completed my presidency, I would continue my involvement in other ways. I will never forget what he told me. It was: "we will make a place for you." The last time I saw Larry was at a Southeast Section Friends and Family Day in 2000 where we played golf together. (The golf event was a scramble, and our scores were so bad we did not even turn in our score sheet!)

A highlight of the 2013 Conference for me was receiving the Larry D. Moon Outstanding Service Award for 2013. Winning this award was not only personally satisfying to me, but it brought me back full circle to my point of beginning and flooded me with memories of the wonderful man that Larry was. As you can see, Larry Moon was not just a disembodied name to me and others of my era, but a wonderful person who taught me many things; two of which I will never forget and have served me well in my career over the past 36 years:

- Operators are critical to our industry. If you want to be successful, you need to listen to them as they can teach you many things.
- We are all ambassadors. Where possible project warmth and inclusiveness. This puts people at ease and makes them feel welcome.

He will be missed.

LARRY D. MOON OUTSTANDING SERVICE AWARD WINNERS

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1987	LARRY MOON
1988	JACK MEYERS
1989	LOUIS RISSER
1990	BOB COTTRIL
1991	JON KEEL
1992	JOHN MCCREIGHT
1993	STUART BRUNY
1994	BOB MERGEL
1995	RICK VARNER
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2009	KATHY COOK
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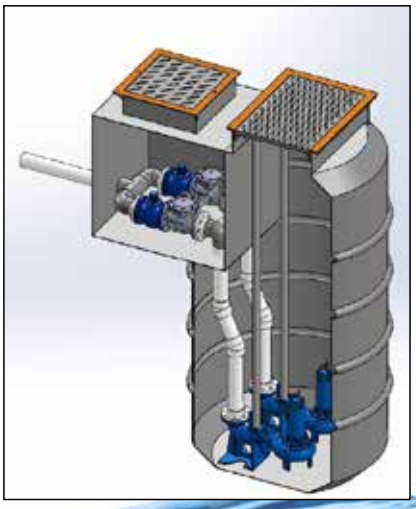

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3. Dual MA Selection (optional)	
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☐ MA/MBA/MS
☐ BA/BS
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☐ Technical School
☐ High School

Race/Ethnic Origin:
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☐ American Indian or Alaskan Native
☐ Asian
☐ Caucasian
☐ Hispanic/Latino
☐ Pacific Islander or Native Hawaiian
☐ Other

ADDITIONAL SUBSCRIPTIONS

Dependent upon your membership level, $55, $47 or $20 of your membership dues is allocated towards a subscription of Water Enironment & Technology (WE&T) magazine that is non-deductible from the membership dues.

☐ *World Water: Water Reuse and Desalination*	$55	$
☐ *World Water: Stormwater Management*	$55	$
☐ *Water Environment Research Online*	$95	$
☐ *Water Environment Research* Premium	$130	$
☐ *Water Environment Research* Print plus online package	$150	$
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MONDAY AUGUST 27

- **Attendee Registration** *7 AM - 5 PM*
- **Ops Challenge** *8 AM - 5 PM*
- **Exhibitor Registration** *12 PM - 5 PM*
- **Exhibitor Set-Up** *12 PM - 10 PM*
- **Research Workshop** *8:30 AM - 5 PM*
- **Plant Tours** *9 AM - 4 PM*
- **Golf Outing** *9 AM - 5 PM*

TUESDAY AUGUST 28

- **Attendee Registration** *7 AM - 5 PM*
- **Exhibitor Registration** *7 AM - 9 AM*
- **Exhibitor Set-Up** *7 AM - 9 AM*
- **Exhibit Hall Open** *9:00 AM - 5:00 PM*
- **Kick-Off Breakfast** *7:30 AM - 9 AM*
- **Concurrent Technical Sessions** *9:15 AM - 4:30 PM*
- **Ops Challenge** *8 AM - 5 PM*

WEDNESDAY AUGUST 29

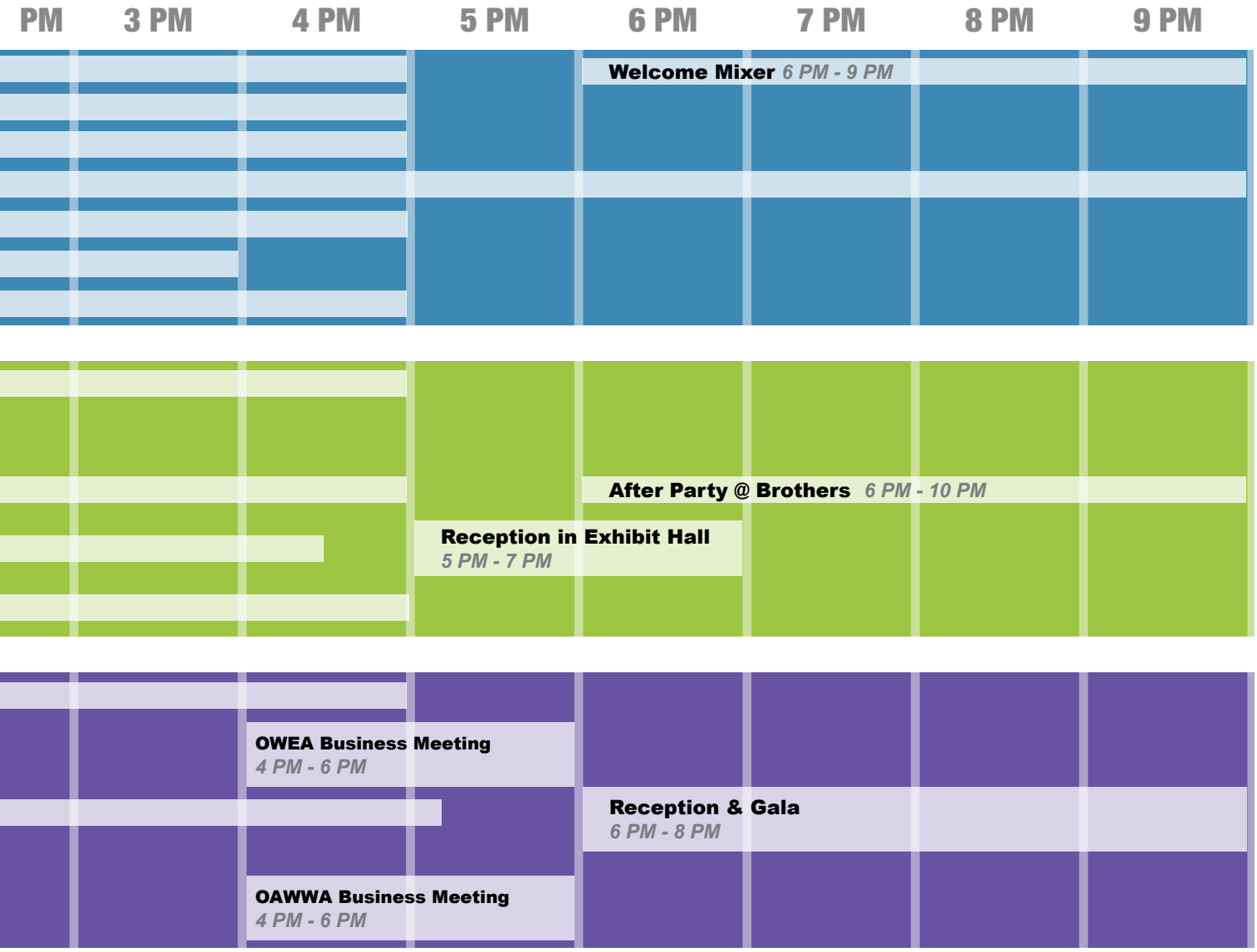
- **Attendee Registration** *7 AM - 5 PM*
- **Breakfast** *7 AM - 8:30 AM*
- **Women's Networking Social** *9:30 AM - 10:30 AM*
- **Lunch in Exhibit Hall** *12:30 PM - 2 PM*
- **Concurrent Technical Sessions** *8 AM - 5:10 PM*
- **Exhibit Hall Open** *9 AM - 2 PM*
- **OWEA's President's Lunch** *12 PM - 1:30 PM*

