Ohio Water Environment Association
Volume 92:1 | Issue 1 2019

Buckeye Bulletin

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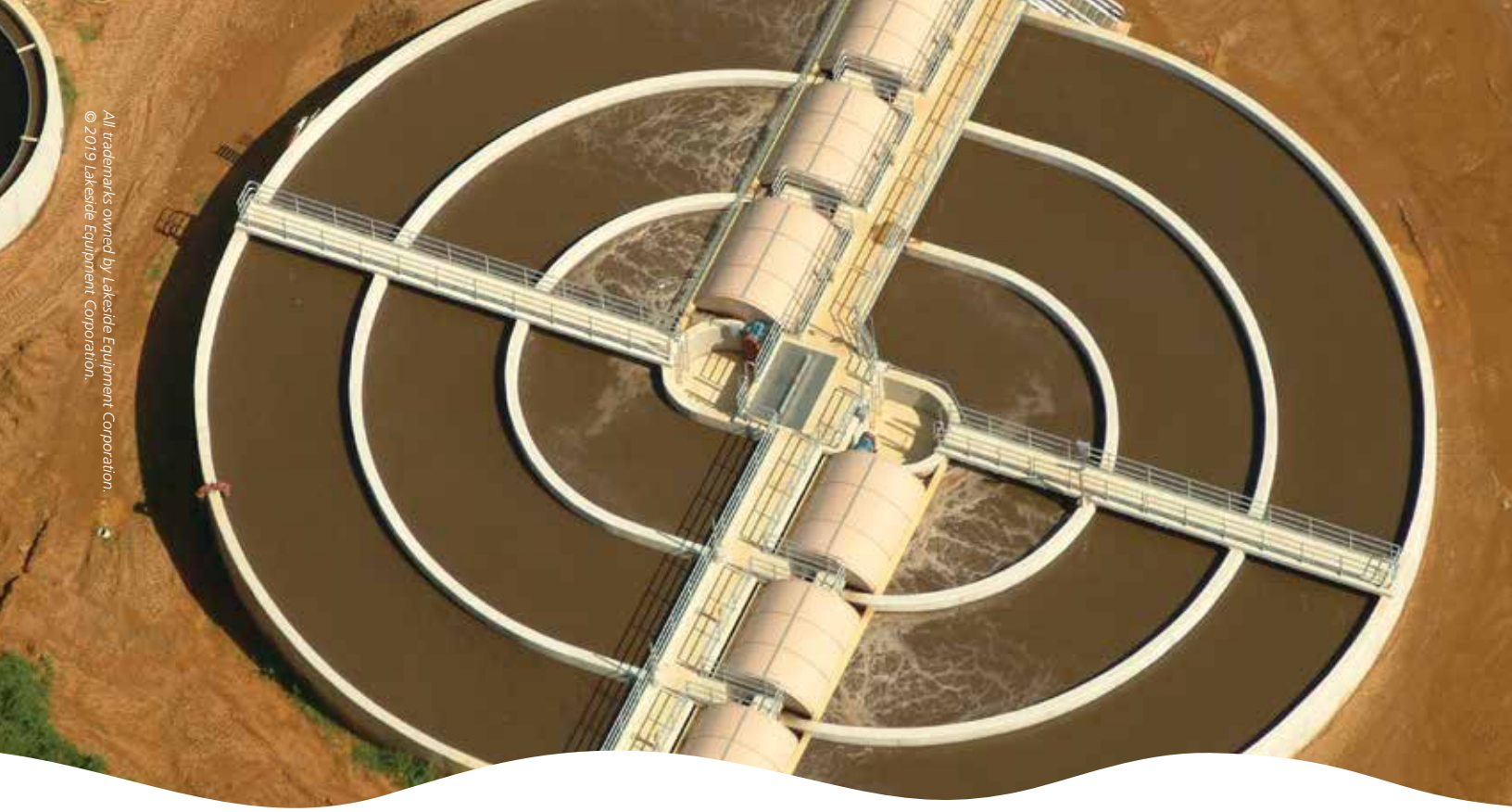

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CDM Smith, Inc.
smithfj@cdmsmith.com - 614.572.6123

President-Elect Kim Riddell-Furry
Alloway
kim.riddell@alloway.com - 419.234.4507

Vice President Mike Welke
City of Warren
mwelke@warren.org - 330.841.2595

Past President Jamie Gellner
Hazen and Sawyer
jgellner@hazenandsawyer.com - 513.469.2750

Secretary-Treasurer Jane Winkler
janewink1127@gmail.com - 513.910.3775

WEF Delegate Dale Kocarek
Stantec
dale.kocarek@stantec.com - 614.486.4383

WEF Delegate Ted Baker
Baker and Associates
kingsnu@aol.com - 440.461.4577

WEF Delegate Kathy Richards
City of Akron
KRichards@akronohio.gov - 330.375.2963x7184

SW Delegate Jason Tincu
Greene County
jtincu@co.greene.oh.us - 937-562-7414

SE Delegate Brandon Fox
City of Columbus
bdfox@columbus.gov - 614.645.3153

NW Delegate Jeff Lamson
City of Fremont
jslamson@fremontohio.org - 419.334.3876

NE Delegate Mary Ann Driscoll
Burgess & Niple, Inc.
MaryAnn.Driscoll@burgessniple.com - 330.376.5778x3417

2018-2019 Section Presidents

NW President Gary Bauer
gbauer@jheng.com

NE President Jim Cooper
jim.cooper@arcadis.com

SW President Dave Wilson
dwilson@blanderson.com

SE President Brenda VanCleave
vancleave.13@osu.edu

2018-2019 Committee Chairs

Annual Conference Doug Borkosky, Elizabeth Wick, & Dave Sprague
doug@hlbaker.com, elizabeth.wick@epa.ohio.gov, spragoo@bright.net

Auditing Doug Clark and Tom Fishbaugh
douglas.clark@bgohio.org, tfish@fishbaugh.com

Awards Ted Baker
kingsnu@aol.com

Certification Kathy Richards
krichards@akronohio.gov

Charitable Outreach Afaf Musa and Stephanie Johnson
musab@cdmsmith.com, sjohnson@msconsultants.com

Collection Systems Bill Horst
horstb@mcohio.org

Contact Hours Marc Morgan
marc.morgan@cantonohio.gov

Governance Fred Smith
smithfj@cdmsmith.com

Government and Regulatory Affairs Dale Kocarek
dale.kocarek@stantec.com

Laboratory Analysts Melodi Clark and Denise Seman
mlclark@columbus.gov, ldychem@gmail.com

Membership Fred Smith
smithfj@cdmsmith.com

Nominating Elizabeth Wick
elizabeth.wick@epa.ohio.gov

Nutrients Jason Tincu
jtincu20@gmail.com

Past Presidents Doug Clark
douglas.clark@bgohio.org

Plant Operations Joe Tillison and Walter Ariss
jtillison@bgohio.org, walter.ariss@epa.ohio.gov

Pretreatment and Industrial Sharon Vaughn
sharon.vaughn@cityofdayton.org

Public Education Kevin Stilwell
kstilwell@raconsultantsllc.com

Publications Elizabeth Wick
elizabeth.wick@epa.ohio.gov

Residuals Jamie Gellner
jgellner@hazenandsawyer.com

Safety Mike Welke and Nathan Coey
mwelke@warren.org, ncoey@woosteroh.com

Sponsorship Ted Baker
kingsnu@aol.com

Utility Enhancement VACANT

Watershed Anil Tangirala
atangirala@msconsultants.com

Young Professionals Lindsey Hassenauer
lhassenauer@hazenandsawyer.com

STAFF

Executive Administrator Dawn Sink Kennedy
dawn@ohiowea.org

Association Coordinator Megan Borror
megan@ohiowea.org

Administrative Assistant Chelsea Cameron
chelsea@ohiowea.org

Ohio Water Environment Association

1890 Northwest Blvd, Suite 210

Columbus, OH 43212

T: 614.488.5800

F: 614.488.5801

E: info@ohiowea.org

www.ohiowea.org

Elizabeth Wick, Publications Chair

Dawn Kennedy, Executive Administrator

Megan Borror, Association Coordinator

Chelsea Cameron, Administrative Assistant

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Contact Hour Information:

OWEA training is submitted for contact hour approval. Free Webinars are not submitted for contact hour approval at this time.

Article Deadlines:

1st day of January, April, July, and October

Publication Dates:

Spring, Summer, Fall, and Winter

Photo Requirements:

Please contact the OWEA office regarding photo requirements for covers and articles.

OWEA is a Member Association of the

Water Environment Federation

601 Wythe Street

Alexandria, VA 22314-1994

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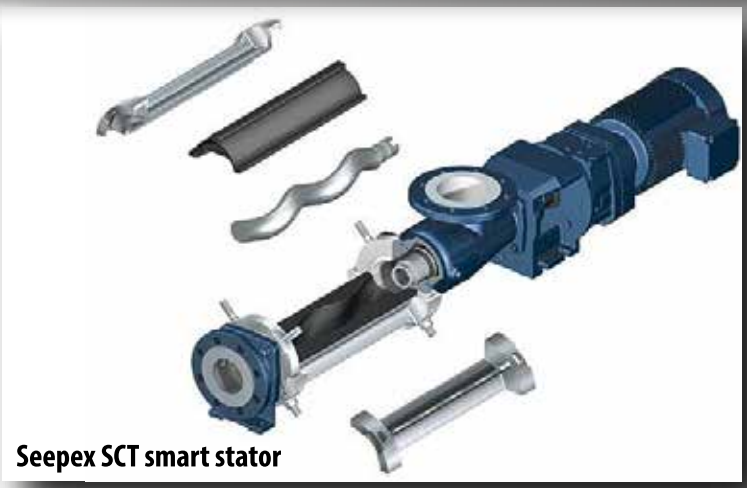
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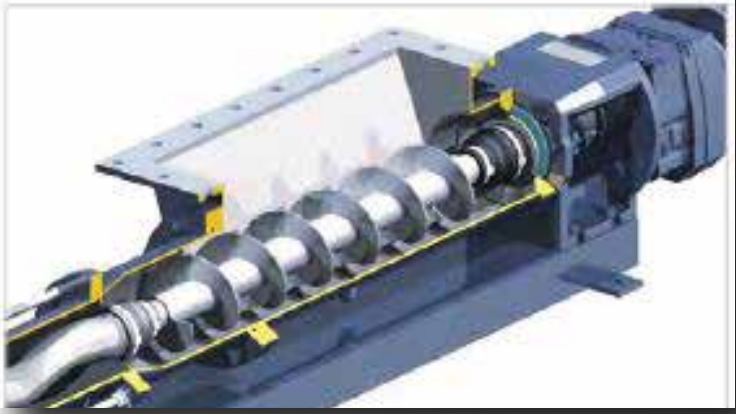

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Fred Smith
OWEA President

It is hard to believe that this is my third President's message. Since this is my first message of 2019, let's start with a State of the OWEA Address. There is absolutely no reason for anyone to stand up and applaud while reading this report, that will just slow us down. If you would like to offer a rebuttal to my address, feel free to email me. Maybe we can find a place to print the rebuttal in the next Buckeye Bulletin.

All kidding aside, 2018 was a great year for OWEA, and the Executive Committee (EC) is already discussing ways to make improvements in 2019 and beyond. The largest focus of the first half of my Presidency was creating a 2019 balanced budget.

A decision was made by the EC a few years ago to reduce the OWEA reserve account and provide a larger benefit to our members. The EC determined that our reserves were greater than required to operate the organization in a fiscally responsible manner. A few of the benefits offered to our members were reduced costs at the conference and workshops, increased customer service, additional grant opportunities, memberships for qualifying students, increased philanthropy, and increased financial support to our Sections.

What many members might not realize is that OWEA has operated in the red for several years. In order for YOUR association to be sustainable for the future, we must work towards a balanced budget.

While we did not achieve a balanced 2019 budget, the EC was able to significantly reduce the amount OWEA will require from reserves for this year. In order to achieve this reduced budget deficit, a two-prong approach was required, both increasing fees and reducing expenses.

We greatly appreciate our members, sponsors, advertisers, and exhibitors and have worked very hard to keep our conference, workshop, advertising, and other fees low. We have not raised prices on a regular basis, so due to inflation and ever-increasing costs from our venues, we had to institute price increases this year. I still feel OWEA offers great value to everyone that continues to be a part of OWEA. We were able to maintain the OWEA membership dues this year with no increase.

As we move into 2019, we are focusing on many items to improve the member experience, and the value offered by OWEA. The EC is reviewing additional training options for our members. We are bringing back the ethics training in 2019, we are exploring options for leadership training, and finally we are creating an operator training program. We are working with WEF on the creation of our operator training program, and it should be rolled out no later than 2020. One major goal in the spring is to complete our next strategic planning effort. My goal with the strategic planning is to include some members in the process. If you are interested in helping plan the future of OWEA, please email me.

Finally, we are looking to expand our regular meetings with the Ohio EPA, and Ohio legislators. In Jan. 2019, Governor Mike DeWine appointed Laurie A. Stevenson as director of the Ohio Environmental Protection Agency. We expect to schedule a meeting with Director Stevenson in the second quarter of this year.

Thanks for tuning in for the 2019 State of OWEA Address. Don't hesitate to contact me if you have any thoughts, questions, or comments at *smithfj@cdmsmith.com.*

Fred is a Senior Project Manager with CDM Smith in Columbus. He has a Bachelor of Science Degree in Civil Engineering from The Ohio State University and is a third-generation engineering graduate from Ohio State. Fred resides in Dublin Ohio with wife Susie. Fred and Susie have two daughters Emily (23) and Lucy (21). Emily graduated from Ohio State in May, and Lucy is attending Ohio State. Fred enjoys running marathons and drags Susie around the country to watch him race. Fred started taking ballet lessons three years ago and performed as Mr. Banks in last year's Artisan Ballet Company's production of Mary Poppins.

2018-2019 Executive Committee Meeting Dates

April 10, 2019	OWEA Office
June 23, 2019	Sawmill Creek

SAVE THE DATE

MARCH 7, 2019	ONE WATER GOVERNMENT AFFAIRS	NATIONWIDE HOTEL & CONFERENCE CENTER
MAY 2, 2019	COLLECTIONS WORKSHOP	NATIONWIDE HOTEL & CONFERENCE CENTER
JUNE 24-27, 2019	2019 TECHNICAL CONFERENCE	SAWMILL CREEK RESORT
OCTOBER 10-11, 2019	PLANT OPS, LAB, & NUTRIENTS WORKSHOP	NATIONWIDE HOTEL & CONFERENCE CENTER
DECEMBER 5, 2019	BIOSOLIDS WORKSHOP	NATIONWIDE HOTEL & CONFERENCE CENTER

EXECUTIVE COMMITTEE POSITION NOMINATIONS

Interested in being part of the state executive committee? Nominations are being accepted through May 15, 2019 for the positions of WEF Delegate, Secretary-Treasurer and Vice President. If you are interested in one of these positions, send a letter of interest along with a letter of support from your employer to Nominations Chair, Elizabeth Wick at *Elizabeth.Wick@epa.ohio.gov.*



CONNECT WITH US

Welcome New Members

October 2018 - December 2018

David Anderson	Dennis Craig	Rachel Loffing	Alex Robinson
Monica Backs	Claudia Dawson	Xin Ma	Kellie Rotunno
Matthew Barca	Victoria Duwve	Julie McGill	Michael Rowe
Tina Belz	Ashlee Ellis	Dave Miller	Peter Schafer
Ken Boersma	Stacey Faile	Trung Nguyen	Mark Schultz
Russell Boes	Brad Frank	David Osborn	Kenny Staley
Andrew Bohlen	Matt Gaugler	Patekka Pope Bannister	Ranjani Theregowda
Maria Borchers	Peter Herlihy	Edwin Porter	Kate Villars
Todd Bort	Samuel Kloss	Mark Reed	Don Wendorff
Adam Burdsall	Hans Kuenzel	Chris Richard	Karl Ziellenbach

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

Stantec

2019 OWEA Titanium Sponsor

Stantec serves local communities by designing with community in mind.

by Mr. Mark Hudak P.E., Great Lakes Water Delivery Leader

Stantec has a long successful history of service with a wide range of local communities in the water/wastewater industry. We started in 1954 as a one-person firm, and today, Stantec consists of approximately 22,000 employees working in over 400 locations across six continents with over 300 professionals in Ohio. While our large network and depth of expertise allows us to execute large projects, we also work on smaller projects and embrace the ability to improve the quality of life in any community. We care about the communities we serve — because they're our communities, too. This allows us to assess what's needed and connect our expertise; to appreciate nuances and envision what's never been considered; and to bring together diverse perspectives so we can collaborate toward a shared success.

When it comes to water and wastewater engineering, we optimize every facet. By viewing water as an integrated system, Stantec delivers solutions for the entire water cycle, including the capture and diversion of raw water; treatment and distribution for potable and non-potable uses; wastewater collection, treatment, and reuse; and the return of treated effluent to the environment. This approach applies to groundwater, surface water, and storm water on the raw water side, and municipal, agricultural, and industrial effluent on the wastewater side. We deliver solutions to conveyance, wet weather flow and urban stormwater, wastewater treatment, water treatment, and water resource projects that maximize the sustainability of the resource.

For an example of our work close to home, look at the expansion of the City of Fremont Water Pollution Control Center here in Ohio. It was observed that a combination of wastewater and storm water flows would easily exceed the capacity, causing overflows into the Sandusky River. The river has important recreational value to the community and is a spawning area for Lake Erie Walleye game fish. Stantec upgraded and expanded the existing wastewater plant increasing the capacity from 13 to 24 million gallons per day (mgd). The increased capacity has enhanced the environmental protection and the health and well-being of the community.

For another local example, look to the City of Logan, Ohio. In 2016, a major water main ruptured, and Logan's entire city system depressurized, leaving its 7,500 residents without water for three days. The city teamed up with Stantec's office in Logan to assess the water system's condition and develop an improvement plan. That assessment showed that the City needed to invest in a new 2.5 mgd water treatment plant, plus an elevated tank, water line replacements, and at least 3,500 new water meters to bring part of the system up to date. At $18 million, it was a big cost for a small town. Fortunately, our team in Logan has a solid record of securing water and wastewater loans and grants for clients. Stantec went to bat for the City and the citizens of Logan and helped the community secure a $10 million low interest loan and a $7 million grant. The combination of the two provides valuable rate relief to the community, especially for people with low or fixed incomes.

The work we do for our communities can make a big difference in someone's life. We don't just see these as examples of successful projects – they make a real impact on the communities we serve. We are honored to deliver quality service to the many communities we serve and to continue our support of OWEA as a 2019 Titanium Sponsor.

"The things this group has done for the City of Logan are beyond the norm. These are the kind of people I enjoy working with."
Greg Fraunfelter, Mayor of Logan, Ohio

"The automated sludge load out facility and centrifuge dewatering system designed by Stantec has been of great benefit to the City of Marietta. Dewatering and sludge haul out was at one time one of our most time consuming and problematic processes. Thanks to this design that is no longer the case. Thank you for such a well thought out and practical design."
Steve Elliott, WWTP Superintendent-City of Marietta, Ohio

"The Stantec designed integrative approach for our Long-Term Control Plan has provided the City of Napoleon with the opportunity for the financial relief and flexibility we need to effectively plan for capital improvements in the future."
Chad Lulfs, PE, PS, Director of Public Works – City of Napoleon, Ohio

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A top technical firm focused entirely on water, Hazen and Sawyer takes a data-driven approach to process, facility, system, and resource optimization, delivering far-reaching benefits to clients throughout Ohio and across the country. Employee-owned and client focused, we support local staff with the leading national technical experts.

>80 Ohio staff

OWEA Volunteer Support:

- 2 Section EC / Presidents
- OWEA EC / President
- Multiple state section committees

>1,100 national staff

100% of revenue from water engineering

Examples of Hazen's Planning and Design Projects Throughout Ohio:

Cleveland Office

Akron Office

North Olmsted WWTP and Collection System

Improvements doubled wet weather capacity to 40 mgd and provided TN and TP removal to meet present limits and potential future conditions.

Columbus Office

Integrated Plan / Blueprint Columbus

Hazen provided regulatory assistance in support of the Integrated Plan and the Blueprint Columbus program, helping to secure a revised schedule that will allow the program to remain sustainable.

Cincinnati Office

Miamisburg East Side PS and WWTP

New collection system model identified upgrades including equalization, new PS, and WWTP improvements to increase wet weather capacity and reliability.

Wastewater | Drinking Water | Stormwater | Reuse

Hazen

hazenandsawyer.com

Welcome!

The 2019 conference is going to be value packed and fun! We're headed to Sawmill Creek for the first time in 16 years... and if you weren't there last time, you're in for a surprise! In two and a half days an operator can earn 12 contact hours, engineers can get their ethics hour and additional continuing education, exhibitors will have a day with only minimal detractions away from the hall... and then we'll relax.

Sawmill Creek provides the perks of a resort in a casual setting. The golf outing will be on property for the first time (the only driving will be from tee boxes!). The Meet & Greet will be on the beach.

As we all know, just as much learning happens outside the technical sessions as in them. This venue sets us up for some of the best networking and interaction that we can expect to deliver!

Rooms will go quickly, and will be prioritized in waves – with multiple night stays getting priority (check out the accommodations info for specifics). Reserve your sleeping room and get registered. You don't want to miss this one... plan to Bounce North for Learning and Fun!