THURSDAY AUGUST 30

- **Attendee Registration** *7 AM - 12 PM*
- **Breakfast** *7 AM - 8:30 AM*
- **OWEA 5S Breakfast** *7 AM - 8:30 AM*
- **OWEA Executive Committee Meeting** *10 AM - 12 PM*
- **OAWWA Past President's Breakfast** *7 AM - 8:30 AM*
- **OAWWA Board Meeting** *10 AM - 12 PM*
- **OWEA Crystal Crucible Breakfast** *7 AM - 8:30 AM*
- **Concurrent Technical Sessions** *8 AM - 11:30 AM*

*schedule subject to change

Schedule of Events



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Retired	$200	$235
Student	$50	$75
Partial Conference		
One Day Member	$195	$220
One Day Nonmember	$245	$270
Budget Option One Day	$100	$125
Budget Option Half Day	$75	$100
Golf		
Golf - Team	$320	$320
Golf - individual	$80	$80
Exhibitor		
Exhibitor	$975	$1,075
Booth Attendant	$100	$100
Limited Booth Attendant (no meals)	$30	$30
Add Ons		
Plant Tour	$90	$120
Guest Package *Evening Socials and Food Only*	$160	$160
Extra Tuesday Reception Ticket	$60	$60
Extra Wednesday Reception Ticket	$65	$65
Extra Kick Off Breakfast Ticket	$35	$35

One Water Exhibitors

Registered as of 5/1/18

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- Allied Technical Services Inc.
- AllMax Software, Inc.
- Alloway
- American Cast Iron Pipe Co.
- Aquarius Technologies, LLC
- Asahi/America, Inc
- Bayer Becker
- Bennett & Williams Environmental Consultants, Inc.
- BissNuss Inc.
- BL Anderson Company
- Bonded Chemicals, Inc.
- Buckeye Pumps, Inc
- Burgess & Niple, Inc.
- CEI - Carbon Enterprises Inc.
- Chaltron Systems Inc.
- CHEMTRADE
- Chesley Associates, Inc.
- Cla-Val
- Commerce Controls Inc
- CORE & MAIN
- CRANE PUMPS & SYSTEMS
- CTI ENGINEERS, INC.
- CWM Environmental
- Delaney and Associates, Inc.
- Diversified Infrastucture services
- Dixon Engineering, Inc.
- DN Tanks
- DRV, Inc.
- Duke's Root Control, Inc.
- Dutchland, Inc.
- EA Tanks Inc
- Earth Science Laboratories, Inc.
- EJ
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- Engineering Colsultant
- Environmental Express
- ENVIROSCIENCE INC
- E-tank, Ltd/E-Pump
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- Excel Fluid Group, LLC
- FER-PAL Construction
- Flottweg Separation Technology, Inc.
- Fontus Blue
- George E. Booth Co., Inc.
- GFS Chemicals
- Hach Company
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- HPT / JWC Environmental
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- MarshWagner
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One Water

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August 27th - August 30th, 2018

www.onewaterohio.org

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AUGUST 27-28, 2018

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One Water Ohio is proud to announce they will be hosting an Operations Challenge Competition and National Invitational as part of our August 2018 Technical Conference and Exhibition.

- 12 teams total
- 6 spots held for invitational teams

$50 Team Registration (up to 5 people) includes:

- Breakfast on Monday
- Lunch on Monday
- Welcome Event Monday evening
- Conference Kick-off Breakfast on Tuesday
- Lunch on Tuesday in the Exhibit Hall
- Meet and Greet Event Tuesday evening (Adults Only)

Registration and details at ***www.onewaterohio.org***

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MAINTENANCE EVENT

Wipes, Ragging, FATBERGS… Oh My! A lift station trouble alarm was received via the SCADA system at the Operations Control Center. A crew has been dispatched to troubleshoot the alarm. The teams will need to troubleshoot the electrical control panel, perform routine maintenance on the submersible pump and wet well, and then ultimately restore the pump station back to normal operating condition. While troubleshooting the alarm, it has been decided to replace the impellor of the pump to prevent continued calls do to clogging – all because of wipes. In a first for this event, we will be using a "live" pump and wet well. In the last step of the event the teams will be testing the pump to be sure their work was successful.

PROCESS CONTROL EVENT

This event consists of a written test and computerized process simulator meant to evaluate an operator's knowledge of WRRF process control. The written test is made up of four main sections: short math, multiple choice, extended multiple choice and longer process scenario questions. Point values range from 10 for multiple choice to 200 for the process control scenarios in the written portion. The process simulator will be run by each team on a laptop that will be provided. The process simulation software is provided by Hydromantis and will be the same for each team. Each scenario lists a set of goals and points are awarded for the number of goals achieved.

COLLECTION SYSTEMS EVENT

How long do you think it would take you to cut through an 8" SDR-35 pipe with a hand saw? No battery powered Sawzall® here. 30 seconds . . . how about 45 seconds? Unless you can be around 20, don't even try. The object of the Collections Event is to cut out a 1' – 2' section of broken sewer line from a six foot long pipe, replace it with another unbroken section using two Ferncos®, and install a new saddle connection on the fresh pipe. You have four team members: who cuts what, and when? Choreographed chaos is the best way to describe the event. Complete the whole thing in less than two minutes and you might just be fast enough to be the winners.

SAFETY EVENT

While your WRRF facility crew is working, one of the workers collapses in the bottom of a confined space lift station. It is suspected that he/she has been overcome with an unknown gas or lack of oxygen due to a warn 4" check valve gasket in the station. The in-plant rescue / repair team is immediately called to the scene. Two members of the team will enter the confined space, rescue the downed worker and repair the check valve. Two gate valves will be closed and locked out/ tagged out by the entrants, the check valve flapper and gasket will be replaced and the line put back into service. Tools and equipment will be lowered to them by the attendants and all proper confined space entry protocols will be followed during the rescue and repair completing just another day in the life of a WRRF operator!

AWARDS WILL BE PRESENTED ON TUESDAY AT THE EXHIBITOR RECEPTION.

LABORATORY EVENT

All week long your ammonia levels have been creeping up at the plant effluent… the laboratory tech is on vacation and you have to get to the bottom of this before the boss gets involved. The purpose of this event is to familiarize teams with the definition and concept of alkalinity and how it impacts plant operations. Team members will be required to run straight and diluted samples of influent ammonia and alkalinity to determine basic alkalinity needs of the treatment plant based on these values. Calculations will be performed to determine if there is adequate alkalinity to complete nitrification or if supplemental alkalinity would be needed. Bench sheets will need to be completed properly in addition to proper performance of such techniques as measuring with graduated cylinders, pipetting and analysis of pH, alkalinity and ammonia using instruments provided.

Golf

Monday, August 27, 2018
Foxfire Golf Club

Foursome $320
Individual $80
Hole Sponsor $250
Register at *www.onewaterohio.org*

Networking

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A Chat with President Elect Fred Smith

by Megan Borror, OWEA Staff

THIS OWEA MEMBER IS A PROJECT MANAGER AT CDM SMITH, A MARATHON RUNNER, AND THE ORGANIZATION'S PRESIDENT ELECT

STAFF: How did you get involved in the wastewater industry?

SMITH: Actually, my Dad, Francis Smith, was a water and wastewater engineer. So I knew from a young age I wanted to be an engineer and work in water and wastewater treatment design. In fact, I can remember my first trip to a treatment plant. It was to the City of Kent Water Treatment Plant Expansion Grand Opening. I was anywhere between six and eight. I think it was 1975, but I am not sure.

STAFF: That's when you knew you wanted to stay in the industry?

SMITH: Yes.

STAFF: What do you do for CDM Smith?

SMITH: I am a project manager in charge of water and wastewater treatment projects so I manage several of their larger projects.

STAFF: Have you always been in project management?

SMITH: Since I have been a Professional Engineer, yes. I enjoy the challenges of project management. Project management allows you to work closer with your clients, the operators, and with your team of design engineers.

STAFF: What is your favorite thing about the industry?

SMITH: The people. I enjoy working with the different people from the engineers to the clients to the operators. They are a really hardworking and focused group that take water seriously.

STAFF: Who would you say, of those people, do you look up to?

SMITH: First and foremost is my father, who was probably my biggest mentor. He worked for Burgess and Niple for 40 years... I also got to spend a lot of time with Frank Agin and Dave Zimmer from Burgess and Niple. I would also consider them mentors. Finally, my Uncle, George Smith. He started in construction in Ohio, and now owns a construction company based in Sanford, Florida. His start was constructing water and wastewater treatment plants.

STAFF: More on the OWEA front, how have you enjoyed your path to the presidency thus far?

SMITH: It's been great! I have really enjoyed working with the people on the board and getting to know them better and helping strengthen the organization with a vision and a plan moving forward. I have enjoyed getting to know a lot more members this way and really meet the members. It's a better chance to get out and see them.

STAFF: You took a different path to get on the board, right? You didn't start out with the traditional four years as a delegate role?

SMITH: Correct. I replaced Tyler Linton as a delegate so I was actually only delegate for one year. He served his first three years, then I took over in the last year as delegate. I have only been on the board four years. I am hoping I will have the honor as serving as a WEF delegate in the future, so I can continue serving OWEA and our members.

STAFF: You were on the Southeast Board before that too?

SMITH: Correct, I had gone through all of the offices and came on to the state board when I was Past President for the Southeast Section.

STAFF: What is a goal that you have for your presidency?

SMITH: I would say the creation of a foundation for our scholarship and public outreach efforts. Another one would be facilitating and opening a stronger discussion between the Agricultural Industry and the Wastewater Treatment Industry to help solve Ohio's nutrient puzzle.

STAFF: What is something you want the membership to know about you as their incoming president?

SMITH: That I am very humbled for the chance to serve

them as president for one year. That the members are what makes the OWEA great and the chance to serve them is a great honor.

"When you are passionate about your work, it is much easier to become a good leader."

STAFF: What advice do you have for someone that is looking to get more involved with OWEA?

SMITH: To get involved at the section level and their section events. Get to know the people in the sections because that's where a lot of the action happens. It's where a lot of the events happen, and a lot of networking. Get involved there first and let that bring you to the state level. I think that helps a person find their passion to serve the organization. Where you want to serve, or where you want to spend your time and efforts.

STAFF: What is something that you would like to see in our organization in the next five years?

SMITH: I would like, again, fostering that discussion and having more collaboration with the Agricultural Industry to solve the nutrient puzzle. I would like to see within five years the creation of the foundation to help support and advance our scholarship and public outreach program. I would like to see a continued rise in membership and have more members involved and volunteering for the organization.

STAFF: What is something that you like to do outside of the office?

SMITH: I like to vacation with my family. I love to go to Disney and I am also a marathon runner so I run, and run, and run some more. My wife Susie is a marathon super fan. She goes to my races and chases me around. I frequently see her four of five times during a race. She is very supportive of my time away from her training for marathons. Well, very may be a strong adverb.

STAFF: What was your favorite run?

SMITH: Probably last year's Boston Marathon. It is the pinnacle for marathon runners. It is the race that every marathon runners wants to run. You have to run a qualifying time to just enter the race. Fortunately, the 50 year old male qualifying time is only 3 hours and 30 mins. I ran a 3:24:38 at the Columbus Marathon in 2015 to qualify. Running down Boylston Street, the last 1/2 mile of the race, and seeing my family and a close friend was a moment I will never forget.

STAFF: What advice would you have for someone that wants to advance their position at work or become more of a leader?

SMITH: I would say one of the most important things when you want to get more involved is to get involved in things outside of work like OWEA or other organizations. This gives you a chance to begin to work more with people. To practice your leadership skills, consider becoming a committee chair, a committee co-chair, or a Section Executive Committee member. This will help you develop your leadership skills. You have to find your passion, what you enjoy. When you are passionate about your work, it much easier to become a good leader. So find your passion, and let it lead you to where you want to go.

STAFF: What do you want someone outside of our industry to know about wastewater?

SMITH: What most people really don't understand is the dedication of the public servants that maintain and operate their wastewater treatment plants. They keep the wastewater systems working and give everyone the ability to flush their toilets every day. Not many people think about that when they go to flush the toilet or turn on the shower or the dishwasher. Behind these daily conveniences are a lot of wonderful men and women who work quietly and diligently to make our water clean and our environment better and safer for everyone.

Fireside Chats - Looking for Recommendations!

The Fireside Chats is a series for the Buckeye Bulletin focusing on leaders in the industry. The Question and Answer Feature will dig into their leadership role and how it has had an impact on the industry. We will be focusing on leaders from OWEA to Plant Superintendents and every leader in between. Please nominate your boss, coworker, or someone you admire for a future article by emailing Megan Borror at:

meganborror@ohiowea.org.

A History of Pollution and Pollution Controls in the Scioto River with Corresponding Changes in Water Quality and Biological Integrity

by Chris O. Yoder, Research Director, Midwest Biodiversity Institute[1]

Background

This article describes the results of a 37 year (1979-2015) series of biological and water quality assessments in the middle Scioto River, a 40 mile reach of the Scioto River mainstem from Columbus to Circleville, coupled with historical information to document the recovery of the aquatic biota from severely polluted conditions that existed for more than 150 years. The results show remarkable improvements in biological and water quality conditions in response to water pollution controls by the City of Columbus in the 1970s and 1980s. Historical information before that time period include the observations of pioneer naturalists to the first treatises of fishes and other aquatic biota in Franklin Co. and Ohio at the turn of the 19th century (Williamson and Osburn 1898; Osburn 1901) in the Ohio State University Museum of Biodiversity (OSUMB) fish collections database.

The Scioto River basin drains 6517 mi.^{2} and is the second largest contained entirely within Ohio (16% of all land). The mainstem is 231 mi. in length (Ohio DNR 1960) originating in north central Ohio in Auglaize Co. and entering the Ohio River at Portsmouth, OH in Scioto Co. It has the longest reach of unimpounded free-flowing riverine habitat in Ohio being open from the Greenlawn Dam in Columbus, OH to the confluence with the Ohio River, a distance of 129.5 mi. The Scioto River valley was originally home to several Native American cultures and the name Scioto is derived from the Wyandot word sk•n•·t•' (deer). European settlement after the American Revolution in the late 1700s and early 1800s displaced the native populations. Of the 11 major cities that now border the mainstem, Columbus is the largest in terms of population. When Columbus was chartered in 1834 the population was 3500 with rapid growth after 1900 through the latter half of the 20th century reaching over 2 million in 2015.

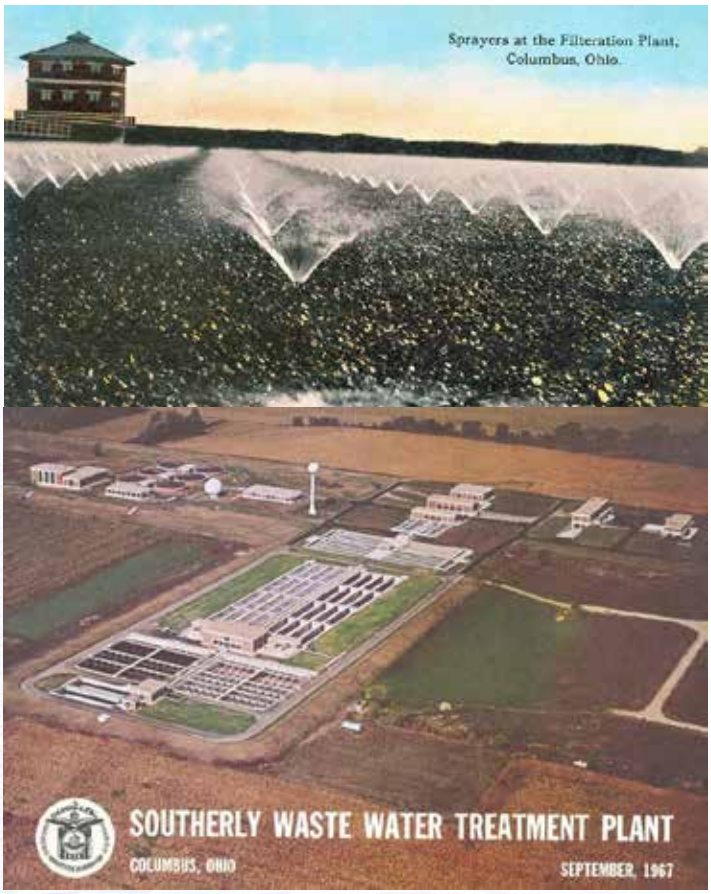

Figure 1. Sprayers at the first Columbus sewage treatment works in 1904 (upper panel) and the newly constructed Columbus Southerly wastewater treatment plant (WWTP; lower panel) in 1967.