2019 Conference Co-chairs
Dave Sprague
Elizabeth Wick
Doug Borkosky

Bounce North
for Learning & Fun

June 24-27, 2019

OWEA 2019

Sawmill Creek Resort, Huron

Tech Program

Tuesday

Vendor Presentations

Wednesday

Nutrients
Modeling and Data Analytics
Collection Systems
Pretreatment & Laboratory
Construction
Planning & Design

Thursday 1/2 Day

Utility Innovation & Regulation
Wet Weather & Green Infrastructure
Solids Handling
Odors, Air and Piping

Visit www.ohiowea.org/2019 to Register

Registration Options

	Early 3/1/19-5/17/19	Late 5/18/19-6/17/19	Onsite
Preconference			
Preconference Workshop Member	$50		$60
Preconference Workshop Nonmember	$125		$135
Full Conference			
Full Conference Member	$325	$375	$385
Full Conference Nonmember	$445	$495	$505
Retired	$175	$225	$235
Student	$50	$75	$85
Partial Conference			
One Day Member	$195	$225	$235
One Day Nonmember	$275	$305	$315
Budget Option One Day Member w/lunch only	$100	**Not available after 5/17/19**	
Budget Option One Day Nonmember w/lunch only	$175		
Golf			
Golf - Team	$360		**Not available onsite**
Golf - individual	$90		
Hole Sponsor	$250		
Exhibitor			
Exhibitor Member	$800		**Not available onsite**
Exhibitor Nonmember	$975		
Exhibitor Passport	$200		
Booth Attendant (max 2)	$165		$175
Extras			
Tuesday Awards Lunch	$40		
Tuesday Meet & Greet	$100		
Wednesday Banquet	$65		
Guest Package	$185		
Ops Challenge Guest	$100		

A more detailed breakdown of what each package includes is listed on the conference webpage.

Please be aware online registration is not available after June 17th. Any registrations after this date will need to occur onsite and could involve a significant wait time.

Register early and save!

Schedule of Events

Monday

8:00 AM	6:00 PM	Registration Open
8:30 AM	10:30 AM	Golf Outing Registration & Range
10:30 AM	4:30 PM	Golf Outing
8:00 AM	4:30 PM	Ops Challenge
9:00 AM	4:30 PM	Preconference Workshop (6 contact hours)
12:00 PM	1:00 PM	Preconference Lunch
6:00 PM	9:00 PM	Exhibitor Setup
6:00 PM	9:00 PM	Welcome Social & Ops Challenge Collections Event

Tuesday

7:30 AM	5:00 PM	Registration Open
7:00 AM	9:00 AM	Exhibitor Setup
9:00 AM	5:00 PM	Exhibit Hall Open
9:30 AM	11:30 AM	Ethics Seminar (2 contact hours)
1:30 PM	4:00 PM	Exhibitor Presentations (2 contact hours)
10:00 AM	11:00 AM	Exhibit Booth Tours (1 contact hour)
2:00 PM	3:00 PM	Exhibit Booth Tours (1 contact hour)
11:30 AM	1:00 PM	Awards Luncheon
11:30 AM	12:30 PM	Exhibitor Lunch
3:00 PM	4:00 PM	Ohio WEA Annual Meeting
6:00 PM	10:00 PM	Meet & Greet

Wednesday

7:00 AM	8:00 AM	Crystal Crucible Breakfast (Invitation Only)
7:00 AM	9:00 AM	Breakfast
7:30 AM	5:00 PM	Registration Open
12:00 PM	1:30 PM	Lunch
8:00 AM	11:45 AM	Tech Sessions (3 contact hours)
1:30 PM	4:15 PM	Tech Sessions (2.25 contact hours)
12:00 PM	1:30 PM	President's Luncheon (Invitation Only)
5:00 PM	6:00 PM	Young Professional Mixer
6:00 PM	7:00 PM	Reception and 5S Induction
7:00 PM	9:30 PM	Annual Banquet

Thursday

7:00 AM	8:00 AM	5S Breakfast (Invitation Only)
7:00 AM	9:00 AM	Breakfast
7:30 AM	12:00 PM	Registration Open
8:00 AM	12:00 PM	Tech Sessions (3 contact hours)

ACCOMODATIONS

On the shores of Lake Erie, Sawmill Creek Resort is a full-service hotel with a casual lodge theme. It features an 18-hole Tom Fazio design championship golf course, indoor and outdoor pools, tennis courts, a nature preserve, and lakefront marina. There is an assortment of eatery options on site in addition to the Sawmill Creek shops filled with unique clothing and gifts. The hotel offers complimentary Wi-Fi and parking on site.

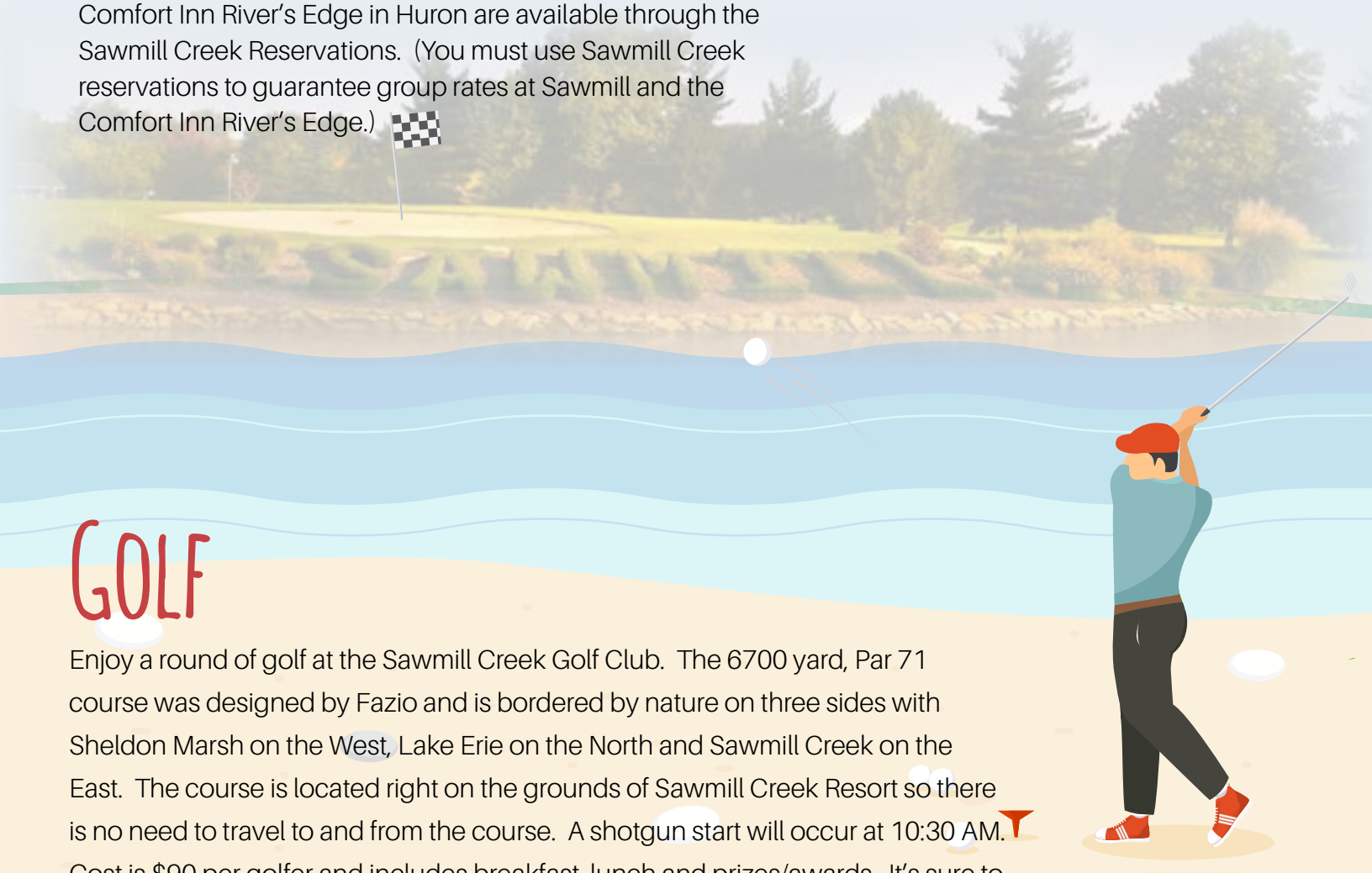
The OWEA rate for a standard room is $129 per night.

OWEA room rates available Sunday, June 23 through Thursday, June 27, 2019. Make your room reservation by calling 1-800-729-6455. Please ask for the OWEA Conference rate. Cut off date for the special rate is May 23, 2019.

Because there are limited rooms on site, Sawmill will be accepting room reservations for multi-night stays (3 & 4 nights) first and then open the reservations for shorter duration stays.

If the Sawmill Creek rooms fill up, overflow rooms at the nearby Comfort Inn River's Edge in Huron are available through the Sawmill Creek Reservations. (You must use Sawmill Creek reservations to guarantee group rates at Sawmill and the Comfort Inn River's Edge.)

Duration of Stay	Deadline
3 & 4 Night Stays Only	April 1
1 & 2 Night Stays Added	April 2-May 23
Hotel Opens to Outside Reservations *Room Rate not Guaranteed*	After May 23rd



GOLF

Enjoy a round of golf at the Sawmill Creek Golf Club. The 6700 yard, Par 71 course was designed by Fazio and is bordered by nature on three sides with Sheldon Marsh on the West, Lake Erie on the North and Sawmill Creek on the East. The course is located right on the grounds of Sawmill Creek Resort so there is no need to travel to and from the course. A shotgun start will occur at 10:30 AM. Cost is $90 per golfer and includes breakfast, lunch and prizes/awards. It's sure to be a great time you don't want to miss.

Exhibition

OWEA's annual conference moves to a different region of the state every year. In 2019, we will be on the beautiful shores of Lake Erie at Sawmill Creek in Huron, Ohio. With more than 600 attendees expected, it's a can't miss show!

Reasons why you want to exhibit:

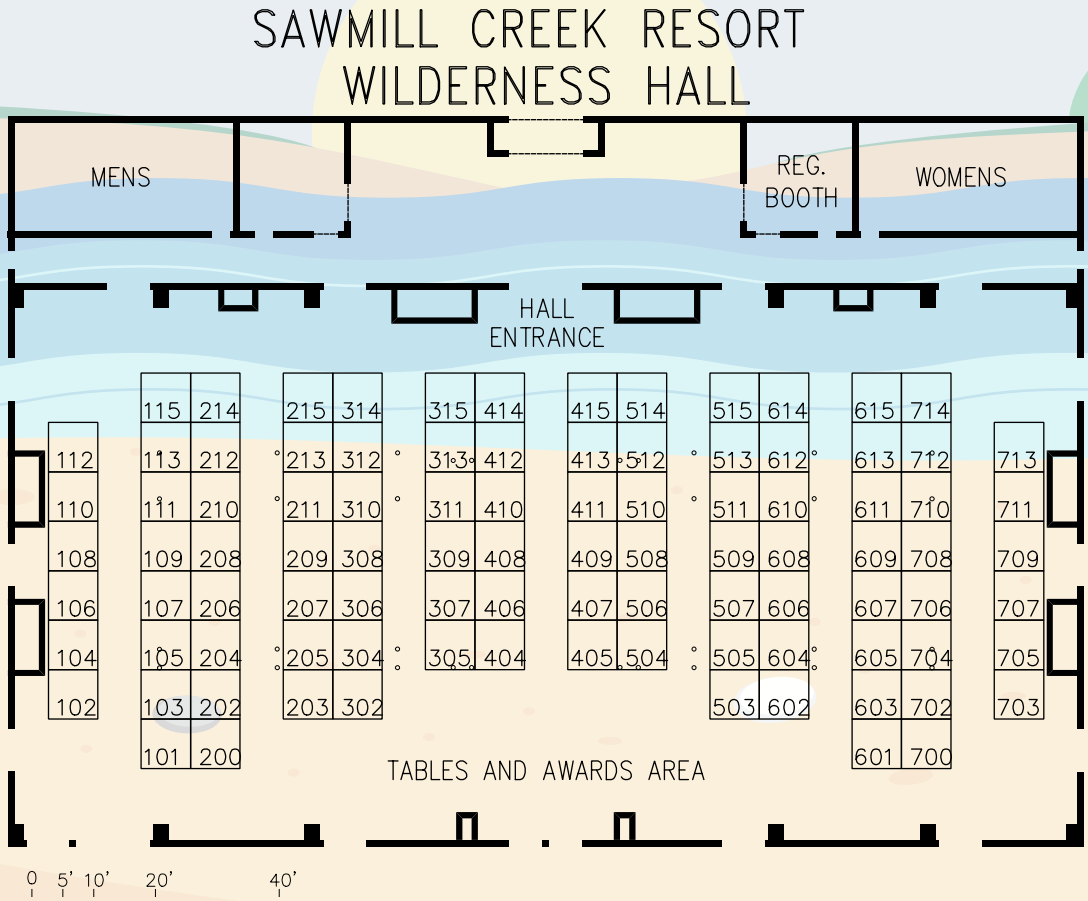
- Opportunity to meet with hundreds of wastewater professionals
- Booth price includes a full registration
- Booth includes a table, chairs, wastebasket and carpet, and wifi - reducing additional costs
- The OWEA conference schedule is built to give dedicated exhibit time and plenty of networking time outside of the exhibit hall

This year, you will be able to pick your booth when you register! Simply go to *www.ohiowea.org/2019* and choose your spot.

BOOTHS SELL OUT EARLY - RESERVE YOURS TODAY!

Member Booth	$800
Nonmember Booth	$975
Listing in Exhibitor Passport	$200

Exhibit Hall Map



Tuesday Awards Luncheon

Every day, we all do our part to keep Ohio's water clean. Each of us plays a different role and although there are times we like to believe differently, every role is just as important as the other. By working together as a team, we get the job done. Join us for lunch on Tuesday, June 25 at 11:30 am to honor the best in our industry. Enjoy lunch, catch up with old friends, and congratulate those in our industry that have gone above and beyond. The OWEA awards, Crystal Crucible, and Golden Manhole awards will be presented. The 5S inductees will be announced and handed their red buckets. Plan on joining us for this special event.

Tuesday Meet & Greet

We're back on the north coast for this year's conference. The 2019 Meet & Greet will be a Beach Party, right on Lake Erie at the Sawmill Creek Resort beach. Great food, fantastic live music, and a chance to visit with old friends and make new ones, all while relaxing in front of a bonfire or dancing under a tent erected especially for our enjoyment. It doesn't get any better than this. The Beach Party Meet & Greet begins Tuesday evening at 6:00.

Wednesday Annual Banquet

Tradition has value. Excellence deserves recognition. Vision needs communication to become mission. Friends share the table gladly. Join us on Wednesday evening for OWEA's Annual Banquet. We'll present the highest honors given to OWEA members, and we'll celebrate the ongoing vision and mission of the Ohio WEA. More details will come, but we'll save you a seat...

Volunteers Needed

Sign up at Ohiowea.org/2019

Golf Volunteers:
Monday, 2 hours
Golf registration, greeting, etc.

Exhibit Tour Monitors:
Tuesday, 75 min
Guide/monitor small group through four 15 minute booth presentations, be present early to gather/sign-in group.

Sign Wranglers:
Tuesday –Thursday, 30 min
Place and remove signs as conference progresses, early morning and evening options.

Ticket Takers:
Tuesday & Wednesday, 45 min
Be present at the beginning of meals to collect event tickets

Moderators:
Tuesday –Thursday, 3 hours
Announce technical session speakers and manage flow of presentations for one morning or afternoon track.

Monitors:
Tuesday –Thursday, 3 hours
Assist with contact hour check-in/out at entry to room for one morning or afternoon track.

OWEA 2019

JUNE 24TH, 2019

Operations Challenge Invitational

OWEA is proud to announce they will be hosting an Operations Challenge Competition and National Invitational as part of our 2019 Technical Conference and Exhibition

- 12 teams total
- 6 spots held for invitational teams

$100 Team Registration (up to 5 people) includes:

- Breakfast on Monday
- Lunch on Monday
- Welcome Event Monday evening
- Tuesday Awards Luncheon
- Entrance to Exhibit Hall on Tuesday
- Tuesday Reception where Ops Challenge awards will be presented
- Tuesday Meet & Greet

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

Process Control
2019 Operations Challenge Invitational
Laboratory
Test Your Skills! Meet and compete with fellow Operations Challenge teams
Collections
Great way to prepare for 2019 National Competition in Chicago
Maintenance
Visit *www.ohiowea.org* for details
Safety
Don't Miss It!

Ohio Water Environment Association
1890 Northwest Blvd, Suite 210
Columbus, OH 43212
614.488.5800
www.ohiowea.org
info@ohiowea.org

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 impeller of the pump to prevent continued calls due 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 worn 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!

Single Day Competition!

AWARDS WILL BE PRESENTED ON TUESDAY AT THE EXHIBITOR RECEPTION.

Laboratory Event

One of the primary functions of your treatment plant is removing solids from the waste stream. In order to do this effectively and efficiently you must first know where the solids are throughout the plant. The lab event requires you to complete analysis for total suspended solids from samples collected throughout a WWTP. This event will require the preparation of filter paper for drying for each of the samples. You will also complete a total dissolved solids analysis of each sample using a calibrated YSI MultiLAb instrument. Team members will then weigh pre-dried filter paper samples and complete calculations for total suspended solids on each sample. Bench sheets will need to be completed properly in addition to proper performance of such techniques as measuring with graduated cylinders, pipetting, use of a balance, and basic math skills.

A Stream & A Dream!

On the 50th Anniversary of Ohio's First State Scenic River – the Little Miami

Little Miami Conservancy

In 1768, a baby boy was born along the Little Miami just as a great comet streaked across the night sky. He came to love the river valley as a child, and as he grew into manhood, his life's work took him throughout what would become the eastern United States. As an adult, he would return to the Little Miami to reconnect to its natural beauty, peace, and regenerative qualities - indeed to be reborn!

He was Tecumseh, renowned leader of his Shawnee people. His life's mission was to keep his homeland protected and beautiful for future generations.

Two hundred years later, in the 1960s, a Dayton, Ohio newspaper editor, Glenn Thompson, knew well these same natural qualities of this beloved river. He founded a nonprofit river conservation organization now known as the Little Miami Conservancy (LMC) to guide its protection and restoration. Thompson reflected, "Someday, a corridor of green will stretch from one end of the river to the other. Individuals and families will enjoy the peace and quiet and restoration of spirit that comes with clean water, birds, and trees."

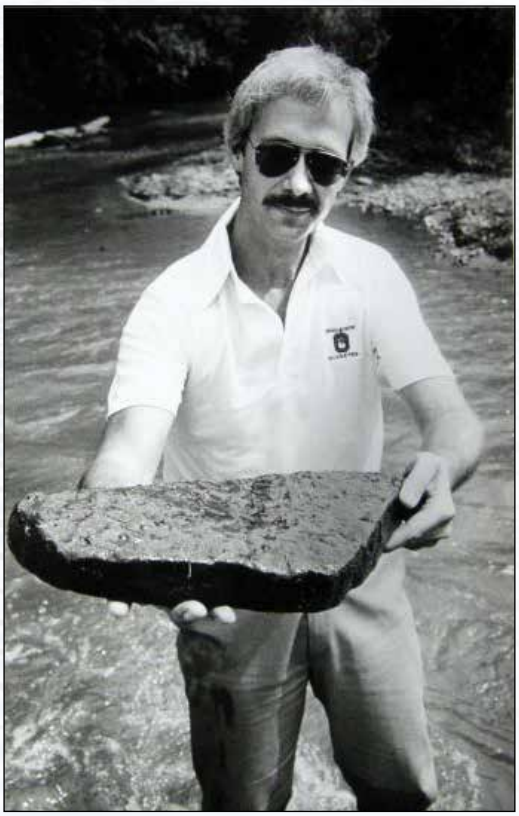
A Time of Turmoil in the Sixties

The 1960s was a time of challenge for the Little Miami and many other rivers across Ohio and the nation. The Cuyahoga River had caught on fire. There was no EPA in Columbus or Washington, DC. There was no Wild & Scenic Rivers Act. There was a growing degradation of a once wild and scenic river corridor filled with wondrous wildlife and majestic forests and clean flowing waters. Among local citizens there was a growing appreciation for this "paradise lost" along the Little Miami.

To begin his journey and restore the Little Miami, Thompson brought together a former US Secretary of Commerce, a former President of Antioch University, and a leading local businessman to incorporate this organization.

He set off to bring many other local leaders from all walks of life to do great things for this little river. Thompson went to the US Congress when new legislation was under consideration – the National Wild & Scenic Rivers Act.

Drafted by Utah Senator Stewart Udall and others, the act with its initial list of special rivers was replete with rivers in the Far West and along the East Coast, all to be brought into a system administered by the US Department of the Interior. Thompson whole heartedly endorsed the concept but strenuously objected. "It appears that the Department of the Interior has become



Eric Partee September 15, 1983
macroinvertebrate study

the Department of 'the Perimeter'," he noted as he sat before a Congressional Committee one morning in 1968. With the help of area Congressmen, the Wild & Scenic Rivers Act was signed into law, with the Little Miami specifically called out as a river worthy of study for future inclusion into this esteemed group of rivers.

With the able assistance of local people like Helen Black, George Henkle, Dave and Barbara Case, Bob and June Morgan, Mike Fremont, Don Hopkins, Stan Hedeen, John Ruthven, Sudie Geier, and so many others, the Little Miami Conservancy successfully achieved the inclusion of the Little Miami into the National Wild & Scenic River System in 1974 (Ohio's first) and the Ohio State Scenic Rivers Program in 1969 (also Ohio's first). These designations gave this little river official recognition and some early, albeit limited, levels of protection.

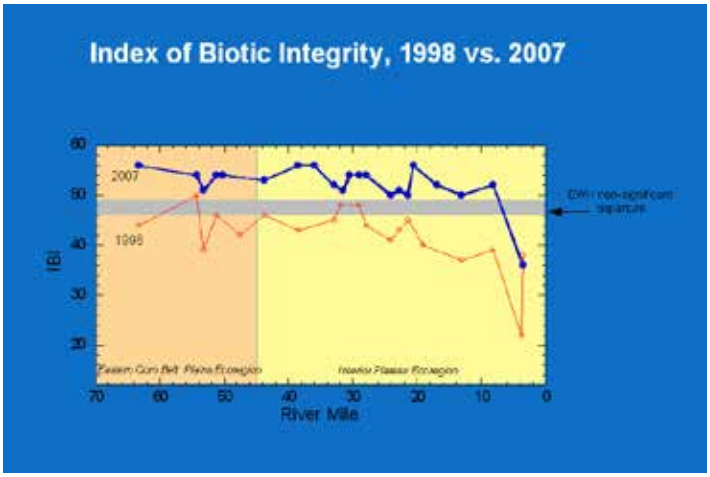
The Little Miami Conservancy (then known as Little Miami, Inc.) did not rest on its laurels but would shepherd the path of this exceptional river for decades to come, but first things first...

A Clean Sweep

Like so many other rivers, the Little Miami had become a dumping ground for trash, junk cars, and so much other debris. LMC encouraged an amazing eight thousand volunteers, who came to the rescue on a summer day in 1971 to start the monumental clean up of the Little Miami, an effort that continues to this day as the "LMC Clean Sweep." Hundreds of Little Miami Conservancy volunteers still paddle the river over twenty times a year to remove tires and trash, much of which is still washed out from river banks and meandering gravel bars. Today the scenic beauty of the river is indeed "head and shoulders" above its ugly state when hearty volunteers started over 50 years ago.

8000 Enthusiasts Gathered For Operation Clean Up

ABOVE: 1971 Little Miami River Clean Up originally published in the Cincinnati Enquirer. BELOW: Flyfishing in 2007.



LMSR IBI OEPA 2007 data

Taking a Short Pause

Besides litter and trash, the fish and other species calling the Little Miami "home" were under assault from water pollution. During times of summer low flow, nutrients (primarily phosphorus) being dumped into the river were causing algae blooms and deadly low levels of dissolved oxygen. Fish kills were not uncommon in the Little Miami.

After several comprehensive studies by Ohio EPA in the 1980s and early 1990s, the agency called for the reduction in what was the predominant source of summer phosphorus loading – the discharges from thirty-six wastewater treatment plants, along the river and its tributaries.

In response, local governments banded together to fund and conduct their own river study, hiring the University of Cincinnati College of Environmental Engineering to collect their own water samples and draw their own conclusions, which, after numerous meetings and discussions, led to the same finding. It was not yet completely clear, however, how much phosphorus reduction would be needed. The first, and lowest cost, approach turned out to be incredibly effective.

Lowering phosphorus discharge concentrations to one part per million resulted in an exceptional rebirth of the river's biology. This was confirmed by subsequent Ohio EPA studies in 2007 and more recently, all at a cost that raised user rates in the vicinity of a reasonable 10%. This approach to stream health was a testament to the axiom that "good data makes for good decisions."

Moreover, the fine work of local Soil & Water Conservation Districts, a strong US Farm Bill and the efforts of local leaders in the agricultural community have all helped keep the Little Miami's return to exceptional health intact. Efforts included the implementation of

Little Miami National Wild and Scenic River at the Little Miami River Tecumseh Preserve

in-field conservation measures including riverfront buffer zones, grass swales, precision application of fertilizers, and more on over 60% of the farms in Little Miami watershed.

With over 80% of the Little Miami watershed utilized for row crop and other agricultural use, this fine work on area farms is an important part of the future of the river's health.

Half the Picture

If there is one thing that Little Miami river studies have shown over the years, it is that clean water in the river is only part of the picture for the river's health. A strong river biology depends on natural streambed conditions and riverside habitat just as much as the meeting of clean water quality criteria.

Protection and restoration of riverfront forests and prairie lands provides the habitat, the "home" if you will, for aquatic animals. Root outcroppings, clean spaces in the rocks of river riffles, healthy river runs and pools, all make up the habitat that is essential for a healthy "web of life" beneath the surface. Avoidance of river dams, which collect sediment and block fish and mussel passage, is another essential element of river health. Similarly, riverfront forests and prairie zones along the river can filter out sediment, phosphorus and more from impacting river life, all helped along by a healthy natural stream gradient and a deep sand and gravel aquifer which all help keep the Little Miami "alive and well."

It's a Win – Win!

For the last five decades, the Little Miami Conservancy has worked diligently with riverfront landowners and developers and public officials to permanently set aside these riverfront buffers through the voluntary donation and purchase of these "riparian" lands and conservation easements.

Using a "Win-Win" approach, the Little Miami Conservancy has partnered with developers to provide for the donation of natural buffer zones between the river and residential developments and gravel operations along the river. Working with developers in the "planned unit development" process (PUD), conservation plans for subdivision proposals, still in their early phases of conception, have provided measurable benefits to parties on both sides of the negotiation table. LMC has welcomed this opportunity to collaborate with developers as they work their way through the zoning approval process.

Along with the outstanding work of local Park Districts, local officials and the Ohio Department of Natural Resources, some 55% of the riverfront areas along the length of the Little Miami is now permanently preserved to fill its valuable role. When LMC began its work in 1967, only 5% of the Little Miami's riverfront was preserved. A quick calculation reveals that this averages at a rate of

Hoggarth mussel team at Horeshoe Bend in 2006.

YSI Xylem staff prepare monitoring equipment on an August 2018 data collection trip.

1% per year of protection. This is a testament to the "slow but steady" process that keeps the LMC conservation process on track.

Eagle, Eagle!

With this great work well underway, it was hoped that the Bald Eagles and other wildlife would thrive along the Little Miami, and so they did. Restored riverfront habitat and clean waters yielded greater fish populations, most notably the smallmouth bass population (to the delight of local fly fishers) and the Bald Eagles, Osprey and Great Blue Herons are gaining abundance along the corridor.

It is a remarkable rebirth, especially in light of the near-extinct Bald Eagle populations in Ohio decades ago, and a real tribute to the great repopulation efforts of the Ohio Division of Wildlife. And the river otters are returning as well!

Public Appreciation

All of this progress and private/public partnerships has not gone unnoticed by the conservation community and the general public.

LMC has been pleased to present numerous "Awards of Appreciation" to political and business leaders for their role in this long-standing progress. This shoulder-to-shoulder approach continues to foster conservation success year after year.

The public is enjoying the spoils of this work. Over 100,000 people paddle the Little Miami each year, supporting seven canoe-kayak outfitters. Over 1 million visitors are enjoying the Little Miami Scenic Trail annually.

Founded by an LMC-spearheaded fundraising effort in the mid-1970s, significant dollars are invested into the local economy, turning small communities like Loveland from a once-degraded downtown into a vibrant historic district of family and tourism-related enterprises.

Getting Your Annual Check Up

Just as your doctor reminds you that your good health should not be taken for granted, the constant monitoring of river water quality and biological health is key to keeping the Little Miami dream alive and well.

Monitoring by the Ohio EPA, Ohio Scenic Rivers Program, Greenacres Foundation, YSI/Xylem, local officials, school students, and others help keep river health data flowing, serving as an invaluable guide to natural resources policy.

Arguably, the single most important water quality measurement reflective of overall river health is dissolved oxygen (DO). Most importantly, dissolved oxygen must be measured on a 365-24-7 basis to observe the fluctuation in DO levels, especially during nighttime periods.

LMC is spearheading the creation of an enhanced DO monitoring system (code-named "DOMES") in partnership with public and private interests and hopes to begin data collection in 2019. Again, good data makes for good decisions.

LMC is also seeking funding for another survey of the mussels in the river. These "bottom feeders" can be another useful "canary in the coalmine" reflecting short and long-term trends in river health. This next survey will provide an important update of similar mussel studies conducted 15 and 30 years ago by Dr. Michael Hoggarth's team at Otterbein University.

2019 Brings Another Reason to Celebrate

Over the past two years, LMC has celebrated its 50th anniversary in 2017, with similar anniversaries for the National Wild & Scenic River Act, and the Ohio Scenic Rivers Act in 2018.

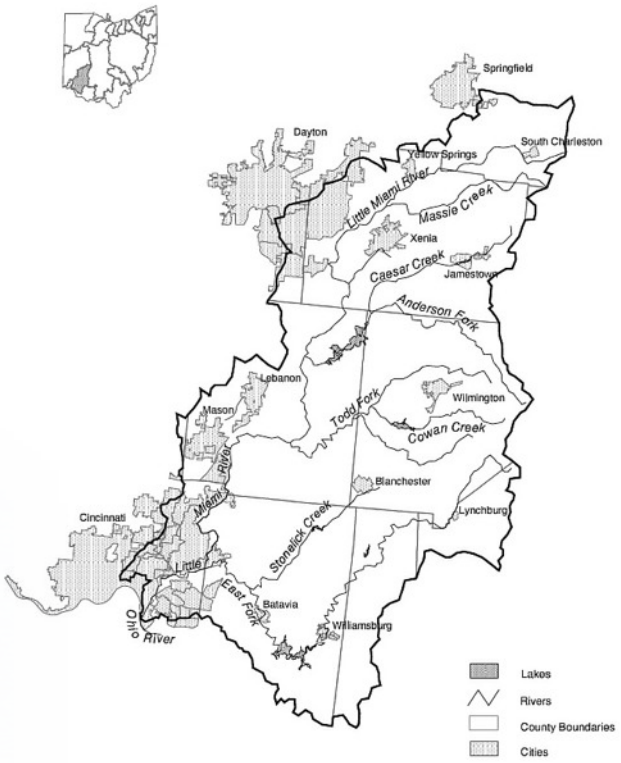
In 2019, LMC and many others will be celebrating the 50th anniversary of the designation of the Little Miami River as Ohio's very first "State Scenic River."

Special events, tours, and educational programs will highlight the importance of this lucky little river and commend all those who played key roles in its designation and the continuing conservation of this wonderful river resource.

You can Help!

You are encouraged to participate. For more information including volunteer and membership opportunities, please log on to www.littlemami.org or visit the Little Miami Conservancy Facebook page.

In 2019 and beyond, the Little Miami Conservancy will be working diligently, with all our public and private partners, to keep the Little Miami dream ALIVE AND WELL for future generations.



ABOVE: Little Miami Watershed Map from OEPA. BELOW: Little Miami Conservancy has planted over 50,000 trees along the Little Miami River.

How to Plan for Affordable, Supportable Utility Rates

Utilities benefit from financial planning and selecting the right funding strategy – and those benefits can be passed to the customer

by Kenneth Duplay, CFO, Northeast Ohio Regional Sewer District, DuplayK@neorsd.org

and Carol Malesky, Stantec Consulting Services Inc., carol.malesky@stantec.com

Introduction

After years of double-digit rate increases, customers, boards, councils, and other decision makers tend to lose their appetites for more. Many utilities today are facing the need for more – more infrastructure replacements and improvements, more funding for projects, and more rate increases to pay for that funding. This was the case for the Northeast Ohio Regional Sewer District (NEORSD). After a period of significant rate increases, the Board of Trustees was sensitive to proposals for future increases (see Figure 1). While the Board understood the need for increases to fund its massive capital improvement program (CIP), greater focus was placed on the balance between minimizing rate increases and getting the required work completed.

Balancing necessary, affordable rate increases sufficient to achieve utilities' objectives can be done with proper planning and analysis. Proper planning and analysis is key to helping decision makers make tough decisions about utility rates. Providing clear materials, rate options that meet strategic objectives, and evidence that utility bills will not comprise a significant portion of customers' incomes (understanding that not all customers will be able to afford their bills) all help utilities' leaders adopt rate increases they can support.

Why financial planning and master planning go hand in hand

Some utilities do not have the ability to address financial planning and rate impacts while creating a master plan for facilities. Some, like NEORSD, are subject to Consent Decrees and are required to complete a set of projects at specific times. Communities frequently conduct rate studies to determine if customers are paying appropriate rates and charges for services but fail to integrate these analyses with budgeting, management, and master plan requirements. Without financial planning, utilities are not properly informed and an inaccurate picture of affordability could be assumed. Often, assessments of the ability to fund necessary capital projects and operational requirements required to ensure long-term viability of system infrastructure are not correct. In a perfect world, financial planning would be concurrent with master planning, with feedback from each plan informing the other. CIP projects can be scheduled according to funding availability while minimizing rate increases to customers.

Your utility's financial team can develop detailed financial plans that are valuable capital planning tools which are used to review master plans and entire CIPs to evaluate the impacts of associated costs, timing, and funding sources. This evaluation works best as alternative CIPs are developed during the master planning process, but it is never too late to evaluate alternative project schedules and timing and adjust where the utility deems appropriate (see Figure 2).

Approach to developing supportable rates

NEORSD provides wastewater treatment services to most of the City of Cleveland and 61 suburban communities as one of its core services. Its large service area comes with large needs driven by capital requirements of $4.1 billion over the next 30 years. The capital needs average $200 million per year with annual operation and maintenance (O&M) expenses of approximately $150 million. These requirements are difficult to balance with minimal rate increases, as additional financing needs are substantially

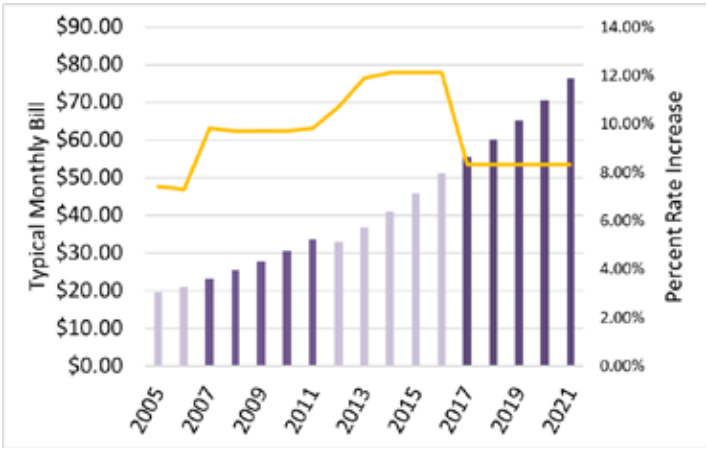


Figure 1 Controlling the Cycle of Increasing Rates

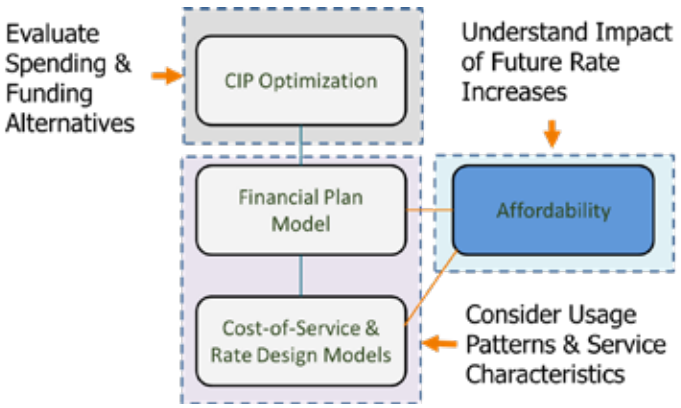


Figure 2 Integrating Financial Planning, Rate Making, and Affordability

larger than ever before. The NEORSD needs to maintain its financial status, through consistent revenues by approval of new rates, which will allow it to minimize its costs of borrowing and keep rates as low as possible.

The key to maintaining the NEORSD's revenue is to provide sufficient analysis and information for regular approval of new cost-based rates. Together, NEORSD staff and its consultants helped develop strategies to mitigate and manage potential impediments to a continuous process of future rate increases. From a financial perspective, increased rates may result in a greater amount of uncollectable accounts and lost revenue. From a political perspective, support for future rate increases is at risk of shrinking as bills become less affordable for many residents. Both are impediments to NEORSD's financial sustainability goals.

While NEORSD completes a full rate study every five years, staff maintains annual updates to its 10-year long-term financial planning model to minimize effects of changes to revenues and costs. During the last rate study, key financial management targets were identified as the drivers to projected revenue requirements and rates. These targets include: 1) maintaining municipal bond ratings of Aa1 and AA+, 2) achieving debt service coverage targets of 1.5X total debt service and 2.0X revenue bond debt service, 3) liquidity of 400 days cash on hand, and 4) generate cash from rates to fund 25 percent of annual CIP project costs.

In working with the Board, the rate study team presented numerous rate adjustment options that balanced the Board's strategic objectives. In fact, the selected rate scenario included the primary use of State Revolving Fund Loans (SRFs) and funding of the new Member Community Infrastructure Program (MCIP). The MCIP provides funding to the NEORSD's member communities to address issues in the local sewer systems including repair and replacement of sewer lines that may cause basement flooding and contribute to inflow and infiltration.

Another means to support the proposed rates was an increased focus on strategies to directly confront the issue of affordability. WARi® (Weighted Average Residential Index), a new approach to evaluating affordability, was used in the NEORSD rate study. WARi enhances visibility of residential affordability for utility managers by focusing on three key areas that the usual approaches neglect: population details by neighborhoods; the full distribution of income unique to the community; and real rather than hypothetical bills (see Figure 3).

Affordability projections were provided for each rate scenario analyzed for the Board. By integrating affordability into the financial planning and rate scenario process, the Board was provided a view of the impacts of proposed and future rate increases on their customers' ability to pay sewer bills. More importantly, NEORSD received useful information for improving its affordability programs. A potential next step in affordability programs is to identify renters who need assistance paying sewer bills. Exploring ways to expand affordability programs beyond homeowners is one potential way to address the impact that increasing rates are having in the community.

Planning for future success

In the end, the biggest benefits of integrating financial planning and affordability analyses into rate making are that you can clearly demonstrate: what is needed, when it is needed, how you can pay for it, and how it will affect customers' abilities to pay utility bills. A detailed and fully integrated financial plan linked to rate options gives the Board all the information it needs to approve necessary, affordable rate increases. For NEORSD, the staff continues to use the financial plan model and is furthering research on expanding its affordability programs to provide a means of improving affordability of sewer service for all.

Key Message: In a perfect world, financial planning would be concurrent with master planning, with feedback from each plan informing the other. Capital improvement program (CIP) projects can be scheduled according to funding availability while minimizing rate increases to customers.

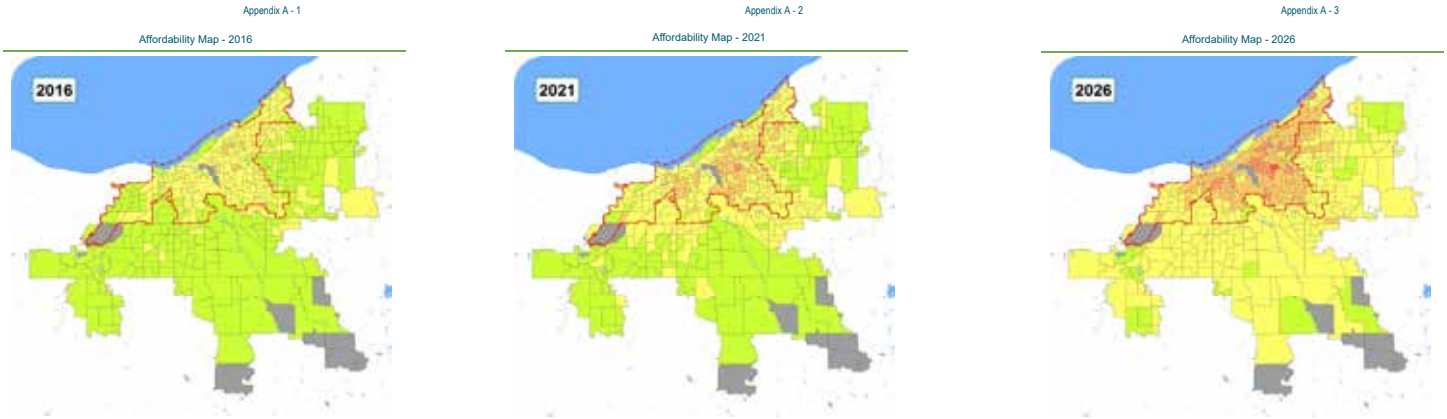


Figure 3 Projecting Affordability over Time with WARi®

"I was only going to be in there five minutes."

by Julie Fritchley, NE Section Safety Chair

The Bureau of Labor Statistics reported from 2011 to 2016 there had been 130 trenching and excavating related fatalities. While there are many dangers to look out for in the wastewater field, this is one I find especially dangerous. It is critical we plan out each dig; one shortcut could mean someone's life.