Pollution History of the Scioto River

Official documentation of water pollution in the Scioto River dates to 1886 by the Ohio State Board of Health (Sharp 1886) serious enough to elicit numerous complaints by the public in nearly every city along the mainstem. Wastewater from municipalities and industries were discharged without treatment during that time period. Leighton (1903) commented ". . . The river is little more than a dumping ground for refuse and its misuse affords a good example of the wanton destruction of a valuable resource . . .". The description of polluted conditions by Trautman (1933, 1977, 1981) tracks that of Sharp and Leighton and includes pollution caused by extensive changes to the landscape beginning with the deforestation of Ohio in the latter 19th century and conversion to agricultural and urban land uses into the 20th century. Despite the inherent richness of the pre-settlement fish fauna, the Scioto River downstream from Columbus was so polluted in the summer of 1897 that only a "few species of fish" could be obtained by seining (Williamson and Osburn 1898). These changes intensified in the latter half of the 20th century which resulted in further changes to the hydrological and chemical aspects of water quality. The accumulation of these changes with a rapidly increasing population dramatically changed the fish fauna throughout Ohio by reducing or eliminating altogether many species of fish from entire regions of the state (Trautman 1981). Trautman (1977) observed that

the general littering and exploitation of natural resources had reached its climax in the 1960s and that such polluted conditions could no longer be ignored.

Water Pollution Control in the 20th Century: Incremental Progress

Sharp (1886) and Leighton (1903) both referenced that the pollution observed in the 1800s was being addressed by the Ohio State Board of Health, which would constitute one of the earliest references to governmental intervention in water pollution. A Federal Water Pollution Control Act (FWPCA) was not forthcoming until 1948, and as amended in 1956 and 1968, it contributed little to real pollution reductions. In the intervening time frame new studies of water pollution advanced the science incrementally. The U.S. Public Health Service A Study of the Pollution and Natural Purification of the Scioto River (Kehr et al. 1941) focused on oxygen demanding wastes discharged by cities along the mainstem. This followed the landmark study by Ellis (1937) of water pollution and its effects on aquatic biota throughout the U.S. which also helped focus on the need to limit discharges of polluting substances. The Ohio Department of Health (ODH, 1961) produced one of the first studies on discharges of wastewater to the Scioto River using an early water quality model, an important prerequisite for limiting pollution at the source. Still, meaningful actions to reduce water pollution to levels that were needed to restore degraded aquatic assemblages were not forthcoming. Finally, the 1972 FWPCA amendments (aka the Clean Water Act, CWA) forced such actions via NPDES permits[2] which have since been issued to all major point source discharges of wastewater to the Scioto River by the Ohio Environmental Protection Agency (Ohio EPA).

The first public sewer in Columbus was constructed in 1841 and in 1872 the first "waterworks" came into service for delivering potable water to homes and businesses and for building and maintaining sanitary sewers[3]. By 1880 nearly 2.2 million gallons/day (MGD) of water was supplied with the majority collected by sewers and discharged without treatment to nearby receiving streams all of which were tributaries to the Scioto River. The first treatment of sewage was proposed in 1898, but was rejected by the Ohio Department of Health (ODH) as inadequate to resolve the problems posed by raw sewage. The first treatment works consisting of septic tanks and spray filtration was initiated in 1908 (Figure 1). Known first as the "Improved Sewerage Works", what later became the Jackson Pike WWTP was constructed in 1908 as the first dedicated sewage treatment facility located 5 mi. from downtown Columbus. It transitioned from primary to secondary treatment in the late 1950s with flows of nearly 82 MGD. In 1967, the Southerly treatment plant (Figure 1) was constructed to handle the rapid growth in sewage flows, discharging to the mainstem 12 miles downstream from Columbus. Over that time period, population growth caused sewage flows to exceed the capacity of the treatment system such that a nearly continual process of latent treatment upgrades occurred. Biological degradation occurred over a distance of 60-75 miles downstream and fish kills of more than 1,000 to 10,000 fish were common and one kill of more than 300,000 fish occurred in 1967 (FWQA 1970). Bypasses of partially treated and raw sewage were commonplace and at Southerly they comprised nearly 80 % of the BOD5 loadings in the late 1970s. It was during this time period that Trautman (1977) described visual evidence of gross pollution below Columbus in the form of "globs of suds" that were more than 5 feet high that completely enveloped the boat he was using to navigate the Scioto mainstem.

FWPCA of 1972 – "The Clean Water Act"

Spurred on by the grossly polluted condition of rivers, streams, and lakes the passage of the FWPCA amendments of 1972 by Congress was the first federal legislation that required permits that limited the amount of pollution that could be discharged to waters of the U.S. NPDES[4] permits were eventually issued to discharges of municipal and industrial wastewater including the two

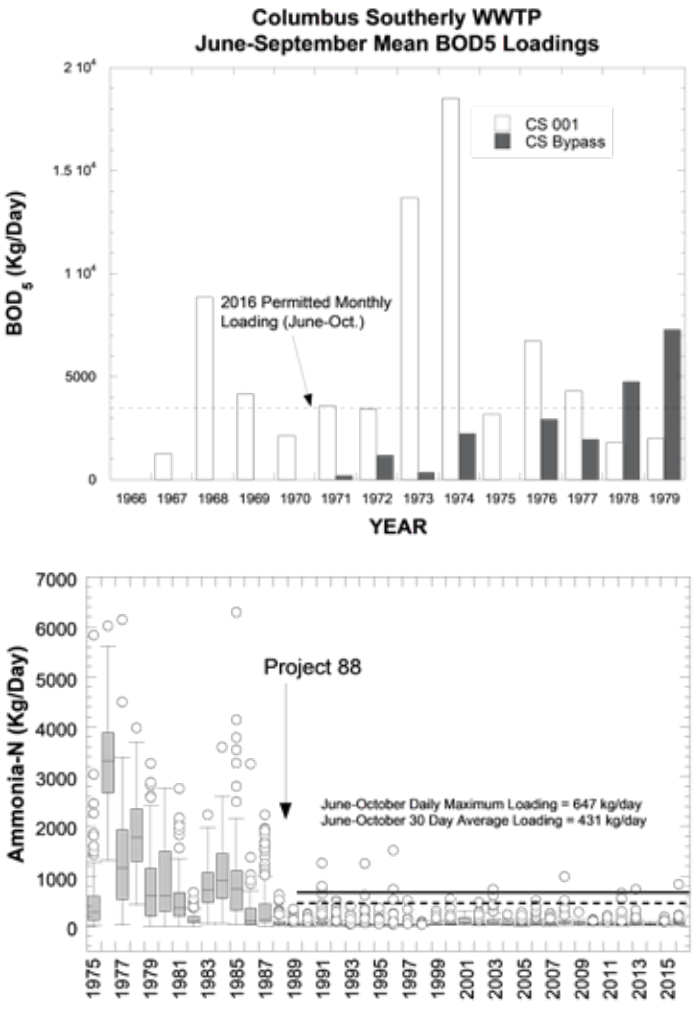

Figure 2. Loadings of BOD5 (Kg/day) discharged by the Columbus Southerly WWTP 1967-1979 (upper panel) from the 001 outfall (open bars) and as raw or untreated bypasses (filled bars) and loadings of NH3-N (Kg/day) discharged July 1-September 30 during 1975-2015 (lower panel). The most recent NPDES permit limitations are shown on each.