Excavations, including trenches, can be found anywhere from construction at our facilities to sewer/water field crews. Deaths or injuries can be caused from some of the following hazards: asphyxiation, electrical shock, falls, concussions, getting caught in or between, struck by, and amputations.

Find the best way to protect employees from cave – ins. Dependent on the soil type and depth, protective systems can include shoring, sloping, benching, or shielding. Make sure to have a competent person on site. This person has the knowledge to identify safety hazards and the authority to stop the job until conditions are made safe. Be sure to locate any underground utilities prior to the dig.

Plan to have the right personal protection equipment (PPE) for the job. Will there be a need for a face shield to protect from splashes? Will there be a need for waterproof footwear or clothing? Workers in excavations should be equipped with hard hats to protect them from overhead hazards. Let's not forget about work zones and traffic requiring us to have on reflective gear.

Excavations should have a safe means of entry and exit for depths of 4 feet or greater. A ladder, steps, or ramp can be used. Whichever equipment is used should be within 25 feet of the employees.

Keep in mind this is in no way an exhaustive list of safety considerations for excavations. It's more of a reminder so we can prevent further death and injury through training and implementation. How many times have we heard, "I was only going to be in there five minutes"? Let's remind ourselves and employees to practice patience and follow proper procedures when working on any job.

Renewing the water workforce: Improving water infrastructure and creating a pipeline to opportunity

by Joseph Kane and Adie Tomer, attributed from the Brookings Metropolitan Policy Program

The original article can be found at *https://www.brookings.edu/research/water-workforce/*

SUMMARY

As the U.S. economy continues to grow, many communities are struggling to translate this growth into more equitable and inclusive employment opportunities. Simultaneously, many of the nation's water infrastructure assets are in urgent need of repair, maintenance, and restoration. Yet the workers capable of carrying out these efforts are in short supply due to an aging workforce eligible for retirement and the lack of a pipeline for new talent.

However, addressing these two challenges together offers an enormous infrastructure and economic opportunity. Constructing, operating, designing, and governing water infrastructure systems demands a skilled workforce, and hiring a diverse workforce can support greater economic mobility. To unlock this opportunity, local, state, and national leaders must work together to better understand current workforce challenges and develop new techniques to hire, train, and retain water workers.

By analyzing occupational employment data, this report explores the water workforce in greater depth to uncover the accessible, well-paying opportunities in this sector. In particular, it finds:

A. **In 2016, nearly 1.7 million workers were directly involved in designing, constructing, operating, and governing U.S. water infrastructure, spanning a variety of industries and regions.** Water utilities employ many workers, but multiple other industries and establishments, including engineering firms and construction contractors, are essential to the water sector too. Collectively, the water workforce fills 212 different occupations–from positions in the skilled trades like electricians and technicians to financial, administrative, and management positions–that are found everywhere, from big metropolitan markets to smaller rural areas.

B. **Water occupations not only tend to pay more on average compared to all occupations nationally, but also pay up to 50 percent more to workers at lower ends of the income scale.** Water workers earn hourly wages of $14.01 and $17.67 at the 10th and 25th percentiles, respectively, compared to the hourly wages of $9.27 and $11.60 earned by all workers at these percentiles across the country. Significantly, workers across 180 of the 212 water occupations–or more than 1.5 million workers–earn higher wages at both of these percentiles, including many in positions that tend to require lower levels of educational attainment.

C. **Most water workers have less formal education, including 53 percent having a high school diploma or less. Instead, they require more extensive on-the-job training and familiarity with a variety of tools and technologies.** While 32.5 percent of workers across all occupations nationally have a high school diploma or less, a majority of water workers fall into this category, speaking to the lower formal educational barriers to entry into these types of positions. However, 78.2 percent of water workers need at least one year of related work experience, and 16 percent need four years or more, highlighting the need for applied learning opportunities.

D. **Water workers tend to be older and lack gender and racial diversity in certain occupations; in 2016, nearly 85 percent of them were male and two-thirds were white, pointing to a need for younger, more diverse talent.** Some water occupations are significantly older than the national median (42.2 years old), including water treatment operators (46.4 years old). Meanwhile, women make up only a fraction of employment in some of the largest water occupations overall, including plumbers (1.4 percent). Finally, there is a particularly low share of black and Asian workers employed in the water sector; together, they only make up 11.5 percent of the water workforce, compared to 18 percent of those employed in all occupations nationally.

Based on these findings and dozens of conversations with utility leaders and other workforce groups, the report lays out a new water workforce playbook for public, private, and civic partners to use in future hiring, training, and retention efforts. Utilities and other employers need to adjust existing hiring procedures and pilot new training efforts in support of the water workforce; communities need to hold more consistent dialogues and develop more collaborative platforms; and national and state leaders need to provide clearer technical guidance and more robust programmatic support.

Ultimately, the report reveals the sizable economic opportunity offered by water jobs, including the variety of occupations found across the country, the equitable wages paid, the lower educational barriers to entry, and the need for more diverse, young talent.

BROOKINGS METROPOLITAN POLICY PROGRAM

RENEWING THE WATER WORKFORCE

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. *(jtincu20@gmail.com)* Thank you!

At a time when many Americans are struggling to access economic opportunity and many of the country's infrastructure assets are at the end of their useful life, infrastructure jobs offer considerable promise.[1] Workers in these jobs earn competitive wages and face lower educational barriers to entry.[2] They develop extensive knowledge and transferable skills that cut across multiple disciplines.[3] And the coming wave of retirements and other employment shifts in the infrastructure sector means prospective workers can find long-term careers.

The country's water infrastructure is emblematic of this significant opportunity. From pipes and pumps to rivers and lakes, water systems are in urgent need of repair, maintenance, and restoration. At the same time, water workers are in relatively short supply, both for public utilities and a wide range of other employers.

To seize this infrastructure and economic opportunity, the report provides a benchmark of the nation's 1.7 million water workers and lays out a set of actionable strategies–a new water workforce playbook–that local, state, and national leaders should use in future hiring, training, and retention efforts. In the process, the report emphasizes that modernizing the country's water systems and approaches to workforce development offers scalable lessons for other infrastructure sectors.

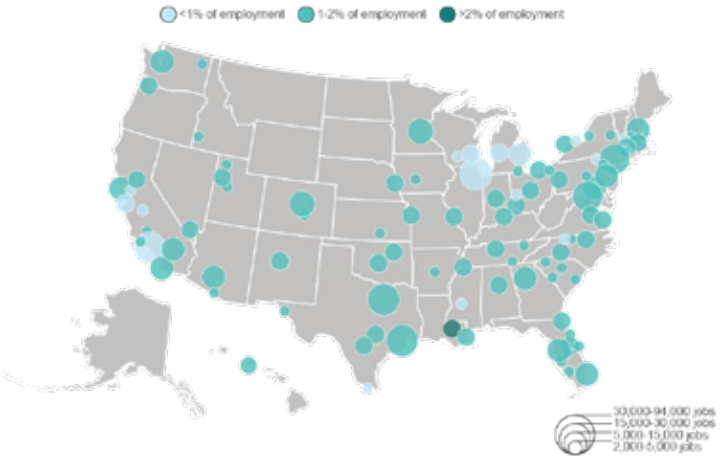
Water workforce sections

1. Types of jobs
2. Wage levels
3. Education requirements
4. Demographics
5. Policy playbook
6. Metro area data

1. Water workers fill a variety of jobs and are present in every region

In 2016, nearly 1.7 million workers were directly involved in designing, constructing, operating, and governing U.S. water infrastructure. From water utilities, to specialty trade contractors, to heavy and civil engineering construction, these workers carry out specialized activities crucial to the long-term operation and maintenance of the country's drinking water, wastewater, stormwater, and green infrastructure facilities.

Employed across 212 different occupations, including plumbers, electricians, and instrument technicians, water workers embody many of the skilled trades. However, there are tens of thousands of other workers involved in administration, finance, and management roles. Perhaps most importantly, water workers are not isolated to only a few areas across the country, but are employed everywhere, speaking to their enormous geographic reach; they consistently represent 1 to 2 percent of total employment in the country's metro areas and rural areas.

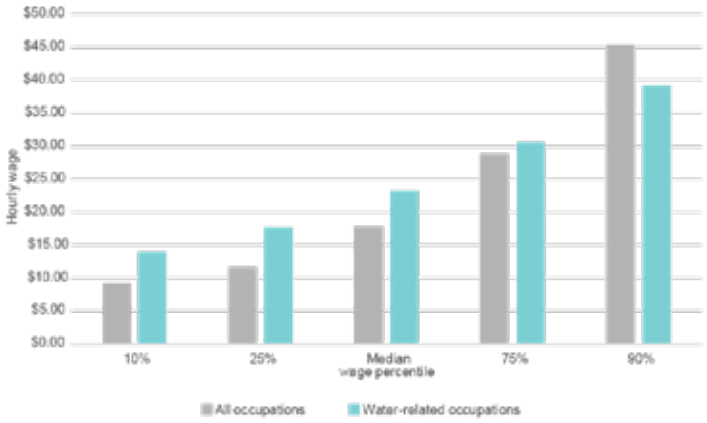


Water workers in the 100 largest metro areas by total employment and share of employment, 2016. Source: Brookings analysis of BLS Occupational Employment Statistics

2. Water workers earn more competitive and equitable wages

Water occupations pay well. Their average wage exceeds the national average, and their wage advantage is especially apparent at lower ends of the income scale. Water workers earn hourly wages of $14.01 and $17.67 at the 10th and 25th percentiles, respectively, compared to the hourly wages of $9.27 and $11.60 earned by all workers at these percentiles. These higher wages are also nearly ubiquitous across the

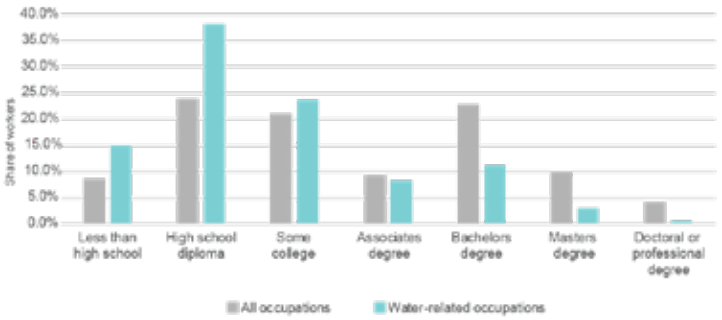
water sector, with 180 of the 212 water occupations (or more than 1.5 million workers) earning higher wages at both of these percentiles. This means most water occupations earn a more livable wage in most places.



U.S. Hourly Wage Comparison: Water Occupations vs. All Occupations, 2016. Source: Brookings analysis of BLS Occupational Employment Statistics

3. Water workers often have less formal education and boast many transferable skills

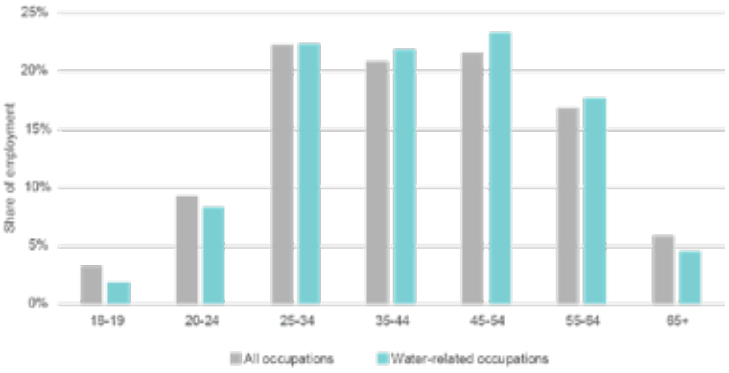
Even with higher pay, water occupations often do not demand much formal education. While 32.5 percent of workers across all occupations have a high school diploma or less, a majority of water workers (53 percent) fall into this category, including carpenters, welders, and septic tank servicers. Instead, water workers need extensive knowledge and skills developed on the job, underscoring the importance of applied learning opportunities. For example, 78.2 percent of water workers need at least one year of related work experience, and water treatment operators, plumbers, and HVAC technicians are among the many large occupations that require two to four years of related work experience.



Educational Attainment for Workers in Water Occupations vs. All Occupations, 2016. Source: Brookings analysis of BLS Occupational Employment Statistics and Employment Projections data

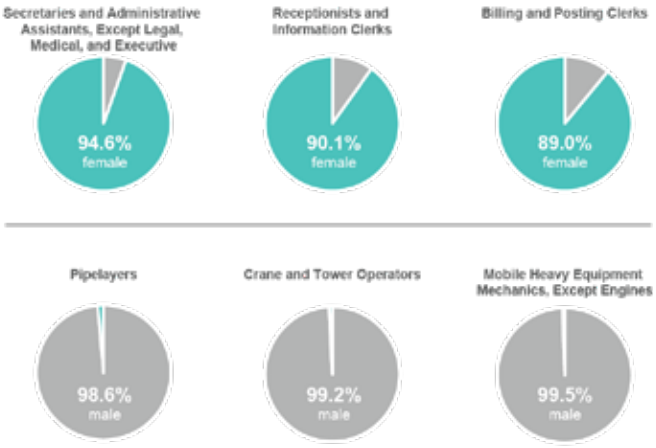
4. Water workers tend to be older and lack gender and racial diversity in certain occupations, pointing to the need for younger, more diverse talent

Thousands of water workers are aging and expected to retire from their positions in coming years, leading to a huge gap to fill for utilities and other water employers. Some water occupations are significantly older than the national median (42.2 years old), including water treatment operators (46.4 years old).



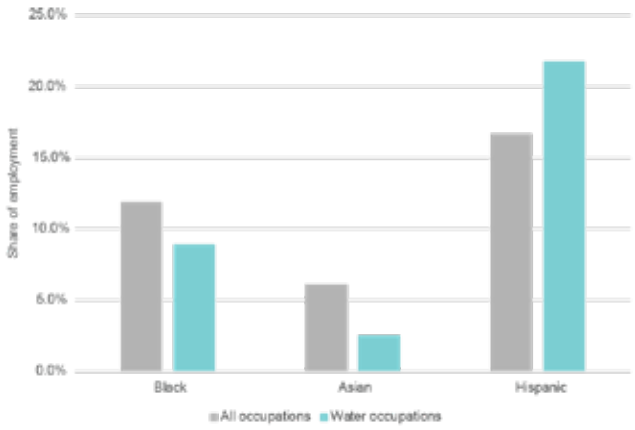
Age Range of Workers in Water Occupations vs. All Occupations, 2016. Source: Brookings analysis of BLS Occupational Employment Statistics and CPS data

Water workers are predominantly male as well, particularly among positions in the skilled trades. Although women make up 46.8 percent of workers across all occupations nationally, they account for only 14.9 percent of the water workforce.



Selected Occupations with High and Low Shares of Female Workers, 2016. Source: Brookings analysis of BLS Occupational Employment Statistics and CPS data

There is a notable lack of diversity in certain water occupations. While nearly two-thirds of the water workforce is white, similar to the ratio found across all occupations nationally (65.3 percent), black and Asian workers only make up 11.5 percent of the water workforce, compared to 18 percent of those employed in all occupations nationally. While the Hispanic share of the water workforce (21.8 percent) actually exceeds the national average across all occupations (16.7 percent), this is primarily due to their concentration in construction jobs. People of color, in particular, tend to be underrepresented in higher-level, higher-paying occupations involved in engineering or management.



Racial Diversity in Water Occupations vs. All Occupations, 2016. Source: Brookings analysis of BLS Occupational Employment Statistics and CPS data

5. Overcoming barriers to water workforce development: Developing a water workforce playbook

Together, water utilities, other water employers, community partners, and federal and state leaders have a long list of "to-do's" to further elevate and expand the country's water workforce opportunity. Not all places are equally equipped to accelerate their workforce development efforts, even if they have an appetite to test out new ideas.

Ultimately, locally-driven actions are crucial to develop new strategies and target new investments, but the scale of the issue demands broader regional collaborations and national support to build additional financial, technical, and programmatic capacity. The country needs a water workforce playbook to accelerate thinking, action, and investment. Informed by site visits across three different regions (California's Bay Area [4]; Louisville, Kentucky [5]; and Camden, New Jersey [6]), an expert roundtable in Washington, D.C., and multiple other conversations with industry leaders, this playbook calls for several actions:

1. Utilities and other water employers need to empower staff, adjust existing procedures, and pilot new efforts in support of the water workforce

- Hire and train dedicated staff to meet with younger students, connect with more diverse prospective workers, and explore alternative recruitment strategies
- Create a new branding strategy to more effectively market the utility or organization to younger students and a broader pool of prospective workers
- Account for workforce needs as part of the budget and capital planning process, while creating more detailed and consistent labor metrics
- Update or create new job categories to provide greater flexibility for potential applicants
- Develop competency models—or customize existing models—to promote continued learning and skills development among staff
- Design and launch new bridge programs, including "water bootcamps," to provide ways for younger workers and other nontraditional workers to explore water careers and gain needed experience
- Implement a formalized mentorship program to provide interns and younger workers a clear point of contact and better monitor their career progression

2. A broad range of employers and community partners need to hold consistent dialogues, pool resources, and develop platforms focused on water workers

- Identify a common regional "point person"—or organization—to schedule and steward consistent meetings among a broad range of community partners
- Hold an annual water summit/meet-and-greet where prospective workers, employers, and community partners can connect with one another regionally
- Out of these dialogues, develop a comprehensive water workforce plan, highlighting regional training needs and avenues for additional collaboration
- Develop a more predictable, durable channel of funding to support these efforts, driven by public fees and private sector support
- Strengthen local hiring preferences in support of more minority and women business enterprises
- Create a new web platform to connect water workers and employers, serving as a simple, consolidated site for regional job postings
- Launch a new regional academy—designed and run by employers and community partners—in support of more portable infrastructure education, training, and credentials

3. National and state leaders need to provide clearer technical guidance, more robust programmatic support, and targeted investments in water workforce development

- Hire or assign specific program staff to serve as common points of contact across relevant federal agencies, with a focus on water workforce development
- Supported by federal agencies or other national organizations, conduct a series of dialogues and learning sessions in a broad range of markets to assess water workforce needs and priorities
- Develop a common landing page, or repository, that highlights regional best practices and other innovative water workforce development strategies
- At a national level, form a "water workforce council" among leading groups to serve as an advisory body, with an eye toward future priorities
- With guidance from employers, industry associations, and other stakeholders, establish more versatile and streamlined water certifications nationally
- Expand federal and state funding via existing workforce development programs and educational initiatives, including apprenticeships
- Expand federal and state funding via newly targeted and competitive grant programs, in support of alternative bridge programs and other innovative training programs

6. Metro area data

This dashboard provides data on the water workforce in the country's 100 largest metro areas, including employment totals, wages, and occupations. See the downloads section at the top of the page for additional data.

Columbus, OH

Columbus, OH

Metro area water employment, 2016

10,237

Rank: 34/100

Hourly wage distribution of the water workforce (■) versus all occupations (■), 2016

Ten largest water occupations by employment, 2016

Occupation	Jobs in water workforce	Share of all water workforce jobs
1. Plumbers, Pipefitters, and Steamfitters	1,804	17.6%
2. Construction Laborers	988	9.6%
3. Water and Wastewater Treatment Plant and System Operators	700	6.8%
4. Operating Engineers and Other Construction Equipment Operators	616	6.0%
5. Heating, Air Conditioning, and Refrigeration Mechanics and Installers	476	4.6%
6. Heavy and Tractor-Trailer Truck Drivers	277	2.7%
7. Office Clerks, General	274	2.7%
8. First-Line Supervisors of Construction Trades and Extraction Workers	271	2.6%
9. Electricians	242	2.4%
10. Septic Tank Servicers and Sewer Pipe Cleaners	240	2.3%

Cleveland-Elyria, OH

Cleveland-Elyria, OH

Metro area water employment, 2016

10,314

Rank: 33/100

Hourly wage distribution of the water workforce (■) versus all occupations (■), 2016

Ten largest water occupations by employment, 2016

Occupation	Jobs in water workforce	Share of all water workforce jobs
1. Plumbers, Pipefitters, and Steamfitters	2,096	20.3%
2. Construction Laborers	1,036	10.0%
3. Water and Wastewater Treatment Plant and System Operators	690	6.7%
4. Heating, Air Conditioning, and Refrigeration Mechanics and Installers	512	5.0%
5. Operating Engineers and Other Construction Equipment Operators	452	4.4%
6. Office Clerks, General	307	3.0%
7. Septic Tank Servicers and Sewer Pipe Cleaners	270	2.6%
8. Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	258	2.5%
9. Heavy and Tractor-Trailer Truck Drivers	242	2.3%
10. First-Line Supervisors of Construction Trades and Extraction Workers	237	2.3%

Cincinnati, OH-KY-IN

Cincinnati, OH-KY-IN

Metro area water employment, 2016

11,558

Rank: 29/100

Hourly wage distribution of the water workforce (■) versus all occupations (■), 2016

Ten largest water occupations by employment, 2016

Occupation	Jobs in water workforce	Share of all water workforce jobs
1. Plumbers, Pipefitters, and Steamfitters	2,482	21.5%
2. Construction Laborers	1,002	8.7%
3. Water and Wastewater Treatment Plant and System Operators	780	6.7%
4. Heating, Air Conditioning, and Refrigeration Mechanics and Installers	541	4.7%
5. Operating Engineers and Other Construction Equipment Operators	524	4.5%
6. Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	430	3.7%
7. First-Line Supervisors of Construction Trades and Extraction Workers	356	3.1%
8. Office Clerks, General	253	2.2%
9. Electricians	253	2.2%
10. Heavy and Tractor-Trailer Truck Drivers	252	2.2%

Source: Brookings analysis of BLS Occupational Employment Statistics

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

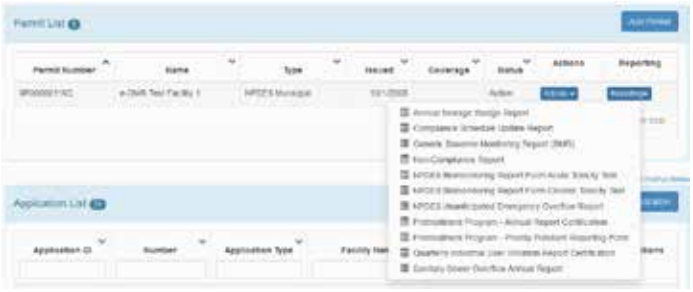
Avon Lake Regional Water
City of Bellevue
City of Canton WRF
City of Celina
City of Columbus
City of Dayton WWTP
City of Fairborn
City of Harrison
City of London Ohio
City of Mansfield
City of Marietta WWTP
City of Mason
City of Newark WWTP
City of Oberlin
City of Painesville
City of Solon
City of Steubenville
City of Toledo Div of Water Reclamation
City of Troy
City of Twinsburg
City of Warren WWTP
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

Ohio EPA Compliance Updates

by Robert C Ward, Environmental Manager, Ohio EPA – Division of Surface Water
and Bill Palmer, Compliance Manager, Ohio EPA – Division of Surface Water

Ohio EPA Non-Compliance Notification Update

The Ohio Environmental Protection Agency's Division of Surface Water (DSW) utilizes the Ohio EPA eBusiness Center to launch the **Surface Water Tracking, Reporting and Electronic Application Management System (STREAMS)**. Through STREAMS, users can electronically submit National Pollutant Discharge Elimination System (NPDES) general and individual initial and renewal permit applications, notice of terminations, no exposure certifications, as well as a variety of permit-related reports (shown below).

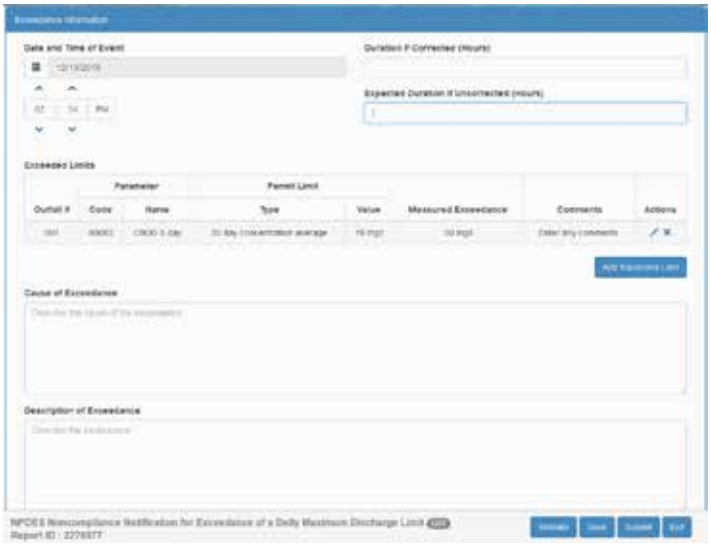


Information regarding the submittal of the non-compliance notification for exceedance of a daily maximum discharge limit, non-compliance notification for bypasses and upsets, and sanitary sewer overflow (SSO) forms were previously only available through the Agency's website. They are now available directly through the eBusiness Center and the STREAMS service. Having the ability to submit immediately through user-friendly smart forms allows for streamlined management and an efficient way to pass information into the Agency database which is then available to all Agency districts statewide. STREAMS provides the capability of electronically submitting many forms and applications, thus replacing physical paper forms which must be mailed and entered by hand into the database, therefore taking longer to reach the district staff.

NPDES permit holders must submit non-compliance notification and SSO notification to Ohio EPA within designated timeframes as defined in the NPDES permit. (See page 28 of Volume 86, issue 4 2013 of the Buckeye Bulletin) The notification is an explanation of the events that lead to certain NPDES permit non-compliance. When the non-compliance event constitutes an emergency, it must be reported to the Ohio EPA's Emergency Hotline (800-282-9378) as soon as possible as delays could potentially result in greater threats to human health and the environment.

The STREAMS reports have been designed to be filled out and submitted with ease. These smart forms streamline the process by providing dropdown menus wherever possible and pre-populating the form with permit-specific information from the Agency's database. This saves the submitter time and simplifies the process as well as helps to maintain data integrity within our system.

The NPDES Non-compliance Notification for Exceedance of a Daily Maximum Discharge Limit report is partially shown below. Note the very quick and easy date, duration and exceedance summary entries. The exceedance limit section brings in all permit-specific outfall and limit information automatically to select via dropdown menus. After clicking Submit, the information can then be viewed immediately by all Ohio EPA staff.



Quick guides providing click-by-click walkthroughs for each STREAMS report are located at: epa.ohio.gov/dsw/ebs#1793310241-report-forms. The site also includes quick guides for the permit application and ePayment system along with other helpful guidance, compliance information, reference documents and district contacts.

Ohio EPA Compliance Updates

In the Federal fiscal year (FY) 2018-2022 U.S. EPA Strategic Plan, U.S. EPA identified a new priority to increase compliance with environmental laws. U.S. EPA selected the Clean Water Act (CWA) NPDES as the first program to initiate the effort. U.S. EPA set a priority goal to reduce the rate of significant noncompliance (SNC) in the NPDES program by 50 percent (to a rate of 12 percent) by the end of FY 2022. U.S. EPA will work with state programs to achieve the priority goal target in

stages – the first will be to reduce the overall NPDES SNC noncompliance rate by three percent (to 21 percent) by Sept. 30, 2019 (the end of FY 2019).

What is SNC? In a nutshell:

- Permit effluent violations
  - Violations Exceeding Technical Review Criteria
    - 40 percent exceedance of the monthly average effluent limits for conventional pollutants
    - 20 percent exceedance of the monthly average effluent limits for metals

      Trigger – Two or more months in a six-month period
  - Violations Not Exceeding Technical Review Criteria

    Trigger – Four or more months in a six-month period
- Failure to submit discharge monitoring reports (more to come on this)
- Compliance schedule violations
- Violations of formal enforcement actions
- Violations for failure to implement a pretreatment program

To convey the message that increased compliance is the goal, and enforcement actions are not the only tool for achieving this goal, U.S. EPA will evolve the National Enforcement Initiatives (NEI) program into a National Compliance Initiatives (NCI) program. Priorities will change from National Enforcement Initiatives to National Compliance Initiatives.

Ohio EPA will support this initiative by maintaining a proactive approach to compliance. One of the recent proactive documents that Ohio EPA has implemented is a Keys to Compliance (K2C) sheet which is included with every new/renewed NPDES permit. The K2C is a one-page sheet that summarizes the important responsibilities of having an NPDES permit. Some of the items included on the K2C sheet are: when the next discharge monitoring report is due; when the current permit expires; when the renewal application is due; what class of operator is required to run the plant; when the annual sludge report is due; and most importantly, who your Ohio EPA district office contact person is. It is highly encouraged for permittees and/or operators to establish a working relationship with their Ohio EPA inspector. This relationship will help achieve compliance and avoid enforcement.

A major reason for elevated SNC rates nationally and in Ohio is due to failure to submit discharge monitoring reports (also known as DMR Non-Receipt). It only takes one DMR Non-Receipt (even for one parameter) to put a facility on the SNC list. Furthermore, once a facility is on the SNC list for a DMR Non-Receipt, they will remain on the list for two years. It is imperative that all data required by the NPDES permit be submitted on the DMR as applicable each month. Timely submittal is the easiest way to avoid SNC.

What if the non-compliance is an emergency?

Report environmental emergencies to Ohio EPA 24-hours-a-day, 365-days-a-year

800-282-9378

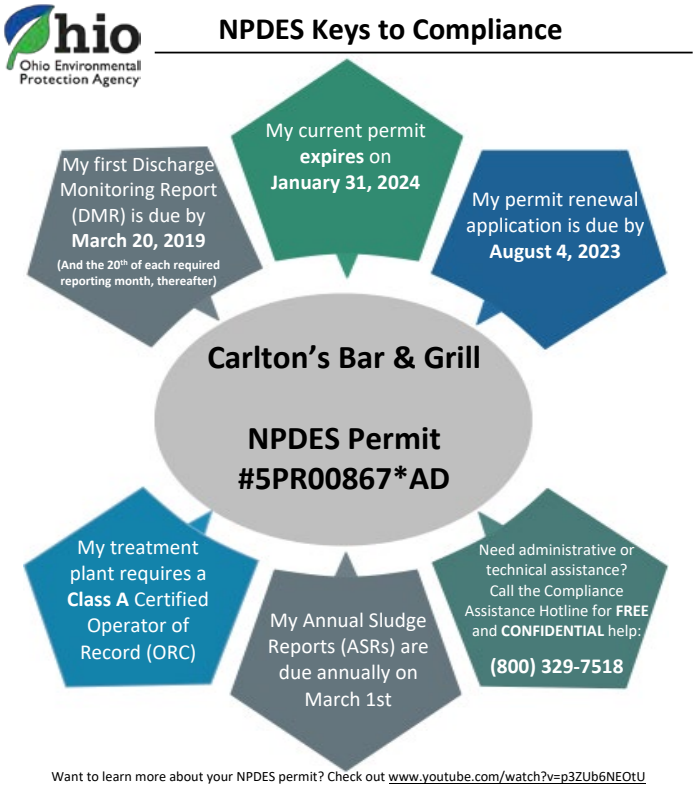
Call the Ohio EPA emergency number above as soon as reasonably possible if you determine an emergency exists.

An emergency exists when there is an imminent or substantial threat to public health, safety or the environment.

Ohio EPA Webpage update

To make Ohio EPA's webpage more user friendly for certified operators, we have updated the Agency's and the Division of Surface Water's home pages to include a quick button for operator certification information. When you open our webpage, look for this button.

Clicking on this button will take you directly to the operator certification webpage where you can find information about the eBusiness Center, certification renewal, operator of record information, rules, exam information and more.



Fremont Water Reclamation Center

by Jeff Lamson, Superintendent, Fremont WRC
and Robert Hrusovsky, P.E., Stantec

5a – Administration/Laboratory
30 – A2O Aeration Basins
41b – Effluent Pump Station
5b – Maintenance
34 – Gravity Thickener
50 – ATAD Reactors
12a – Influent Pump Station
35a – RAS Bldg. Centrifuges
51 – SNDR/Biofilter
12b – Influent/ATAD Electrical Room
35b – Chemical Addition/Electrical Room
52 – Biosolids Storage Tanks
13a – Blower Room/Aeration Electrical Room
35c – Secondary Clarifiers
13b – Grit Removal
40 – Tertiary Filtration
15 – Generator
41a – Ultra Violet Disinfection

The Fremont Water Reclamation Center (FWRC) is located along the banks of the scenic Sandusky River on the northern edge of Fremont, Ohio. The City of Fremont covers 8.3 square miles and the FWRC services a population of 25,400 (17,400 City residents and 8,000 Sandusky County residents). The Fremont FWRC has fifteen employees and is responsible for the operation and maintenance of the FWRC, 25 pump stations and the City's flood control structure.

Sewers were first installed in Fremont in the late 1800s and flowed directly to the Sandusky River. In the late 1940s, two main interceptor sewers were installed that flowed to a newly constructed treatment facility designed for an average flow of 3.5 MGD. The facility had a grit removal channel, coarse bar screens, two comminutors and three raw sewage pumps that pumped sewage to a primary clarifier. Sewage then flowed by gravity to three trickling filters and then to a final clarifier. The facility had two anaerobic digesters and sludge was dried in glass-enclosed sludge drying beds. The original plant also had an administration building which contained a laboratory.

The first major upgrade to the facility occurred in 1964. At this time a garage with maintenance facilities was added on to the west end of the administration building. A pre-aeration facility with an aerated grit tank and grit removal system was added. A new main sewer was installed in 1964 to service the area north of town. A second primary clarifier was constructed during this upgrade as well as the activated sludge system with six aeration tanks and two new secondary clarifiers. Also added was a filter building for vacuum filtration of sludge. The upgrades to the facility increased the secondary treatment capacity to an average flow of 7 MGD with a peak of 13.75 MGD.

In 1976 two 350 HP Hoffman blowers were installed to provide additional air capacity to the aeration basins. At this time sludge filter presses were installed and the sludge drying beds were removed. These presses were removed in 1980 and a sludge loading station was added to pump liquid sludge from the sludge holding tank (original final clarifier) to tanker trucks that transported the sludge for liquid land application.

The next major improvements were completed at the facility in 1988. At this time a sludge thickener was added along with two new secondary clarifiers. This allowed for the west secondary clarifier from 1964 to be converted to a sludge holding tank. Fine bubble diffusers were installed in the six aeration tanks. Tertiary sand filters were installed with a peak flow rate of 9.32 MGD. The administration building was also remodeled during this facility upgrade.

In 2002 the City received a National Pollutant Discharge Elimination System (NPDES) permit with a requirement to develop a Combined Sewer Overflow Long Term Control Plan (CSOLTCP) to reduce combined sewer

overflows (CSO) to comply with the Federal CSO Policy and meet the objectives of the Clean Water Act. The City's approved CSOLTCP is a twenty-year plan with a final compliance deadline in 2028. The first major project in the City's CSOLTCP was the construction of a wastewater treatment facility capable of treating up to 24 MGD through secondary biological treatment. The CSOLTCP currently has a requirement for the site to be able to eventually treat up to 60 MGD. With this in mind, the facility was constructed with provisions so it could easily be expanded to accommodate the additional flow in the future. The groundbreaking ceremony for the project took place in May 2013 with a final completion date of April 2017. The new facility has an average daily flow design of 7.6 MGD with a peak flow of 24 MGD. The City made a conscious decision to implement a biological nutrient removal (BNR) process in an effort to lower the level of nutrients discharged by the City to the Sandusky River that flows to Sandusky Bay and eventually Lake Erie.

The liquid phase of the new treatment facility came on-line in February of 2016. All new structures were constructed for the liquids phase of the project with the exception of the tertiary treatment building which was converted from sand filters to cloth disc filters. This allowed the old facility to continue treatment during construction with only a short period of no tertiary treatment. The facility did meet all NPDES permit requirements during that short period as it usually met total suspended solids requirements with secondary effluent. After the new liquids facility came on-line the original anaerobic digesters and secondary clarifiers were converted to the new Autothermal Thermophilic Aerobic Digestion (ATAD) solids process which came on line in January of 2017.

The following discussion describes the current treatment process in detail:

PRELIMINARY TREATMENT

Flow enters the facility and passes through two multi-rake type mechanically cleaned bar screens with ¼" openings each rated for a flow of 24 MGD. The screened material is deposited onto a reversible sidewall belt conveyor which transports the material to a washer compactor. The washer compactor has an electronic eye and if it becomes plugged/bridged the conveyor will automatically reverse and deposit the screened material into a dumpster. The screened and compacted material is then hauled to a landfill for disposal.

Mechanically cleaned bar screens

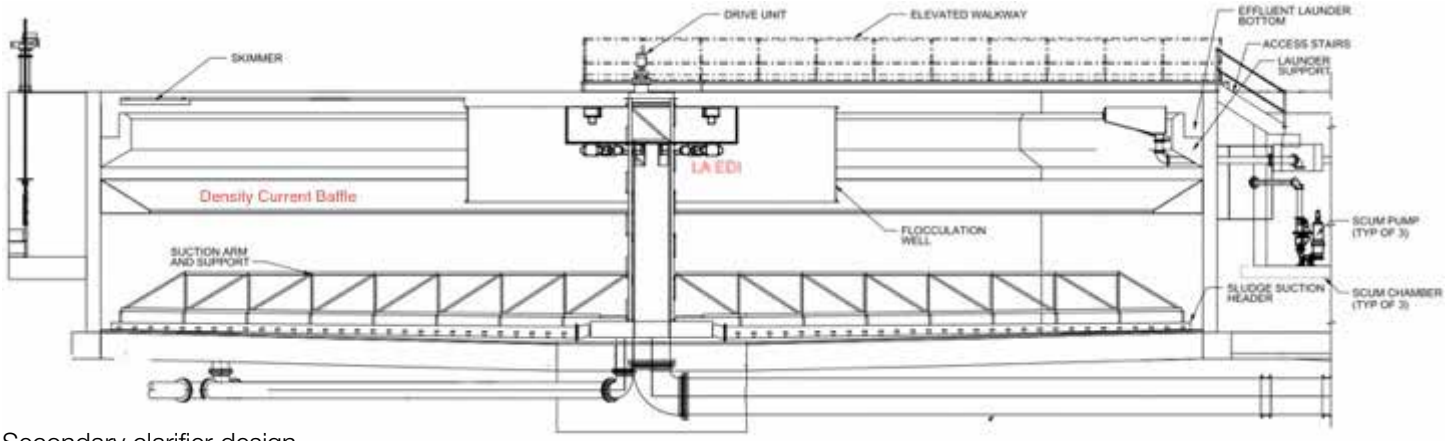
Flow then enters the influent pump station that is divided into two wet wells, one side with a 12 MGD and 3 MGD pump the other with a 12 MGD, 6 MGD and 3 MGD pump for a total pumping capacity of 36 MGD (24 MGD with the largest pump out of service). Each side of the influent pump station has been designed to accommodate a future 24 MGD pump that would bring the maximum pumping capacity to 60 MGD with the largest pump out of service. The influent pumps are submersible centrifugal pumps that discharge to a common header that has at one end a 24-inch force main for flows up to 15 MGD and at the other end a 36-inch force main for flows over 15 MGD. This configuration allows for handling a wide range of flows which in the future could potentially be 60 MGD.

Flow is pumped from the influent pump station to the vortex type grit removal system. This system consists of two grit concentrator basins each rated for a maximum flow of 15 MGD, two recessed impeller centrifugal grit pumps, two grit classifiers with grit dewatering units. The washed grit is discharged into hoppers that are dumped onto a grit drying pad and then disposed of in a landfill.

SECONDARY TREATMENT

Secondary treatment consists of an Anaerobic, Aerobic, Oxic (A2O) Biological Nutrient Removal (BNR) system. There are three basins which have three passes and are rated for maximum flows of 8 MGD. The volume of all three basins is 4.25 MG. The first pass consists of an anaerobic zone and anoxic zone. The second and third passes are oxic zones. To accommodate high flows and avoid wash out of solids the third pass has a gate which is opened at flows over 5 MGD per basin to allow the majority of storm flow to pass just through that last aerobic zone. The anaerobic zones have one floating mixer and the anoxic zones have two. Nitrate rich mixed liquor is returned to the anoxic zone by three 2.5 MGD submerged horizontal propeller type recycle pumps per basin.

The diffusers in the aerobic zones are high efficient flat plate and disc type membrane diffusers and receive air from positive displacement rotary screw blowers. There are three blowers for the facility, one 150 HP and two



Secondary clarifier design

250 HP. Each basin has four aeration grids with air flow controlled by valves that are regulated based on feedback from four dissolved oxygen probes. Air feed to the basins is set at either 2 mg/l DO or a minimum air flow required for mixing. The pressure in the main air header is monitored by the SCADA system to maintain a steady pressure which then prompts the VFD controlled blowers to regulate their output.

The SCADA system monitors the A2O BNR system with data delivered to it by ORP, pH, DO, nitrate and ammonia meters in each basin. If the BNR system is not able to remove the required amount of phosphorus there is a chemical system with peristaltic pumps to deliver alum to aid in phosphorus removal.

Flow from the A2O BNR system flows to three secondary clarifiers that are each 90 foot in diameter with an 18-foot water depth. The clarifiers have patented Los Angeles Energy Dissipating Inlets and density current baffles to aid in solids settling and retention during times of high flow. Scum is collected off of the surface of the clarifiers and sent to one of two scum pumping stations that pump the scum to the biosolids reactors. If needed there is a peristaltic pump polymer feed system to deliver settling aid polymer to the clarifiers.

Centrate from both centrifuges and the gravity thickener overflow go to a centrate well that is pumped to the head of the A2O basins.

Returned Activated Sludge (RAS) is returned to the A2O system with four horizontal screw centrifugal pumps each rated at 2.5 MGD. Waste Activated Sludge (WAS) is pulled off the RAS header and is controlled by an operator setpoint in the SCADA system that controls the wasting valve. The WAS is conveyed to a gravity thickener.

TERTIARY TREATMENT

Tertiary treatment consists of three rotating cloth disc filters each rated for a maximum flow of 8 MGD. The filters flow from the inside out and as the filter becomes fouled the water depth in the inlet rises and triggers a backwash cycle. The backwash is pumped to the head of the A2O basins.

Cloth disc filters

DISINFECTION

Disinfection of the effluent is accomplished by a low pressure/high output ultra violet light system. There are two channels that each contain 3 UV banks with 12 lamps each for a total of 36 lamps per channel. Each channel is rated for a maximum flow of 12 MGD. In the event the UV system is not functioning, the facility has the ability to feed peracetic acid for disinfection with a peristaltic pump system.