City of Columbus facilities. It was the first to state the principal objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." It also set forth seven national policies including Section 101[a][2] that stated . . . "wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water . . ." which promoted the concept of designated uses of water and criteria to protect those uses.

Water Quality Standards

Water Quality Standards (WQS) consist of two parts, a designated use and criteria to support that use. "Uses" include the value of water to the society as a resource for water supply, recreation, and aquatic life. "Criteria" are chemical, physical, and biological properties and attributes of water that support the quality intended by the designated uses. Criteria are also used to determine the amount of pollution that a waterbody may receive and fully support the designated uses. WQS were initially adopted by Ohio EPA in 1974 and underwent major revisions in 1978, 1985, and 1990 that essentially define the WQS of today. For aquatic life, Ohio uses a concept of habitat for aquatic life segregated into tiers depending on the level of biological quality that a river or stream can potentially support. Termed "tiered aquatic life uses" (TALUs) the concept was first adopted in 1978 with chemical criteria only and the addition of biological criteria following in 1990. The implementation of TALUs is dependent on information about the aquatic biota and habitat of a stream or river, thus it is dependent on data and information provided by a systematic monitoring and assessment program.

Water Quality Based Permitting

Water quality based permitting involves the development of limitations for discharges of pollution based on meeting instream WQS under critical conditions. While the 1972 CWA specified technology based limits that all discharges must meet, it was understood that technology based limitations may not be sufficient meet WQS in all rivers and streams. Such was the case with the City of Columbus WWTPs which can dominate the flow of the Scioto River during critical periods. Wasteload allocations were developed that essentially achieved a mass balance between the amount of pollution a receiving river could receive and not exceed instream criteria for selected chemical constituents such as dissolved oxygen (D.O.) and ammonia-nitrogen (NH3-N). However, this meant that additional removal of oxygen demanding wastes and NH3-N had to be accomplished which in turn raised the costs and efficiencies of wastewater treatment. When water quality based permitting was first proposed, serious doubts were raised about achieving wastewater treatment efficiency beyond the secondary treatment technology standard. This concern was compounded further by skepticism about the attainability of CWA mandated WQS under the extant philosophy of dilution

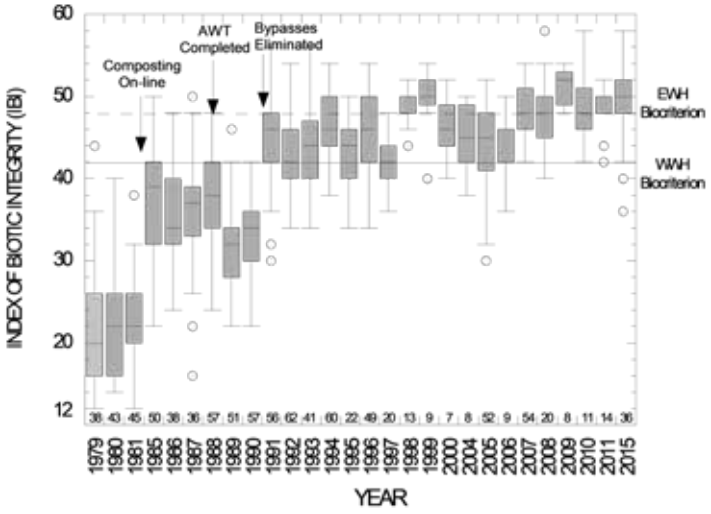

Figure 3. Box-and-whisker plot of the Ohio Index of Biotic Integrity (IBI) by year of sampling between 1979 and 2015 in the middle Scioto River mainstem between the Greenlawn Dam and Circleville, OH by Ohio EPA and MBI.

oriented thinking.

Attainment of WQS and Full Biological Restoration – It Almost Didn't Happen

As part of the 1978 Ohio WQS revisions, discharges to many segments of Ohio rivers and streams could not meet newly adopted water quality criteria without additional treatment and certainly not by the 1977 compliance deadline (later extended to 1983) set forth by the 1972 CWA. To preclude the impending conflict between the existing levels of wastewater discharge and the new water quality criteria, a Limited Warmwater Habitat (LWH) use designation was added to the suite of Warmwater Habitat Uses (e.g., WWH minimally met the CWA) that comprised the first set of TALUs for Ohio rivers and streams. The water quality criteria for each LWH segment was varied to accommodate the existing levels of wastewater discharges with all being less stringent than the WWH criteria. U.S. EPA, acting in their oversight role over the states, disapproved the LWH designations as being incompatible with the intent of the CWA and placed Ohio on a schedule to upgrade each segment to WWH at a minimum. This event and the funding made available via the construction grants program eventually resulted in water quality based permits being issued for all major WWTPs including the Jackson Pike and Southerly WWTPs. U.S. EPA issued the National Municipal Policy and Implementation in 1979 which required that major WWTPs meet water quality based limitations by July 1, 1988.

"Project 88"

What became known as "Project 88" was the City of Columbus response to meeting the water quality based requirements of the Ohio WQS and the intent of the National Municipal Policy. Project 88 was a $208 million

wastewater treatment plant expansion plan that would become the largest capital improvement program in the history of Columbus. The eventual success of Project 88 was evident in the reduction in loadings of common wastewater constituents such as 5-day biochemical oxygen demand (BOD5), suspended solids, and NH3-N (Figure 2). The reductions in NH3-N loadings resulted in lower instream concentrations and reduced ammonia toxicity (Figure 2) which was also paralleled by improved instream D.O. levels in response to reductions in BOD5 loadings. In terms of the primary "currency" of the NPDES program, water quality based permitting and the completion of Project 88 were each indicators of success. However, questions remained about the eventual showing of that success in terms of the recovery of the resident biota and meeting the biological criteria components of the Ohio WQS.

Biological Restoration – The Best Evidence of Success

The increase in water quality monitoring spurred by the rapid proliferation of government agencies tasked with environmental protection and management in the early 1970s eventually included biological monitoring of aquatic assemblages such as macroinvertebrates and fish. While water quality monitoring had previously been focused on selected chemical parameters, the biological integrity and protection and propagation of fish, shellfish, and wildlife provisions[5] of the 1972 CWA spurred an increased emphasis on biological monitoring and assessment (Davis and Simon 1995). Ohio EPA initiated a statewide program of intensive mainstem river and watershed surveys of fish and macroinvertebrate assemblages in combination with chemical/physical monitoring in 1979 (Yoder and Rankin 1995a, 1998; Ohio EPA 2011). The mainstem of the Scioto River between Columbus and Circleville was monitored annually beginning in 1979 with the goal of providing detailed information about year-to-year variations in the biological assemblages and about the need for and responses to increasingly stringent controls for wastewater discharges, especially addressing the serious doubts about meeting aquatic life restoration goals in an effluent dominated river. Providing badly needed clarity for these issues and the close proximity to the Ohio EPA facilities in Columbus made the middle Scioto River mainstem an ideal place for long term monitoring. The Ohio EPA program was designed at the outset to provide biological end points as the measures of pollution control success thus the monitoring and assessment program was fully integrated with the WQS and permitting programs (Yoder and Rankin 1998).

Early Biological Assessments of the Scioto River

The earliest biological assessments of the Scioto River in the 1960s by Olive and Smith (1975) and the FWPCA in 1965-68 (FWQA 1970) were focused on macroinvertebrates sampled with qualitative methods and their pioneering use as indexes of water quality. Each study concluded that ". . . the primary cause of water quality degradation was the excessive amount of oxygen demanding material introduced by municipalities and industries . . . which was particularly true of that portion of the Scioto River downstream from Columbus where the benthos reflected significant degradation of the Scioto River for a distance of 60-75 miles (97-120 km)." During that period bypasses of untreated or partially treated sewage were commonplace as the treatment plants did not yet have the capacity to treat all sewage flows (Yoder et al. 1981). The initial Ohio EPA biological assessments added to three decades of a singular focus on chemical measures of the quality of receiving rivers that were focused solely on oxygen demanding wastes as the awareness and technology to measure and assess the effects of toxicants lagged in their development.

While the awareness of water pollution raised by these early assessments helped spur water pollution controls, alone they were inadequate to understand and address the needs for fully restoring aquatic assemblages to levels expected by the 1972 CWA. The Ohio WQS eventually filled this void by adding an initial list of toxic chemical parameters in 1978 and expanding it in both coverage and scientific adequacy by 1990. The advent of biological criteria consisting of direct measures of the fish and macroinvertebrate assemblages (Ohio EPA 1987a,b, 1989a,b; 2015) and a process for determining the attainment and attainability of tiered aquatic life uses (Yoder 1995; Yoder and Rankin 1995a, 1998) filled gaps left by chemical assessments and criteria alone. Taken together the integration of WQS and monitoring and assessment provided a firmer basis for requiring advanced wastewater treatment via NPDES permitting resulting in the eventual attainment of CWA goals in the Scioto River mainstem.

Scioto River Fish Assemblage: 1979-2015

The historical record in Trautman (1981) and the Ohio EPA/MBI and OSUMB databases of 1979-2015 reveals the Scioto River to have one of the most species rich fish assemblages of any river in Ohio. Trautman (1981) lists 100 fish species in the middle Scioto River study area and with 8 new species added by Ohio EPA and MBI during 1979-2015, the current total is 108 species recorded. The effect of the Greenlawn Dam located in south Columbus as the downstream-most barrier to upstream fish movement is noteworthy in that 26 native fish species that occur downstream from the dam were not recorded upstream during 1979-2015.

The series of biological surveys in the Scioto River during 1979-2015 revealed poor biological conditions through 1981 followed by increments of improvement that corresponded to intermediate steps taken to reduce the bypassing of untreated sewage. Further improvements corresponded to the installation of advance wastewater treatment by Project 88 and substantially reduced loadings and improved water quality. The fish Index of Biotic Integrity (IBI), one of the three indices that comprise the Ohio biocriteria, exemplifies these improvements with full attainment of the Warmwater Habitat aquatic life use

following shortly after in the early 1990s (Figure 3). The results of the 2015 survey by MBI showed attainment of the Exceptional Warmwater Habitat biocriteria by both the fish and macroinvertebrates downstream from Columbus Southerly. An analysis of changes in the occurrence of individual fish species during 1979-2015 show that 69 species exhibited increases while only five species on one hybrid showed significant declines. Consistent with the IBI, the majority of the increasing species are classified as intolerant or moderately intolerant to pollution while to declining species are classified as highly or moderately tolerant. Some of the increased species have used the Scioto River mainstem as an avenue of ingress to tributaries from which they have been absent for more than 100 years. Among the longer lived species, individual fish have markedly increased in size through the same time period.

Conclusions and Lesson Learned

All of the fish assemblage indicators showed clear trends of improvement through time that correspond to the decreased loadings of sewage pollution discharged the Columbus WWTPs after 1988. Both the fish and macroinvertebrate assemblage indices showed a steady improvement some of which have exceeded the minimum expectations of CWA mandated WQS and effluent limitations. Species level analyses likewise showed an increase in occurrence of formerly extirpated or reduced species that comprise nearly two-thirds of the fish fauna. In turn, only five tolerant species and one hybrid showed significant declines. All of these indicators of improvement coincide with the reduction of water pollution from Columbus wastewater treatment plants and the sewer system in general and commensurate improvement in instream water quality. The improved biological quality has provided for better recreational opportunities including fishing, hunting, and canoeing as evidenced by the addition of liveries and public access sites.

Perhaps the most important lesson learned is that the CWA mandated reductions in loadings of sewage pollutants from the Columbus sewer system via water quality based permitting resulted in water quality that was good enough to allow for a biological recovery that meets and in some places exceeds the goals of the CWA. This happened despite serious doubts about the treatability of sewage and the attainability of then poorly understood biological goals of the CWA when they were first introduced in the 1970s. From the first reported evidence of serious water pollution in the Scioto River dating to the 1880s to the installation and operation of advanced wastewater treatment after 1988, it took more than a century before sufficient actions to reduce pollution took place. Part of the delay was due to the perception of the costs of wastewater treatment, but also was largely due to the almost constant pursuit of the engineering technology that was actually required to consistently and reliably reduce pollutants to the levels necessary to meet CWA goals. These achievements did not come easily nor without a significant expenditure of public funds at the federal, state, and local levels. The serious doubts about the efficacy of advanced wastewater treatment and the attainability of Clean Water Act mandated WQS in an effluent dominated river first surfaced in the form designating the Scioto River as a Limited Warmwater Habitat (LWH) in 1978 that had lower water quality goals than that prescribed by the CWA, an action that was eventually disapproved by U.S. EPA illustrating the important role of federal agency oversight early in the process. Had the LWH designation not been reversed the improvements witnessed since 1988 would probably not have occurred, an illustration of the critical importance of getting the WQS "right" before developing regulatory or abatement actions. Hopefully this is an important example of why not giving up on difficult to attain water quality goals will eventually produce tangible environmental results.

This remarkable story of success is the result of the cumulative efforts by the many individuals at the federal, state, local, and private levels who labored through the difficulties of navigating the challenges of setting WQS, water quality based permitting, and achieving advanced wastewater treatment in an economically sustainable manner. It would be a challenge to name them all and some probably do not realize the important role they played in this success story – the real credit goes to those unnamed persons who worked in the City, County, State, Federal, and private domains to make all of this a reality.

Footnotes

[1]Midwest Biodiversity Institute, P.O. Box 21561, Columbus, OH 43221-0561

[2]NPDES – National Pollution Discharge Elimination System (NPDES): a CWA provision that prohibits the discharge of pollutants into waters of the U.S. without a permit issued by U.S. EPA or a delegated state.

[3]https://www.columbus.gov/utilities/about/Historical-Milestones-for-Wastewater-Treatment-in-Columbus/.

[4]NPDES – National Pollution Discharge Elimination System (NPDES) required by Section 402 of the FWPCA.

[5] Section 101(a) for biological integrity and 101(a)(2) for protection and propagation provisions.

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Resources abound for understanding intelligent water systems

by Corey Williams and Lisa McFadden

From wef hq Leading-edge updates from the Water Environment Federation

Intelligent water systems (IWS) are built to link together sensors, control systems, information management, and communications systems. They emphasize the water sector's opportunity to take advantage of advanced technologies and dramatically shift management decision making.

While there are varying ideas of what an IWS may be, there's not one singular definition. Some see the concept as a small piece to help analyze and process both historical and real-time data; others see this integration as an opportunity to overhaul their entire decision making or performance management approach.

How far each utility or facility chooses to take the IWS concept will vary, but many water sector organizations have produced resources to help guide these choices.

Key mechanisms

The Water Science & Engineering Center within the Water Environment Federation issued a technical report that identifies the key mechanisms needed for utilities to start and run a successful intelligent water systems program. Titled, Intelligent Water Systems: The Path to a Smart Utility, the report explores the following 10 topics.

- **Data prioritization** — First and foremost, utilities must decide what data is needed and how the data collected will fit into the ultimate strategy and goal of the utility. Data should not be collected for the sake of collection; collecting data takes time, staff, and money. The right data, at the right time, needs to be captured. This critical data must be accurate, complete, and aligned with business and operational management requirements.
- **Data governance** — Prior to data capture, system managers need to formulate a data governance approach. This includes identifying data stewardship, storage and access rights, and archiving and deletion protocols. For example, by deciding these responsibilities ahead of time, data processing issues can be ironed out. Developing a data management and governance plan also can help reveal gaps in the system.
- **Data capture** — This aspect is probably the most notable component of the process. With all the new and emerging technologies, utilities have vast options for how to capture data and how much to capture. With many new technologies promoting real-time data capture, it is important to note the difference between real-time data and data frequency. While real-time data deals with how quickly the user receives measured data, data frequency refers to how often the data is gathered.
- **Data validation** — With speed and an abundance of tools choices, data validation becomes an important component. While collecting data is easy, the goal is to be confident in the data being receiving.
- **Data processing, storage, and access** — Organize your data! Historically, data organization is sometimes forgotten. With newer platforms and easier accessibility, the storage, query, and transfer of data is now more manageable than ever. Data organization includes the formulation and upkeep of database table structures that fit the needs for analytics (as distinct from the database table structures for transaction processing).
- **Data integration** — By prioritizing and organizing data, users can ore easily integrate this data into existing systems and processes throughout the utility and networks. Remembering the prioritization and overall purpose of the data can help ensure they are being applied in a useful way.
- **Data analytics** — With Big Data come big opportunities. By incorporating data analytics, utilities can transform what's been collected into information. Utilities can choose from many types of data analytics tools. The ultimate performance goal or outcome helps choose the right platform or tools to perform the analytics.
- **Business intelligence and decision support** — With the information provided, utility

Figure 1. Most desired benefits of intelligent water systems

personnel can make operational and business decisions. By incorporating the information provided from the data analytics into modeling, optimization, and even predictive analysis tools, utilities can look at many different scenarios and find the best solution. By utilizing IWS, water sector agencies can get a big picture view, with the goal of making an informed decision. These decision support tools are not just for big capital improvement projects (CIP), but also can be applied to real-time situations and scenarios, through dashboards and cloud-based operations.