EFFLUENT PUMP STATION

Under normal conditions, the effluent flows by gravity to the Sandusky River. When the river is too high to allow flow by gravity, the facility utilizes an effluent pump station. The pump station consists of two 12 MGD, two 6 MGD and one 3 MGD KSB vertical submersible mixed flow pumps. The effluent is pumped to an elevation higher than the river allowing it to then flow by gravity to the river.

BIOSOLIDS PROCESS

The FWRC produces approximately 700 dry ton per year of biosolids. The heart of the biosolids system is a Autothermal Thermophilic Aerobic Digestion (ATAD) process. WAS is thickened in the gravity thickener to about 3.5% total solids and is then sent to the thickening centrifuge where it is thickened further to between 5-6% before being sent to one of two ATAD reactors. Sludge is sent on a daily basis to the ATAD system feeding the reactors on a rotating basis. From the ATAD reactors the sludge is sent to the Storage Nitrification Denitrification Reactor (SNDR). From there the sludge is pumped to the dewatering centrifuge where it is dewatered to between 20-25% total solids. Currently the biosolids are being hauled to a solid waste landfill but the City is in the process of having the biosolids certified as exceptional quality and there is interest from a local composter to utilize it.

Cloth disc filter

Average flow of sludge to the thickening centrifuge is 60 gpm and to the dewatering centrifuge is 100 gpm. Two polymer blending units provide polymer for the centrifuges.

Off gases from the two ATAD reactors and the SNDR are drawn off by a vacuum fan to the biofilter.

PERFORMANCE OVERVIEW

Performance of the new facility has been very good from day one. Average daily flow has increased by over 65% and CSO volumes have been reduced approximately 90%. The new facility has treated flows approaching 30 MGD for short periods of time and has experienced several consecutive days with flows in excess of 24 MGD on several occasions. Compared to the effluent of the previous facility ammonia has been reduced by 60%, nitrate/nitrite by 74% and total phosphorus by 38%. (Refer to following chart)

	Fremont WPCC	Fremont WRC
	Data from 2012-2015	Data from March 2016-December 2018
Average Flow (MGD)	4.778	7.304
Peak Flow (MGD)	9.158	24.990
Avg NH3 (mg/l)	1.41	0.56
Avg NO3 & NO2 (mg/l)	3.09	0.80
Avg TKN (mg/l)	2.1	<2.0
Avg TP (mg/l)	0.29	0.18

City of Athens finds new home for old parts

by Kayla Beard, originally printed in The Athens NEWS

Athens city officials have found a way to reduce waste connected to the Water Treatment Plant improvements project by donating old, operational parts to other municipalities.

Director of Engineering and Public Works Bob Heady said in an email last Friday that the city donated some of the used electrical equipment from the water plant to the city of Troy in southwest Ohio.

The equipment "consisted of motor-control centers that contain transformers, control switches, indicator lights and motor starters that are over 50 years old and no longer in production in most cases," Heady said.

"Before our upgrade, we found ourselves searching the internet to find replacement parts," Heady explained. Because most of the parts are out of production, internet sites such as eBay and other outlets were the only places the city might find replacement parts for old equipment.

"This experience gave us the idea that there may be other municipalities with the same challenges," Heady said.

"By working with our design engineer and Ohio Water Environment Association (OWEA), we were able to advertise the equipment to OWEA's e-mail list and within a week the City of Troy, Ohio, will now be able to benefit from our donation, thereby saving them money and keeping the removed equipment out of the landfill and scrap yard," Heady said.

Mitch Beckner, superintendent of the Wastewater Treatment Plant in Troy, said in an email Tuesday that employees from his city picked up the equipment from the Athens Water Treatment Plant last Friday.

"Both Troy's wastewater and water plants currently use identical equipment, and we were advised by the company that services our electrical equipment that it would be in our best interest to pick up the equipment for use as spares," Beckner said.

Beckner said the city of Troy is currently focused on refurbishing the existing equipment in its wastewater and water treatment plants, rather than replacing it, so the donation was appreciated.

"We were very pleased when we saw that Athens was offering their used equipment to anyone who wanted to come and pick it up," Beckner said, adding that he called Athens Water Treatment Plant Manager Shawn Beasley and "made arrangements right away" to retrieve the equipment.

"When we picked up the equipment, we learned that there will be some additional equipment available later as well," Beckner said, but that equipment is of a different model than that which Troy utilizes. "Hopefully, someone else will be able to find a good use for it that keeps it from going to waste," Beckner said.

Return on Investment: Starting a YPG at Work

by Justin Siegrist

I'm just going to come right out and say it – I'm a millennial. There, it's out there. I'm one of those that some feel has received preferential treatment in the workplace. So why does everyone care so much about making sure millennials are happy at work? I'm not sure, but I do know that it's extremely important to invest in your future. Realizing this, we started a company-wide Young Professionals Group at Wade Trim. I'll get into why the group was created, but before I do, I want to first share the story about my journey into civil engineering, as it relates to why investing in the development of younger staff is so important.

In the summer of 2010 – the summer between my Junior and Senior year of college – I completed an internship at a large international architectural/engineering firm's Bellevue, Washington office, which happened to be the second largest office in the company at the time. Working in an office that housed about 250 employees coupled with the fact that I was 2,300 miles from home in a large city where I knew exactly zero people, I initially felt a little bit like a kid lost at the zoo. However, one of the things that gave me solid footing was my involvement with the office's Young Professionals Group (YPG). My participation in the YPG allowed me to feel comfortable at work and provided me with opportunities to grow both professionally and personally. One of the most beneficial skills I learned was networking. When I arrived in Bellevue, the thought of entering a room full of strangers – and talking to them – terrified me. Through my participation in the YPG, the act of networking and the art of conversation slowly became less and less terrifying, until it eventually became commonplace. Thanks to that newly crafted skill, I was able to make a lot of connections throughout the office. I can recall at a Happy Hour during the last week of my internship one of my coworkers commented that after 3 months I knew more people in the office than he did after working there for several years. I think he was at least half joking. All kidding aside, it was the networking that allowed me to work on multiple projects across all civil engineering disciplines, which ultimately set the course for my eventual career in Water Resources engineering. On top of that, I became a different person. No longer was I reliant on others to get me work or look out for me. I was empowered. I took charge of my career.

Pittsburgh Big Brothers/Sisters Bowling fundraiser YPG Event.

This is a tremendously important point to note – on top of all the skills and personal and professional development that occurred because of my involvement with a YPG, I became empowered. This was not a mindset I held prior to joining the YPG, but it is one that has stuck with me ever since. I have no doubt that the success I've experienced to this point in my career is directly a result of my involvement with a YPG. My participation in that YPG so early in my development as an engineer set a strong foundation from which I was able to grow in a direction that I believe has enabled me to reach my full potential.

After completing my internship, I came back to Ohio to complete my bachelor's in civil engineering from the University of Dayton, and accepted a job offer from Wade Trim in their Cincinnati office in the summer of 2011. At the time, Cincinnati was Wade Trim's newest market, and because of that, my employment doubled the size of the office – I was one of two people. Keep in mind that my most recent experience with the world private sector consulting was my internship in an office that had around 250 people in it. It was certainly an adjustment for me. And while I wasn't quite the kid lost at the zoo anymore, I still felt a little lost. But this was a new kind of lost – instead of overwhelmed, I felt isolated.

In time I would eventually begin networking with many people in other offices because of their involvement with a large project with a client of ours in Cincinnati. People would visit the Cincinnati office, or I would work with them remotely. I also started getting involved with projects in other offices, often requiring some travel. Over the course of a few years, I would eventually work with a lot of people throughout the company, and on top of that, our Cincinnati office continued to grow. And before I knew it, my fit with Wade Trim suddenly felt very different from when I first began working there. I began to understand and sense the size of the company, and instead of feeling isolated, I felt connected to my coworkers that were spread out across the country. Suddenly, distance didn't really mean anything. Once again, I became empowered. I knew people; I was connected. Picking up the phone and asking someone for help was no longer a daunting task – it was comfortable for me. Because of this, my ability to

President/CEO Andy McCune talks to the YPG in March 2018 during the group's Phase II Kickoff event in the Taylor, MI office.

produce high quality work increased, and because I knew I had a network of expertise that I could always turn to when I needed help, taking on more responsibility wasn't a scary proposition anymore.

So now there are couple more points to note before going any further. First, just like when I joined the YPG, getting connected to my coworkers once again empowered me to take charge of my career, which increased my contributions to Wade Trim's product, and thus increased my benefit to my employer. Further, one other aspect not yet mentioned, but equally important to note, was my view of Wade Trim as my employer. When I began working at Wade Trim, there wasn't anything tying me to working there – not uncommon for someone's first employment in the working world. I wasn't sure at the outset if Wade Trim was a place I wanted to stay. That changed after I became more connected to my coworkers across the company. Suddenly I felt grounded, and Wade Trim became my home. Because of that, the thought of just leaving my "home" to work somewhere else didn't seem right. This shift in my mindset and development in my skillset occurred because I was engaged in my work.

To some of you reading this who are early in your career, you can probably relate to some of my experiences – feeling a bit lost, unsure of where you fit in with your company, and wishing you had more people that you could reach out to. And to some of you reading this who are more experienced – some of the younger staff that you're responsible for can probably relate to some of my experiences. It's important not to forget this: entering the workforce and finding your way is hard.

But is there a way to help younger staff transition from the unknown into their chosen career path, and provide them with opportunities to fully engage in their work, just like I was fortunate enough to experience? When thinking back on all my experiences – the YPG during my internship and how that helped me, the transformation of how I fit with Wade Trim after getting connected with my coworkers, and my increased ability to contribute to projects – putting all of that together, the answer to that question became obvious: start a YPG!

The Wade Trim YPG officially kicked off in August 2017, with the first of its many events taking place the following month. At the time of writing this article, the YPG has grown from its initial membership of 90 members to more than 140 members (roughly one quarter of the company) company-wide. One of the main themes of the first year of the YPG was to provide networking opportunities to younger staff to "introduce" everyone to each other and begin establishing lines of communication between all members of the group. To date, the YPG has collectively gotten together over 60 lunches and 15 happy hours between 10 different offices.

After the first full year of the Wade Trim YPG, we administered a survey to gauge members' overall satisfaction with the group. When asked how satisfied they were with the YPG, 94 percent of respondents indicated that they were either satisfied or very satisfied. Eighty eight percent of respondents said the YPG made them feel more engaged with their work, and 93 percent felt the YPG helped them network with their coworkers. A few responses to an open-ended feedback question really stood out, as they embodied exactly the aim of the group:

- "Getting to know my coworkers changes everything if I need a hand with something or have a question. It really helps out in the work place knowing your coworkers a little better."
- "So far the lunches [have provided] an opportunity to get to better know co-workers and helped with communication on projects."
- "Getting to know people who do different jobs than I do has led to us including other disciplines more in projects and broadening our group's work."
- "I was really welcomed into YPG when I first started working for Wade Trim and that definitely made my first few weeks of working and living in a new city much easier. I appreciate the variety of activities YPG participates in and the welcoming nature of the group."

So What does all of this mean? In general, it means a stronger future for Wade Trim. Equally as important,

Cincinnati hosts a remote YPG luncheon.

I believe it also means that the opportunity for a more fulfilling career for each YP member is available to those who want it.

For anyone reading this who has the opportunity to join a YPG, my advice is to get involved. You'll be surprised what you get out of it. For anyone reading this who manages younger staff, I encourage you to think back to when you first started your career and some of the challenges you faced. Maybe those challenges seem trivial to you now, but at the time, I bet they were substantial. It's important to never lose sight of that experience, and to encourage younger staff to take advantage of every opportunity to grow what they can. Those who want to join a YPG, but one isn't offered where they work, most cities have some sort of YPG that you can join, and there are always some great YPGs available through professional organizations such as ASCE, and of course OWEA, for example.

And for those of you who read this article and thought to yourself, "I bet I could start a YPG where I work" – you're right. You can start a YPG in your workplace. Ask questions and get involved in company strategic planning. Craft a plan for a Young Professionals Group, and be sure to have backup, including what other companies have started a YPG and what similar groups offer. You can even use this article as a reference! Lastly, ask those around you for help and ideas. Whatever you do, don't forget that like me, you can grow by leaps and bounds with a "home" network to lean on in the workplace, and that it's important to invest in that network as soon as possible.

The Westerly Storage Tunnel:

Use of CFD and Physical Models to Increase Performance and Save Money

by Stephan Janosko, PE, NEORSD and Dave Gleason, PE, Stantec

The Northeast Ohio Regional Sewer District (NEORSD) is currently constructing the Westerly Storage Tunnel (WST) in the Tremont, Ohio City and Detroit-Shoreway neighborhoods of Cleveland, Ohio (Figure 1). This combined sewer overflow (CSO) storage tunnel is an element of the NEORSD's "Project Clean Lake." "Project Clean Lake" is NEORSD's $3 billion, 25-year program to construct the infrastructure to reduce CSO discharges to Lake Erie, the Cuyahoga River and other creeks and streams from approximately 4.5 billion gallons to fewer than 500 million gallons in a typical year.

Figure 1: The WST Alignment, flowing from the WROS Diversion Structure down to WTDPS and ultimately the WWWTC

The tunnel – 25 feet in diameter and 9640 feet long – will capture approximately 300 million gallons of CSO in a typical year. The captured flow will be pumped from the tunnel to NEORSD's Westerly Wastewater Treatment Center (WWWTC) for full treatment after the storm event. Most of the flow directed into the tunnel will be diverted out of the Walworth Run Overflow Sewer (WROS), a former tributary creek to the Cuyahoga River that was culverted in the early 1900s. This flow diversion will occur near the intersection of Scranton and University Roads, where the WROS is 16.5 feet in diameter. The performance requirement for the diversion structure and the baffle drop structure at this location was that they be hydraulically capable of passing 960 CFS of flow to the tunnel (Figure 2).

NEORSD had already used computational fluid dynamics (CFD) and physical modeling on other similar projects to validate the use of a baffle drop structure for the flow rate in question. However, the use of these tools was now needed to optimize/validate the performance of the diversion structure, which would pass the flow from the WROS to the baffle drop structure. CFD was used to develop an initial configuration of the diversion structure (Figure 3) and physical modeling was then utilized to optimize the diversion structure's configuration.

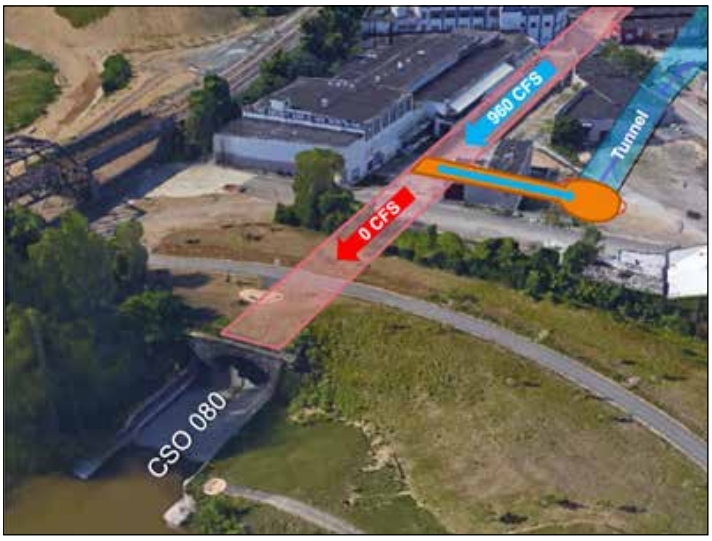


Figure 2: Schematic view of the WROS Diversion

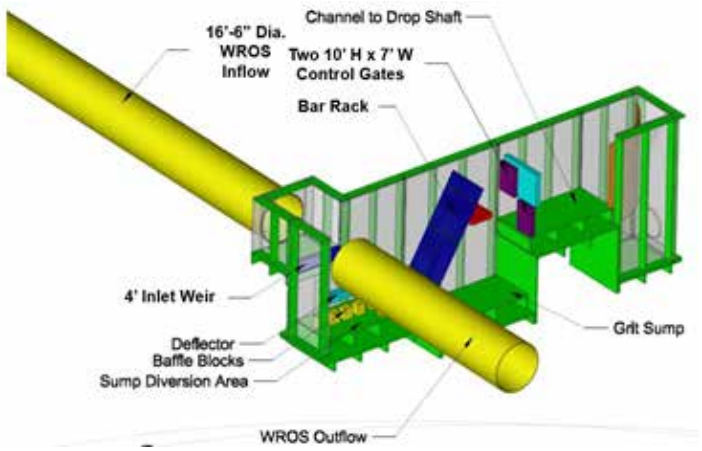


Figure 3: Initial configuration of the diversion structure

The diversion structure physical model was constructed at a scale of 11.73:1 at Alden Research Laboratory in Holden, Mass (Figure 4).

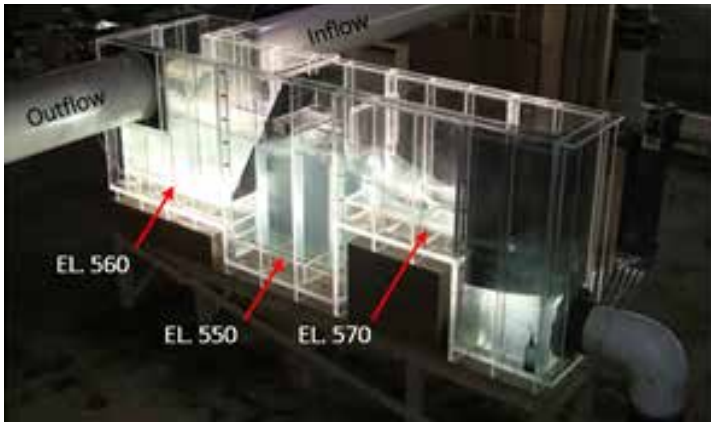


Figure 4: Baseline physical model of the Diversion Structure

Since the actual structure was to incorporate a 4-inch bar screen (to capture large debris), a grit sump, and two 10-foot high by 7-foot wide sluice gates (which close to isolate the tunnel when it is full), these elements were represented in the reduced-scale model. The inflow rate, elevations and dimensions of the baseline diversion structure are as listed in the table below. The flow rates, elevations and dimensions listed in the table and remaining article are real world numbers as opposed to the equivalent numbers applicable to the reduced-size model.

Inflow Rate, Elevations and Dimensions Associated with the Baseline WROS Diversion Structure	
Inflow rate	960 CFS
Elevation of WROS invert at the inlet to Diversion Structure	575
Width of Diversion Structure	16 feet
Length of floor at Elev. 560 (drop-in entrance from WROS)	42 feet
Length of floor at Elev. 550 (grit sump)	37 feet
Length of floor at Elev. 570 (discharge to baffle drop structure)	33 feet

Under baseline conditions, the turbulence at the drop-in entrance was high enough to cause an outflow of 50 CFS in the downstream WROS. The inflow rate had to be decreased from 960 CFS to 546 CFS to eliminate the outflow. This decrease is referred to as the drawdown condition, however, it is not a solution to the outflow problem. Since any amount of outflow represents a CSO discharge to the environment, modifications to the physical model were then made to attempt to eliminate the 50 CFS outflow.

Modification #1 moved the 4-foot tall weir at the WROS inlet upstream in 4 and 8-foot increments and then removed the weir entirely. With each of these weir relocations (and its removal) the high degree of turbulence at the drop-in entrance remained and the outflow actually increased, eventually reaching 178 CFS. Given the worsening performance of the diversion structure with each weir repositioning (and removal), the weir was returned to its baseline position and a different modification was attempted.

Modification #2 lowered the elevation of the sluice gates and the downstream discharge channel. The elevation drop required to eliminate the 50 CFS outflow was determined to be 4.3 feet, which moved the gates and the downstream discharge channel from Elev. 570.00 to Elev. 565.70. At this position, the turbulence at the drop-in entrance remained high but since it was lower in elevation, the outflow was reduced to 0 CFS (Figure 5).

Figure 5: Model showing no overflow after implementation of Modification #2

With the sluice gates and downstream discharge channel back in their baseline position, Modification #3 attempted to achieve the same results as Modification #2 by lowering the drop-in entrance floor and the bar screen. However, with a 5-foot drop from Elev. 560.00 to Elev. 555.00, the measured outflow was 48 CFS. This modification did reduce flow velocities at the bar screen and the drawdown condition occurred at 659 CFS, which was an improvement over the decrease of inflow to 546 CFS required by the baseline configuration, but these improvements were considered trivial. Therefore, the drop-in entrance floor and the bar screen were returned to their baseline position.

With Modification #3 proving unsuccessful, Modification #4 built on the success of Modification #2. With the sluice gates and the downstream discharge channel again lowered to Elev. 565.7, the height of the gate openings (initially at 10 feet) was then reduced until an outflow occurred. The outflow occurred when the height of the

gate openings was reduced to less than 7.2 feet. This modification was considered significant because it reduced gate size and also reduced the size of the hydraulic power unit (HPU) intended to drive the gates. A further benefit of this modification is that it reduced the flow entering the baffle drop for storm events generating flows higher than 960 CFS, and this lessened the potential for surging in the tunnel.

In summary, the modeling effort for the diversion structure effectively reduced the required gate sizes and power requirements and optimized the hydraulic performance of the diversion structure during high flow events.