- **Knowledge sharing** — Once useful information has been attained, it can be integrated throughout the utility's system and utilized in cloud based systems, allowing the information to be centralized and used across all utility functional groups. By sharing information throughout a utility, data silos fall away. This enables all stakeholders to incorporate the same information into their decision-making processes. Further, data sharing can encourage its use for beneficial purposes that might not have been intended originally.
- **Performance reporting and visualization** — IWS is not always just for predictive and decision-making tools, it also can show how efficiently a water sector agency is operating. Coupling tools for performance data and visualization—such as interactive mapping or GIS, dashboards, or chart pop-ups — can provide useful insight into areasin need of improvement. Once performance gaps are identified via these visualization methods, water sector agencies can use optimization tools to improve operations, reduce energy usage, lower costs, or develop adaptive master planning and CIP. IWS provides the data and information that utilities need to take a step back and look at where improvements may be needed.

IWS drivers

Similar to the concepts identified by WEF, the National Association of Clean Water Agencies (NACWA; Washington, D.C.) identified several IWS drivers. NACWA published these findings in the white paper, Envisioning The Digital Utility Of The Future. The paper lists eight drivers for utilities, which include

- reduce operational costs,
- manage and mitigate risks,
- enhance the customer experience,
- improve financial execution,
- optimize asset performance and uncover hidden value,
- leverage existing communications and computing platforms,
- maximize the engagement and efficiency of employees, and
- integrate water quality, policy, and performance.

Wanted results and simple framework

At the 2018 AWWA/WEF Utility Management Conference (UMC), participants in the workshop, Demystifying the "SMART" Utility, shared their opinions on where IWS can help most. Fully two-thirds of the attendees believed cost reduction and asset optimization to be the most important result of IWS implementation. Figure 1 (p. 84) shows the full results of their voting.

The Smart Water Networks Forum (SWAN) is a non-profit organization that seeks to be the leading global hub for the smart water sector. This group, a WEF partner, seeks to accelerate the awareness and adoption of data-driven technologies in water and wastewater networks worldwide. To help communicate the critical components of IWS, SWAN has developed a five-level framework to clearly define the components.

- The Physical level comes first. This includes components such as its pipes, pumps, valves, reservoirs, and tanks. As physical water infrastructure only, without data collection or analysis, this layer is often not considered "smart."
- The Sensing and Control level includes the initial components enabling IWS. These include sensors, meters, pressure-reducing valves (PRV), automatic meter reading (AMR) and advanced metering infrastructure (AMI).
- The Collection and Communication level are technologies that enable storage and transmission of data. Examples include fixed cable network, radio, cellular, and Wi-Fi.
- Supervisory control and data acquisition (SCADA) system, cybersecurity, customer information systems (CIS) and geographic information system (GIS) are prime examples of the Data Management and Display level.
- Data Fusion and Analysis is the ultimate IWS level. These technologies perform data analytics and modelling to help operators by assessing effects of changes, responding to them in real-time, optimizing operations, and planning for enhanced decision-making.

Based on these five levels, the same UMC workshop participants who identified cost savings and asset optimization as primary drivers, claimed that the largest

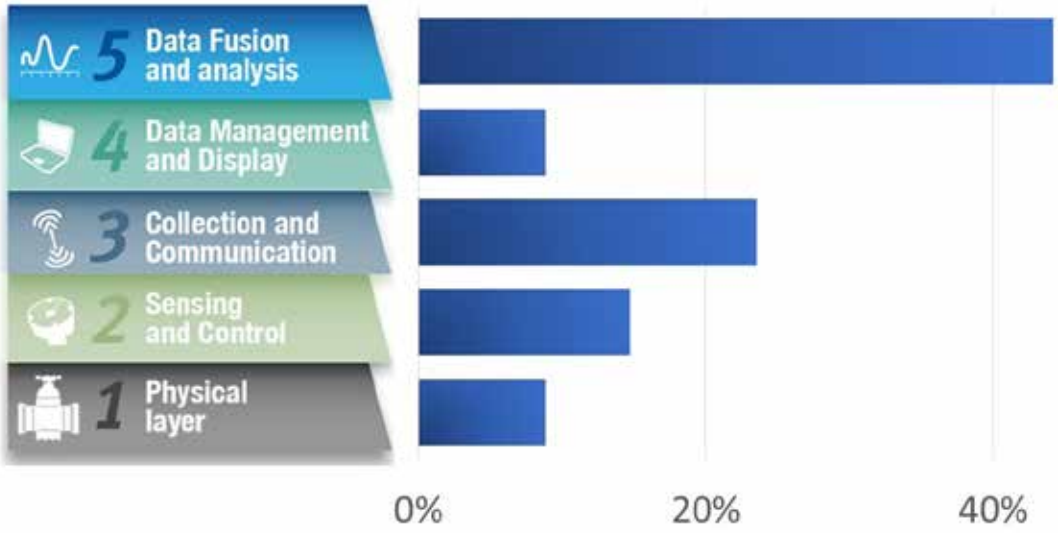

Figure 2. Largest resource needs for intelligent water system implementation

resource gap existed at the Data Fusion and Analysis and Collection and Communications levels. The implications are that, in general, water and wastewater utilities appear to have SCADA (level 4) for data management and display a well as instrumentation and sensors (level 2) in place. However, the need to communicate the data from the sensors to management platforms and the lack of ability to perform analysis for enhanced decision-making are the areas of greatest needs to take full advantage of IWS. Figure 2 (p. 85) shows the workshop participants full opinions on the needs for IWS implementation.

Changing workforce and skills

With the implementation of IWS, utilities will start to see a rise in the need for some new skill sets, including data science and data engineering. While current utility personnel may hone some of these skills, these are things that the utility engineer of the future will need to possess. It is important to make students aware of resources that exist outside the "typical" water engineering realm, and ths is evident in the large mix of water personnel we are starting to see today.

Corey Williams is CEO of Optimatics (Overland Park, Kan.) and chair of the Interoperability Task Force for WEF's Intelligent Water Technology Committee, and Lisa McFadden is director of Integrated Technical Programs and associate director of the Water Science & Engineering Center at the Water Environment Federation (Alexandria, Va.).

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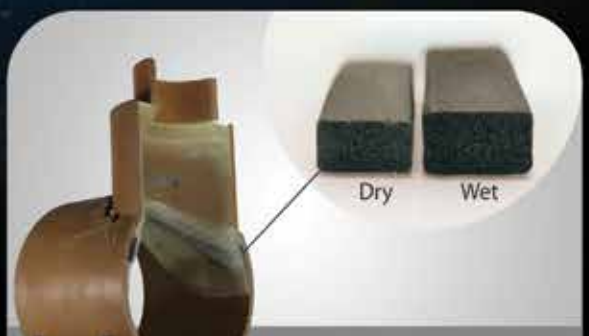

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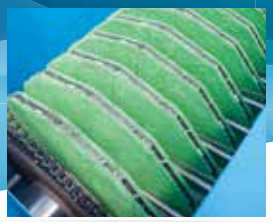

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U.S. states, EPA coordinating on best approaches to nutrients permitting

ACWA, WEF join with U.S. EPA to host seven workshops

by Mark Patrick McGuire and Katie Foreman

From wef hq Leading-edge updates from the Water Environment Federation

In early December 2017, representatives from 24 state clean water programs involved in managing nutrient pollution as well as headquarters and regional staff from the U.S. Environmental Protection Agency (EPA) met for 3 days to learn, discuss, and confer on a broad range of nutrients permitting issues. Presentation topics included nutrient removal technologies, nutrients reduction strategies, variances, water quality trading, watershed-based and adaptive management approaches, integrated planning, and more. Participants also had the opportunity to work in small groups on three specific issues:

- nutrient removal technology implementation at water resource recovery facilities (WRRFs),
- overcoming impediments to permitting for nutrients, and
- integrating total maximum daily loads (TMDLs) with permits.