The design of the Westerly Tunnel Dewatering Pump Station (WTDPS) progressed in tandem with design of the WROS diversion structure. After a storm event, the WTDPS must pump up to 36 million gallons per day of captured combined sewage back to the adjacent near-surface collection system (a lift of 200 feet). From there, the sewage will gravity flow to the WWWTC for treatment. The high-level options initially reviewed for the WTDPS included: dry pit vs. submersible, number and size of pumps, and wet well geometry. A 46-foot inner diameter shaft with a submersible pump layout of 5 pumps, each capable of pumping 9+ MGD, was chosen at this stage. The benefits of this selection include minimizing the shaft footprint (and therefore the cost), allowing O&M personnel to work from the surface, and providing the pump station's required firm capacity with one standby pump available for redundancy. Provisions were also made to deal with high expected grit loadings. The central 3 pumps were set at a slightly lower elevation (2-foot) relative to the outside two pumps in order to allow dewatering to proceed via the higher pumps, even if grit were to inundate the bottom of the station in an exceptionally large event.

With the high-level decisions made, wet well geometry for the selected alternative was reviewed in closer detail using CFD to model and improve upon the initial layouts. Geometry refinements at this stage became more focused;

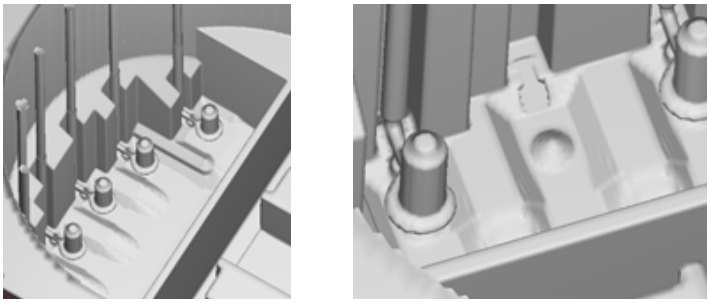


Figure 6: WTDPS wet well geometry during early-phase CFD evaluations

hydrocones and filleting between pumps (Figure 6) were added to improve patterns of flow approaching and entering the pumps. These flow patterns were evaluated under different scenarios varying the water elevation in the wet well and number of pumps in operation at one time. The layout of the wet well coming out of CFD modeling predicted little turbulence and a relatively even distribution of flows to each pump. While CFD proved useful to optimize hydraulics in the wet well, it is not the best tool for modeling grit and so this question was deferred to physical modeling.

Figure 7: WTDPS wet well geometry as represented in the physical model

The WTDPS physical model (shown in Figure 7 from the outside and from the inside) was constructed at a scale of 3.199:1 at the Utah Water Research Laboratory in Logan, Utah. The larger scale relative to the WROS diversion structure represents the need to observe and evaluate hydraulic phenomena at a higher resolution; whereas the primary concern at WROS was diverting the correct flow rates, the WTDPS physical model was constructed to evaluate the angles at which flow approaches the pumps and the presence/absence of vortices which could harm pump performance.

Baseline tests confirmed the even flow distribution to the pumps as predicted by CFD and measured generally favorable hydraulics with some key exceptions. The most notable and problematic of these was the formation of a

dye core vortex (Figure 8) between the pump intakes and the rear wall behind them. In order to prevent formation of such a vortex, seven successive modifications were made to the wet well floor geometry immediately surrounding the pump intakes, consisting of various vanes and alterations to the space between the wet well floor, the rear wall, and the pump. With these incremental improvements, the vortex was weakened, observed less frequently in follow-on physical model runs, and finally was no longer observed. It is important to note here that although CFD did help to predict flow patterns inside the wet well, it does not quantify the relative frequency of problematic patterns such as vortices, which may be observed to occur only a certain percentage of the time during physical modeling. The final modification (the orange area in Figure 9) consisted of a vertical vane on the back side of each pump, extending from the wet well floor up above the pump intake. The rear wall itself was also extended upwards. This modification succeeded in preventing formation of the previously-observed vortex, thereby reducing the risk of encountering similar conditions during operation of the actual WTDPS.

Figure 8: Dye core vortex observed in baseline physical model tests

With the main goal to optimize wet well hydraulics achieved, the design team then leveraged the model to optimize grit management and the commissioning plan. Baseline grit tests placed soil at the bottom of the wet well to observe whether material would be mobilized during normal pumping or final drawdown. These model runs concluded that grit which settled out prior to pumping would not be fluidized during the dewatering cycle and for the most part remain on the wet well floor. This observation is problematic because of the way the CSO pump station operates; intermittently, with plenty of time for settling prior to dewatering. To avoid buildup of solids in the wet well, a flushing system was conceptualized; it would be used to stir up grit at the bottom of the wet well and transport accumulated grit to the pumps. This concept was tested in 3 phases:

1. A benchtop study outside of the WTDPS model (Figure 10). This phase evaluated various flowrates, jet angles, nozzle sizes, and distances from the floor.
2. A pilot study with a single nozzle placed inside the WTDPS model to evaluate area cleared inside the wet well (Figure 11).
3. Model runs conducted inside the WTDPS model with multiple nozzles to evaluate the flushing system performance and recommend additional flushing locations for any remaining dead zones observed (Figure 12).

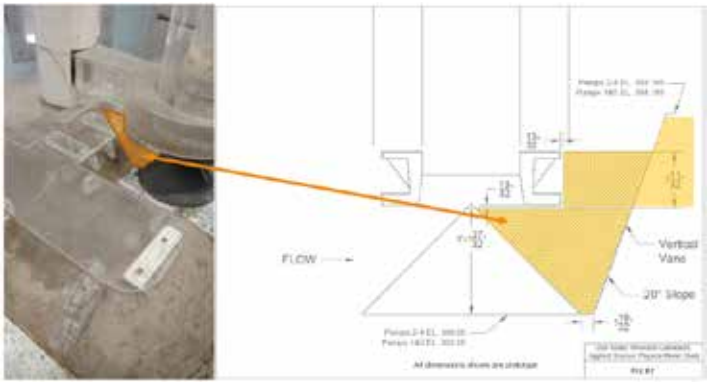


Figure 9: The vertical vane geometry which successfully prevented vortex formation

Figure 10: Benchtop grit test

In addition to optimizing layout and flow rates for the flushing system, this portion of the study allowed the design team to reduce the number of pump starts required during final dewatering by instead using the flushing system to fluidize grit instead of pump-induced turbulence (which was predicted to be ineffective for grit transport in this application).

Figure 11: Prototype grit test

We hope this much-abbreviated discussion of physical modeling performed for this project provides the reader with an appreciation of the physical modeling process and the design improvements to be gained. Although the process requires upfront time, effort and cost, there are performance benefits and savings to be realized with full-scale improvements during construction and operation.

Figure 12: Full scale grit test

Solutions to Ohio's Nutrient Puzzle—OWEA's Nutrient Workshop Debrief

by Jason Tincu, Greene County

Background: On November 13, 2018, around 80 water quality professionals joined in Columbus at Ohio Water Environment Association's (OWEA) Nutrient Workshop. The goals were (1) to build upon the progress made at August's OneWater Conference Nutrient Forum which was aimed at "Understanding Ohio's Nutrient Puzzle" (see: *https://www.linkedin.com/pulse/understanding-ohios-nutrient-puzzle-onewaterohio-forum-jason-tincu/*) and (2) to introduce some real-world "Solutions to Ohio's Nutrient Puzzle".

The facilities were top notch--the Nationwide Hotel and Conference Center. The agenda was loaded with some of the best in the business (see: *https://ohiowea.org/docs/Nutrients_Schedule.pdf*). The **structure** was innovative by offering 'lightning round' sessions loaded with quick hitting presentations that fell within the same 'bucket' and included audience comments and advanced Q&A. The **outcome** was impactful with lots of positive comments and opportunities for learning and collaboration. The **future** is bright considering OWEA's commitment to water quality and the Nutrient Committee's vision and future efforts.

Session Overview: After a warm welcoming from OWEA President Fred Smith, things got kicked off by the Ohio EPA's Josh Griffin and his overview of the state's Nutrient Mass Balance (see: *https://epa.ohio.gov/Portals/35/documents/Nutrient%20Mass%20Balance%20Study%202018_Final.pdf*). Takeaways being that Ohio has both nearfield and farfield nutrient challenges and that the Ohio EPA has excellent data on loadings and sources to be used while we attempt to solve Ohio's nutrient puzzle. Next, Tadd Nicholson of Ohio Corn & Wheat Grower's Association gave the 'state of nutrients in the agricultural space'. Case and point, agriculture has made strides over the last couple decades-but also admits much more work is needed to solve our challenges. Next, I was joined on stage by Jeff Hall (Delaware Co) and Doug Clark (Bowling Green) to discuss the 'state of nutrients within POTWs'. Discussion ensued from diverse perspectives (no Phosphorus (P) limit, 1.0 mg/L limit and a TMDL-driven limit of ~0.4 mg/L) that concluded (1) POTWs are willing to make necessary upgrades if the proposed nutrient reductions will exclusively move a water body from impaired to attaining status, (2) POTWs are concerned about the effects Biosolids reuse and disposal as it relates to P removal technologies, (3) statewide reductions must come from both point and non-point sources, (4) POTWs must have permit certainty for an extended period, and (5) long-term loading limits are preferred for a number of reasons.

Lightning Rounds: These sessions were designed to host numerous nutrient management solutions within varying applications, disciplines and categories. The topics generally centered around the following: Watershed Concepts, Point Source Controls, Agriculture and Biosolids, and Technologies.

- **Watershed Concepts** (facilitated by Beth Toot Levy): These topics focused on 'outside the fence' nutrient management solutions including integrated planning, water quality monitoring and trading, in-stream treatment (see: *https://www.youtube.com/watch?v=69BJUkEKjE4)*, and water reuse options.

- **Point Source Controls** (facilitated by myself): These topics centered around 'inside the fence' solutions targeted at point sources including nutrient reductions via pretreatment, innovative process designs, process optimization and alternate operational strategies.

- **Agriculture and Biosolids** (facilitated by Beth Toot Levy): This session focused on field level science and solutions including on field technologies and Ohio's risk index(see: https://senr.osu.edu/about-us/multimedia/field-ohio-updating-ohio-phosphorus-risk-index), Biosolids reuse considerations and the strategic use of wetlands for nutrient management.

- **Technologies** (facilitated by myself): The day's final round focused on emerging technologies in the industry as it relates to nutrient controls including nutrient recovery and reuse, and advanced process intsrumentation and control systems.

In summary, OWEA is thoroughly content with the progress that was made in 2018 as it relates to Ohio's Nutrient Puzzle and plans to continue to 'lead from behind' as the conversation advances into a new state administration in 2019. The Nutrient Committee will continue to present relevant topics in 2019 as it looks to delve into various implementation strategies (and dare we say, funding).

Special thanks to the following: OWEA staff, Beth Toot Levy (Geosyntec), Josh Griffin (Ohio EPA), Tadd Nicholson (Ohio Corn & Wheat Grower's Association), Jeff Hall (Delaware County), Doug Clark (Bolwing Green), Adrienne Numura (Geosyntec), Sarah Hippensteel Hall (Miami Conservancy District), Don Bloomquist (Brown and Caldwell), Andrew Newbold and Mary Sadler (Hazen), Jim Fitzpatrick (Black and Veatch), Anthony Giovannone (CDM Smith), Kevin Krejny (Montgomery County), Jon Van Dollelen (Ohio EPA), Dr. Libby Dayton (Ohio State), Heather Curtis (City of Columbus), Thomas Harcarik (Ohio EPA), Rachel Lee (Ostara), Dave Rutowski (Hach) and the event sponsor Umbaugh.

ROLL CALL

DAN JOHNSON

Burgess & Niple (B&N) is pleased to announce the election of Dan Johnson, PE to an owner of the firm.

Dan joined B&N in 1988 and is currently Director of the Utility Infrastructure section in Akron. In his 30 years with B&N, he has managed a wide variety of public water and wastewater treatment projects mainly throughout Northeast Ohio for small, medium and large clients. He has also managed industrial wastewater treatment projects. Dan is active in all stages of his projects from planning through design and construction.

Dan has given many presentations at the local, state, and the national level. He is most passionate about serving people: our clients and our own staff. He believes that success is built on relationships and treating people well. Dan graduated from The Ohio State University with a Bachelor of Science and Master of Science in Civil Engineering.

NOMINATE YOURSELF OR A FELLOW OWEA MEMBER FOR ROLL CALL ON OHIOWEA.ORG.

EPA OIG Biosolids Report

by Patrick Dube

This article solely reflects the personal opinions of the authors, not necessarily WEF and its members. It is provided for educational purposes only, and is not intended to substitute for the retainer and advice of an appropriate professional. No warranties or endorsement of any kind are granted or implied.

U.S. EPA Office of Inspector General releases biosolids report

A routine investigation by the U.S. Environmental Protection Agency (EPA) Office of Inspector General (OIG) has concluded that EPA's controls over the land application of biosolids were incomplete or had weaknesses and may not fully protect human health and the environment. However, the EPA Office of Water, which operates the biosolids program, disagrees with the findings and states that presence of pollutants does not automatically pose a risk to public health and the environment.

Throughout 2017 and 2018, OIG investigated whether EPA "has and implements controls over the land application of sewage sludge that are protective of human health and the environment." On Nov. 15, 2018, OIG released a report based on its investigation titled, EPA Unable to Assess the Impact of Hundreds of Unregulated Pollutants in Land-Applied Biosolids on Human Health and the Environment.

OIG process and findings

OIG is an independent office that helps the agency protect the environment in a more efficient and cost-effective manner. OIG's main activities include performing audits and investigations of EPA to prevent and detect fraud, waste, and abuse. Following an audit or investigation, OIG typically releases a report of findings.

In the report on the biosolids investigation, OIG found 352 unregulated pollutants in biosolids and stated that EPA lacked the data or risk assessment tools to decide safety. These 352 pollutants are in addition to the nine regulated pollutants that EPA consistently monitors.

The report pointed to a steady reduction in staff and resources in the EPA biosolids program as a cause of many of these weaknesses. The OIG recommended that the EPA Office of Water "address control weaknesses in biosolids research, information sharing with the public, pathogen control and training" and implement corrective actions with milestones to fix these issues.

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

The report and related materials can be viewed on OIG's website at *http://bit.ly/EPA-OIG-biosolids2018*.

Office of Water response

OIG provided the Office of Water the chance to comment on the report; this response is included in Appendix D of the report. The Office of Water took issue with how the science was presented in the report and stated that "there is no attempt to make it clear to the reader that the occurrence of pollutants in biosolids does not necessarily mean that those pollutants pose a risk to public health and the environment."

The response also states that a top priority for the biosolids program will be to address the uncertainty of potential risk posed by pollutants found in biosolids but uncertainties in science does not mean that they are threats to human health and the environment.

The OIG report resulted in 13 recommendations for the Office of Water to consider. The Office of Water response provides corrective actions and milestone dates for eight of them with resolution efforts underway for the remaining five.

The Office of Water conducts biennial reviews of biosolids that include a full literature review of potential toxic pollutants and determines if the pollutants detected pose "potential risk to human health or the environment." The 2015 report analyzed peer-reviewed journal articles from January 2013 through December 2014 to determine the articles' relevance to biosolids and potential pollutants. Overall, 46 articles met the eligibility criteria. Once analyzed, the biosolids program identified 29 new chemical pollutants. Following a risk assessment of these new chemicals, the Office of Water determined that no additional pollutants needed to be regulated. A 2017 report following the same intensive analysis is expected to be released in the coming months.

WEF actions

During the OIG investigation, WEF staff members were interviewed and have since been tracking the report and working with other biosolids partners to coordinate responses after the release. It is WEF's position that decades of science have shown that biosolids are a safe, renewable resource that improves our environment, lowers costs to consumers, and strengthens our farming communities.

Biosolids undergo a rigorous set of treatment processes that include physical, chemical, and biological processes to aid pathogen reduction. Utilities across the country have been safely recycling biosolids for decades while delivering innovative solutions that lead to stronger, more sustainable, and resilient communities.

WEF supports continued research on biosolids to ensure regulatory requirements continue to be based on the latest science. The WEF Residuals and Biosolids Committee (RBC) is committed to developing and promoting cost-effective practices and policies in biosolids and energy technologies associated with municipal, agricultural, and industrial wastewater residuals for the protection of the environment. Through education of WEF members, the public, and policymakers, RBC aims to serve the public interest regarding scientifically sound residuals and biosolids environmental practices and regulation. To learn more, visit the RBC page — www.wef.org/biosolids — to download fact sheets, white papers, and technical reports.

Patrick Dube is a technical program manager in the Water Science & Engineering Center at the Water Environment Federation (Alexandria, Va.). He manages the Residuals and Biosolids Committee and the Air Quality & Odor Control Committee. He can be contacted at PDube@wef.org.

Office Offerings

The start of a new year often brings reflection. This is absolutely the case for me as it was this time last year that I was writing my first Buckeye Bulletin article. What a year it has been…

I started with OWEA on January 18, 2018. I knew very little about wastewater and had never really given much thought as to what happened after I flushed my toilet. What I did know is that this association had executive leadership that was ready to take it to a new level and that I wanted to be part of that. I knew I could learn about wastewater and bring my association background to the table.

Through one of the most exciting positions I have ever began... I have learned exactly how important wastewater treatment is and how it has a larger public health impact than almost anything else in modern history. I have met some of the nicest and most hardworking people in the world. I have grown as both an employee and a manager by spending time with our Executive Committee and staff.

OWEA has accomplished quite a bit in the past year. We have streamlined our Contact Hour process, updated our financial process, had a great One Water annual conference, grown our social media, and continued to improve on the Buckeye Bulletin. These are just a few highlights of what we have accomplished.

While we have made great strides, we still have a lot more work to do, to better serve you, our member. Some things we are looking at for 2019 include additional educational programming, working with schools to encourage wastewater as a career, increased social media presence, and continuing to improve the relationship with the OEPA. These are just a few of the areas we are focusing on.

A bigger long-term goal is promoting our profession. I had been in this position about 6 months when I over heard two PWOs say they were somewhat embarrassed to tell people what they did. I asked, "Why?" They explained, "Well you know we deal with poop." My reply was "so?"… We need to stop thinking of ourselves as less than. Modern wastewater treatment SAVES LIVES. We protect our most precious resource of water and need to "OWN" it. If we don't tell our story, who will? Tell it to anyone that will listen and be PROUD of what you do. You SAVE lives and protect the environment.

So in this time of resolutions, I am asking for two things:

1. Get involved with us! Whether it's serving on a committee or just following us on social media (Twitter: ohio_wea)…DO SOMETHING! This is your association and we want to serve you. Let us know what you want to see and how we can improve or maybe even what you like!

2. Tell your story! Whether you are an engineer, PWO, lab analyst, or support staff, YOU MATTER and so does what you do. Be proud of the fact that everyday you go to work and make a difference in the lives of your committee and our environment. Most people have no idea what happens when they flush the toilet. They just now it works. Explain that essential part of their day is because of hardworking professionals like YOU!

Here's to a GREAT 2019! I can't wait to see what this year will bring to OWEA and I hope you can't either.

Best, Dawn

Dawn Sink Kennedy, CAE, Executive Administrator

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2018 APPLICATION

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Home Phone	Cell Phone	Business Phone	
E-mail Address		Date of Birth (mm/yyyy)	

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Another New Year Has Come and Gone

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

HAPPY NEW YEAR

The ballad "Auld Long Syne" was originated in 1711 by James Watson but has evolved considerably throughout the years. According to Wikipedia, it is well known in many countries, especially in the English-speaking world, its traditional use being to bid farewell to the old year at the stroke of midnight on New Year's Eve. Original lyrics were never written down and passed down through orally. The ballad is thought provoking. It addresses the concept of moving from one part of life to another. Does one firmly close the door on the past never to look back or should one view the past as something to remember and guide us as we move into the future? The ballad mentions memories of friends and others dear to us. The ballad as it is known today is as follows:

Should old acquaintance be forgot,
and never brought to mind?
Should old acquaintance be forgot,
and old lang syne?

CHORUS:

For auld lang syne, my dear,
for auld lang syne,
we'll take a cup of kindness yet,
for auld lang syne

There is uncertainty and excitement of entering a new year. OWEA has many events planned through the year including Workshops, Section Meetings, and our Annual Conference at Sawmill Creek Resort in Huron that we can look forward towards. These things are already being planned and promise to be "can't miss" events. One of my personal favorites is the Annual One Water Government and Regulatory Affairs Workshop to be held on March 7, 2019.

All years bring changes. Some of us will see significant changes such as job changes or retirements. Others will see incremental changes and live life much in the same way as we did in the past. Some changes will be surprising and some anticipated. The year 2019 will bring at least one transition for me. After six wonderful years I will no longer be on the WEF House of Delegates in October 2019. I have said many times, volunteering for OWEA and serving at the WEF level is something that I highly recommend.

"CHANGING OF THE GUARD"

A New Year's tradition for many people I know is watching old episodes of the Twilight Zone series. One episode that comes to mind is called Changing of the Guard, which originally aired on June 1, 1962. This episode featured an English and Literature Teacher, Professor Ellis Fowler, at a Boys School for the past 51 years. After being forced to retire, Professor Fowler contemplates suicide when he doesn't feel he has made a difference in the world. One scheme shows him standing at the statue of the great educator Thomas Mann (1796-1859). The statue had the quote: Be ashamed to die until you have won some victory for humanity. Upon putting a gun to his head, the Professor hears a bell rung from his class room. Given that it was evening, the Professor thought it odd. Upon entering the classroom, he encounters the ghosts of former students who died doing heroic things for humanity. Each credited him for lessons learned in class about courage, heroism, and striving to achieve great things. This experience changed the Professor's mind and gave him peace. The episode ended on a happy note.