The workshop, held in Boise, Idaho, was the first in a series of seven meetings to be held between 2017 and 2021 by the Association of Clean Water Administrators (ACWA; Washington, D.C.), with support from the Water Environment Federation (WEF; Alexandria, Va.), as part of a cooperative agreement with EPA. The workshops are intended to assist with achieving several objectives and environmental outcomes by bringing together state, tribal, territorial, federal, and other stakeholders. The goals are to identify challenges and barriers to nutrient permitting program implementation, highlight opportunities for program improvement and enhancement, showcase innovations and achievements, and identify and attempt to solve the most intractable issues.

States employ various approaches to nutrient permitting

A major takeaway from the Boise workshop was that states manage nutrient pollution through permitting in myriad ways. For example, Montana, Iowa, and North Carolina approach nutrients permitting via numeric nutrient criteria, performance-based actions, and water quality trading, respectively.

Montana. Montana adopted numeric nutrient criteria in 2014 to combat nutrient pollution. The development process for the criteria included three components:

- identifying geographic zones for specific criteria,
- understanding the cause-effect relationships between nutrients and beneficial uses, and
- characterizing water quality for reference sites.

Because nutrient concentrations vary naturally, Montana tested different geospatial frames and reference sites for nutrient concentration variation. To develop permit limits based on the criteria, Montana used EPA's 1991 Technical Support Document for Water Quality-based Toxics Control. Ongoing work in Montana will lead to other large-river nutrient standards and additional site-specific wadable stream standards.

Iowa. Iowa employs a nutrient reduction strategy to combat nutrient pollution. In Iowa, numeric nutrient criteria development presents significant challenges. Therefore, in lieu of adopting numeric nutrient criteria, Iowa hopes to achieve nutrient load reductions through performance-based actions. Working closely with the regulated community to adopt performance-based discharge limits, Iowa establishes limits based on the effect of the pollutant in the water and the feasibility and reasonableness of treating the pollutant. Iowa focuses on major and minor municipal WRRFs and industries that treat more than 3.8 million L/d (1 mgd). Under this approach, there has been considerable progress in nutrient pollution reductions at point sources throughout the state.

North Carolina. North Carolina uses water quality trading to combat nutrient pollution. North Carolina implements nutrient trading programs in specific watersheds where impairments have been identified. In these watersheds, point sources have a collective nutrient allocation ("bubble") permit. Pursuant to this joint compliance approach, allocation is sold or leased among these facilities through an independently-operated compliance association. So long as the collective cap is met, individual nutrient limits are not enforced.

States and EPA offer solutions to complex issues

At the Boise workshop, participants focused on the three issues mentioned above (technology implementation, permitting impediments, and TMDL integration).

Technology implementation. Participants named some of the significant barriers to technology integration as affordability, resource constraints, operator expertise, and political will. They also identified some solutions, including targeted technical training and greater public education on the need for such technologies at WRRFs.

Permitting impediments. Regarding impediments to permitting, participants identified affordability, lack of

data, and resource constraints as challenges. One solution identified to mitigate these problems included changing the 5-year National Pollutant Discharge Elimination System (NPDES) permit cycle to 10 years. Other solutions included increasing flexibilities for states, implementing stronger regulations for nonpoint sources, integrated planning to identify issues and priorities for regulators and the regulated community, increased support and technical training, and public education.

TMDL integration. In the final session on integrating nutrients TMDLs with permits, participant attendees acknowledged that communication gaps are a major barrier to adequate integration. They identified the existence of communication gaps between regulators and stakeholders and with permitting and TMDL staff. Many participants described better communication among the various interested parties as an important goal for resolving this challenge.

Future meetings

ACWA and WEF plan to tackle these three issues and more in greater detail at the next six nutrients permitting workshops. These workshops provide states and EPA, as coregulators, the opportunity to identify and seek solutions for the diverse problems associated with nutrient pollution. In 2018, workshops are planned for summer and autumn; visit www.acwa-us.org for more details on these events.

Mark Patrick McGuire is an environmental program manager and Katie Foreman is an environmental program associate at the Association of Clean Water Administrators (Washington, D.C.).

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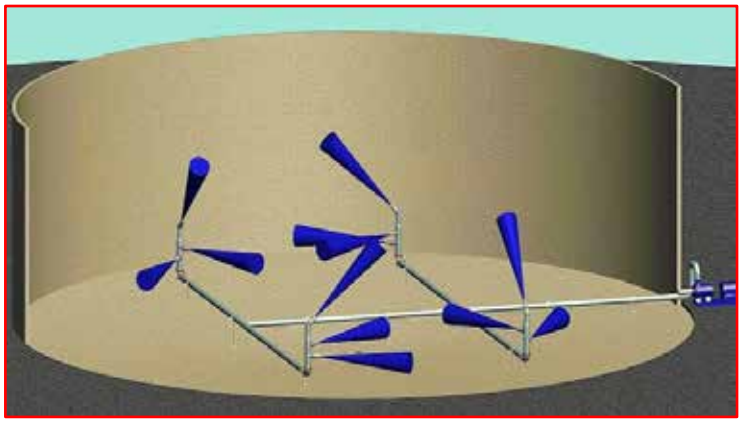

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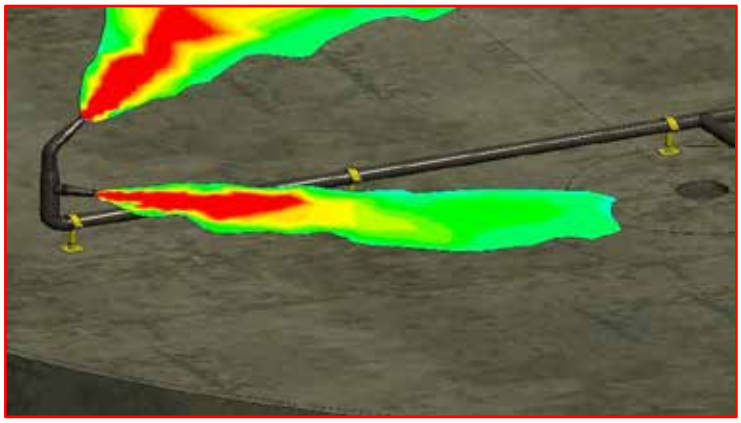

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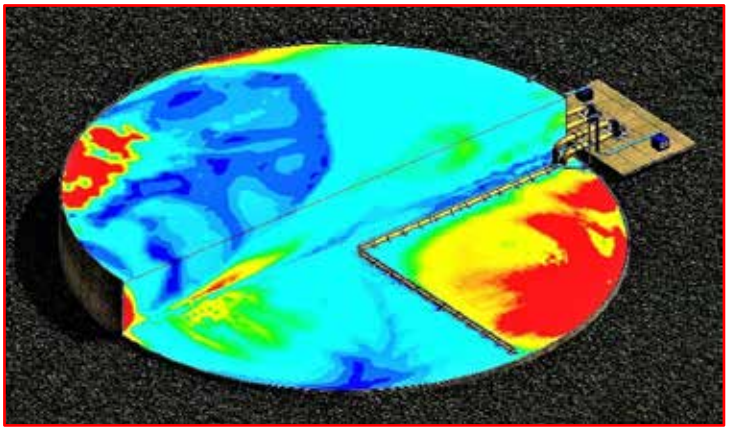

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