THE IMPORTANCE OF THE PROFESSIONAL OPERATOR

Expect to hear much on this topic from me this year, and don't be surprised if I reach out to you as a group or individuals. I am the Vice Chair on the WEF House of Delegates Operators Work Group. My task is to promote the Operator Ingenuity Award in Ohio. A mission statement of this work group is to promote the profession of the Professional Operator.

As I learned from the late Larry Moon (1939-2018), Operators are a unique and incredible group of people. They have an expansive and versatile skill set and are the true heroes of the Public Health Movement of the 20th Century. When we understand that our bodies are 99% water, and operators are "front and center" at protecting and reclaiming this resource, it makes sense that credit for much of the lifespan increases of human beings in the United States from 1900 and 2000 from 47 years to 78 years should go to operators. This is an increase of 66%.

Yes, the medical field gets most of the credit, but given how often we drink a glass of water compared to visiting the doctor, it is clear who has greatest influence on our lives daily.

CLOSING

It is no mistake that I mention Changing of the Guard in my article in conjunction with talking about the Professional Operator. For those in our ranks that serve as Professional Operators, you serve. There should never be any confusion in the role that you play in serving the needs of humanity. You would make Thomas Mann proud!

By the time you get this article, we will be several weeks into 2019! But this will not keep me from wishing you a Happy, Heathy, and Prosperous New Year!

SWOWEA

Dave Wilson, President

Goodbye to 2018!

2018 was an excellent year for SWOWEA! The Southwest has a great group of dedicated volunteers providing educational events for our members. The last quarter of 2018 found us busy with these high quality, low cost events below:

- Operator Education Day 10/26
- Southwest hosted the Collections Systems Hands on Event 11/1
- Lab Analyst Committee meeting at YSI 11/1
- November Plant Operations Seminar and Section Meeting 11/15
- Plant Operations Seminar was followed that evening by a YP committee social event
- The Watershed and YP Committees teamed up for a tour of Cincinnati MSD's SSO 700 facility and a social event at Fretboard Brewery 12/4
- SWOWEA Past Presidents and SWOWEA 5s members luncheon was held 12/7
- And shortly after I write this article the 30th annual SWOWEA Industrial Waste Seminar and Section Meeting 1/24/19!

Ring in 2019!

2019 looks to be an exciting year for SWOWEA! We are connecting with folks at the state and other sections to see how they "do" social media, with SWOWEA likely to be active in that realm soon. The Safety committee is considering hosting an educational, hands-on (little to no Power Points ☺) event in 2019. We have a busy calendar for the first part of 2019 as shown below:

- SWOWEA Industrial Waste Seminar 1/24
- Lab Analyst Committee meeting 2/14
- Section meeting, Cincinnati MSD Werk & Westbourne CEHRT facility (tours) 3/14
- Plant Operations Committee Operator Education Day (Date TBD)
- Lab Analyst Committee meeting 4/11

Resolutions – Opportunity for Improvement

I am writing this article shortly after the beginning of 2019 and that brings a lot of conversation about New Year's resolutions. I hear a lot of pros and cons about resolutions and whether they help us improve ourselves. I have experienced both improvements and failed resolutions. I find that the beginning of any life event can be a time to pause, reflect and resolve. That life event can be as simple as starting a new week or day, anytime you feel you need to reboot. Whenever I hit one of these beginning points in my life, among many improvements I need to make, three are consistent on my list: (Disclaimer: these are things I work on, not things that I am telling you or anyone you need to work on)

Receiving Gifts Graciously: Gifts can come in many forms, monetary, time and talents, material items etc. Importantly, someone took the time to think of you to offer and/or give you a gift. First, receive the gift, it can be hurtful to the giver to not accept the gift or say, "I don't need it" (there are many ways to say I don't need it). The gift likely was offered in appreciation of you, not necessarily due to a perceived need. Say thank you graciously and accept the gift without condition.

Listening: Try listening without feeling the need to interject a point/counterpoint or offering advice or a solution. Sometimes folks just need to know someone out there cares enough to listen to them. Practice active/non-distracted listening. Put the phone away and do not

Photos from the tour of MSD SSO 700 facility

answer calls/notifications/texts, occasionally summarize what is being told to you to show that you are truly listening. Unfortunately, this skill needs constant work to perfect and does not come naturally to most of us.

Random Acts of Kindness: Have you ever been the recipient of someone ahead of you in a drive thru lane paying your bill? Likely, the person did not know you and will not be thanked by you, they paid your bill without any hope of a return. Have you ever deposited coins in a nearly expired parking meter or taped coins to the outside of a parking meter for someone to use? Give an anonymous, non-traceable monetary gift (even have someone else fill out the card, so your handwriting is not recognized). After a storm, pick up tree limbs in your neighbors' yard or blow their leaves to the curb when they are not home.

I'll repeat my disclaimer here: (Disclaimer: these are things I work on, not things that I am telling you or anyone you need to work on)

Lastly, I'd like to thank all our volunteers, employers of the volunteers, staff at OWEA and sponsors in the Southwest section for helping us keep our event prices low and content quality high! I sincerely appreciate all of you!

Work Hard and Have Fun!!

Dave Wilson, *dwilson@blanderson.com*

Meet the Executive Committee Social

SEOWEA

Brenda VanCleave, President

Happy New Year from the Southeast Section EC!!! With the New Year, there are some changes to our Board. Nathan Coey, our Third Year Director and Safety Committee chair, has taken a new position as the Utility Director for the City of Wooster. Nathan contributed hordes of energy and fresh ideas to our EC and will definitely be missed. We see him becoming active with the Northeast Section and wish him the best in his new role.

With the departure of Nathan, Amy Eberhardt and Aaron Pennington move up to Third Year Director and Second Year Director, respectively. We welcome Jamie Mills from Strand Associates to serve as our First Year Director. Jamie has been active with our Section, serving as YP Chair and attending meetings.

We also welcome Jeff Henderson who will be our new Safety Committee chair. Jeff is the Occupational Safety & Health Officer for the City of Columbus Department of Public Utilities. In this role, Jeff oversees and manages the occupational safety and health activities in the department. Jeff also worked for Ohio State University for 14 years in the Office of Environmental Health & Safety as a Safety Engineer and most recently as an Industrial Hygienist.

Our Industrial Section Meeting will be held on February 28th at the Sofidel paper product facility in Chillicothe. In addition to touring their wastewater pretreatment facility, we will be given a tour of their toilet paper making facility. Attendance will be limited to 150 people, so make your registration early!

Our April event will feature a tour of four wastewater treatment plants around southeast Columbus. The May event will be hosted by the City of Delaware and Delaware County and includes two WWTP tours and a technical session. More information to follow on these events.

NWOWEA

Gary Bauer, President

I want to thank everyone who attended our October section meeting held at the University of Northwest Ohio event center in Lima, Ohio. There were 108 people who attended and we provided four contact hours, including a tour of the Lima WWTP facility. The Lima staff did a great job having their facility ready and giving tours. Along with the meeting, our annual pancake breakfast was held with the proceeds going to Water for People.

In November, the NW Section and NE Section Lab Analysis committees held a joint meeting in Oberlin, OH. We had 30 attendees, which was a great turn out considering the icy roads we had that day. Attendees received 3 wastewater hours and 1 water hour, including a tour of the Oberlin Water Plant. The event was free and included lunch compliments of the NW and NE Sections. And everyone loved our special OWEA cookies! The lab committee is working on a microorganism workshop, possibly this March. Keep your eyes open for more info on future events.

December provided the opportunity for members of the NW Section Executive Committee to speak at an Environmental Sciences class at the University of Toledo. Elizabeth Wick from Ohio EPA, Mark Lehnert and Kevin Connor from the City of Defiance, Todd Saums from Northwest Water and Sewer, and Gary Bauer from Jones & Henry Engineers shared with the students about various areas of the environmental arena. The discussion included working for and with Ohio EPA, wastewater plant operations, collection systems, laboratory operations and consulting engineering. The class lasted for over an hour and concluded with everyone sharing in a pizza luncheon provided by the NW Section. We hope these types of interactions will provide opportunities for the students to continue their interest in the environmental field and consider participating with other Young Professionals in OWEA.

Our next NW Section meeting is scheduled for Wednesday, March 20, in Bellevue, Ohio. We will be touring their Water Pollution Control Facility and providing additional contact hours and a catered lunch. By the time of this publication, registration should be open on the OWEA website. We hope to see many of you there!

In addition to our ongoing local efforts, many of our NW Section leaders are helping with the planning process for the 2019 Annual Conference at Sawmill Creek Conference Center. We're dusting off the welcome mat and inviting everyone to the North Shore for the state conference. Additional details are in this same issue of the Buckeye Bulletin, but we want to note that most of our NW Section Officers and Chairs are also volunteering on the Conference Team—partly because we enjoy each other's company—but also because we value the opportunity to host conference and to welcome the other Sections to our backyard. Mark your calendars now for the Annual Conference, June 24–27 and be our guest!

Gary Bauer *gbauer@jheng.com*

Photos from the NW LAC meeting

NESOWEA

Jim Cooper, President

Greetings fellow water professionals!

Happy New Year to everyone! I hope everyone had a great holiday season, but most importantly, this is a great time of year to THANK our dedicated Operators and support staff who spend holiday hours dedicated to the protection and preservation of our water environment. It is also the time of year for popular events in the North East Section including training seminars and education, our annual sellout seminars in January and February, and a brand-new event this year as well! Register early for events, as many sell out based on facility space limitations – all your peers will be there!

INNOVATION SEMINAR – Save the date for this half-day Innovation Seminar scheduled for April 18, 2019. You won't want to miss this NEW event with contact hours, presentations by industry leaders and young professionals. Oh, it's also a FREE event!

All upcoming events are highlighted in our section newsletter, Sparkling Waters, our social media channels and on our website at www.nesowea.org. The Section's upcoming events for early-mid 2019 include the following:

- Annual Industrial Wastes Seminar – Feb. 21, 2019
- NEW Innovation Seminar – Apr. 18, 2019
- Annual Business Meeting, Training and Tour – Avon Lake Regional Water – May 23, 2019
- BioMass'ter's Golf Outing – Jul. 19, 2019
- Stay tuned for event updates!

Over the past months our section has conducted multiple training and networking events, including a Fall Meeting with tours of the City of Rittman WPCF and the Village of Creston WWTP, a Lab Analysts certification training at the City of Akron WRF, our annual Supervisors and Ethics Seminar in Richfield at the Summit County MetroParks, our Collection Systems Hands-On Workshop at the City of Canton WRF, and our Industrial Pretreatment Coordinators Workshop at NEORSD. Feedback I've received from attendees was very positive and special thanks are due to the volunteers who developed the programs for these events. Thanks also to Ken Mann from the City of Rittman, Mark Allen from the Village of Creston and their respective teams who went above and beyond to conduct the tours and host our fall meeting. We greatly appreciate the hospitality of the host facilities and welcome you to consider hosting a tour at your facility in the future. Reach out to anyone on the executive committee to have a brief discussion on upcoming events if you are thinking about showcasing your facility. As you can see, we have had a busy calendar with events planned by your Section committees.

While on the topic of Section committees, we have a great group of leaders who are always looking for support and to grow their committees. If you are a member and do not participate in a committee, I highly suggest that you find at least one or two committees to participate in. Often it's a minimal ask for participation that reaps significant benefits for your career in many ways; in addition to having the opportunity to make a meaningful impact on our profession. Our current section committee leadership is:

- Awards – Dan Johnson (Burgess and Niple)
- BioMasster's – Mike Cook (ADS Pipe)
- Collection Systems – Don Gallimore (United Survey) and Brandon Long (Burgess and Niple)
- Education – Terry Gellner (TnT Engineering)
- Gov't Affairs – Debbie Houdeshell (City of Canton)
- Industrial Wastes Pretreatment – Scott Broski (NEORSD)
- Lab Analysts – Beverly Hoffman (City of Geneva) and Tom Zocolo (City of Akron)
- Membership – Mark Hutson (Burgess and Niple)
- Plant Operations – Kristi Babcock (City of Wadsworth)
- Safety – Julie Fritchley (City of Akron)
- Publications – Chris Ryman (Arcadis) and Brien Croff (Geauga County)
- Residuals – Mike Welke (City of Warren)
- Young Professionals – Ashley Williston (Burgess and Niple) and Kelsie Senuta (Burgess and Niple)
- Public Outreach – Steve Baytos (Avon Lake Regional Water)

I look forward to seeing you at our upcoming events. I hope you reach out to the leaders above and express interest in joining a committee. Think of what we can accomplish in 2019 with your help!

James P. Cooper
NESOWEA President
jim.cooper@arcadis.com

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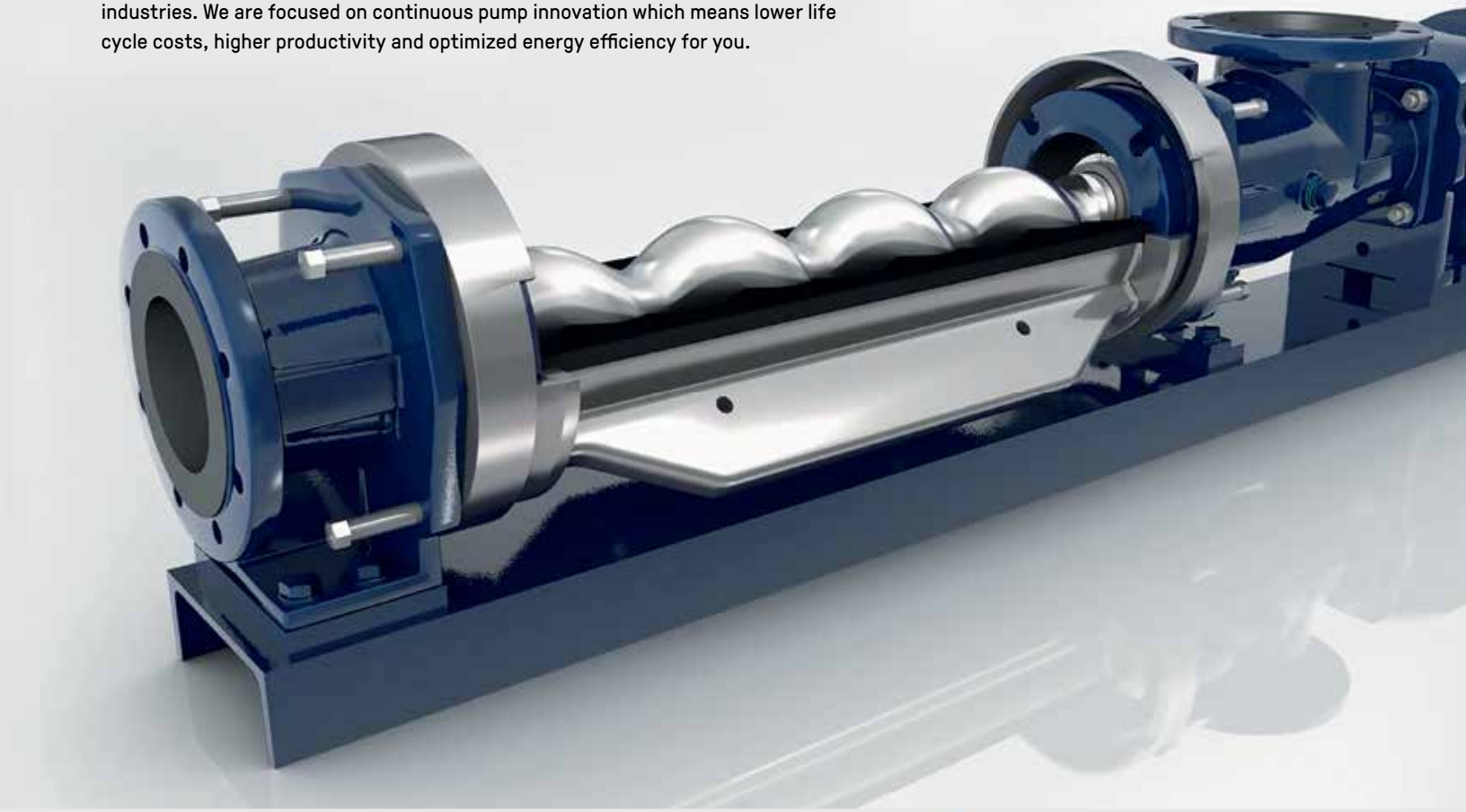

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Plant Operations Update

by Joe Tillison and Walter Ariss, Co-Chairs

The Plant Operations Committee met on January 25th at the OWEA office in Columbus to start planning for Ops Challenge and our Plant Operations and Laboratory Two-Day Workshop. Planning is in full swing for the 2019 Operations Challenge Invitational which will be held during the OWEA Technical Conference and Exhibition on Monday, June 24th at the Sawmill Creek Resort. For the first time we will be running the entire competition as a single day event, with the day culminating with the collections event taking place at the Welcome Social on Monday evening. Registration will be open later this spring and contest rules will be available on the website so keep an eye out, or contact Joe or Walter to be put on a mailing list for all pertinent information.

We are extremely excited to announce that our 2019 workshop will be held once again at the Nationwide Conference Center on Thursday, October 10th and Friday, October 11th. This will hopefully be our final year with a Thursday/Friday timeframe. We will preview the speakers and agenda in the next Buckeye Bulletin so stay tuned for more details.

Stay tuned for more information regarding other training opportunities also sponsored by the Plant Ops committee including the three day advanced activated sludge workshop and some activated sludge short courses .

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 Joe Tillison at *jtillison@cityofdelphos.com* or Walter Ariss at *walter.ariss@epa.ohio.gov*

Test Your Knowledge – Take the Operations Quiz

1. One byproduct of aerobic digestion of sludge is methane gas.
a. True
b. False

2. The F:M ratio in wastewater treatment refers to ____.
a. amount of filaments to microorganisms
b. amount of food to microorganisms
c. amount of ferric chloride dosage to MGD of flow
d. amount of flagellates to microorganisms

3. What is the minimum contact time for chlorine disinfection to be effective at pathogen destruction?
a. 17 minutes
b. 5 minutes
c. 15 minutes
d. 9 minutes

4. The Brake Horse Power (BHP) of a pump is always greater than the Motor Horse Power (MHP) of a pump.
a. True
b. False

5. One pound per square inch of pressure is equal to how many feet of water?
a. 2.05
b. 1.70
c. 2.31
d. 3.45

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

Answers: 1-B; 2-B; 3-C; 4-B; 5-C

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Lab Analysis Committee Update

by Denise Seman and Melodi Clark, Committee Co-Chairs

Hello all! Hope everyone had a great holiday, and your 2019 is off to a great start.

A few things from Denise: I have decided to step down as committee co-chair, effective June of this year. It's time to let someone else take over the reins. I plan to stay involved with the committee, but in a capacity more in keeping with my semi-retirement. For those of you who may have missed the big news, I did retire from the City of Youngstown in April of last year. I accepted a part time position as a Quality Assurance Specialist with CWM Laboratories in October last year…you know how much I love the QA/QC stuff. ☺

Let's wish Karen Tenore a joyful retirement as she retired from the City of Dayton at the end of January 2019. Thank you Karen for everything you have done for the LAC.

SW LAC – Jim Davis and Lori Kyle

We wish to thank the hosts of SWOWEA LAC meetings in 2018. They Include the City of Fairfield WWTP (February), Montgomery County Environmental Services (April), the City of Fairborn WRC (July) and YSI (November). It would not be possible to hold our meetings and offer contact hours all at no charge if not for the assistance of the hosts and presenters.

SWOWEA LAC Meetings for 2019 include:

- Apr 11, 2019 MSDGC
- Jul 11, 2019 Greene County
- Oct, 2019 YSI

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.

NE LAC - Beverly Hoffman and Tom Zocolo

Greetings and salutations, my fellow laboratory dwellers!

Please check the calendar to see what new and exciting classes we have planned for this year

As always you can reach us via *nesowealac@gmail.com* with your thoughts, questions, and concerns. You may also reach me through my email: *tzocolo@akronohio.gov.*

Good tidings and accurate analytics to you all!

SE LAC – Melodi Clark

Happy New Year! I am looking forward to 2019.We are going to take the lab section and hopefully do a lot with it. I am planning on holding 3 to 4 LAC's this year and I am going to try and venture out to areas we have not been to before. We are also going to do a workshop for the Lab Exam that will allow hands on approach to the test and focus on areas that seem to be a struggle for people. Keep your eyes on the lookout for the new things we are going to try this year!

NW LAC – Terri Brenner and Tony Hintze

Happy New Year from your friendly Water Nerds in the Northwest Section! We hope you all enjoyed the holidays and had a chance to spend some time with your families.

Thank you to everyone that braved the icy roads to attend our NW and NE LAC Joint Meeting in November. Attendees received three contact hours, along with one bonus water hour. They also had free lunch compliments of the NE and NW sections. A big thank you goes out to the City of Oberlin for hosting the meeting and to our speakers for their great presentations.

We are already working on the next meeting and it'll be one that you won't want to miss. We'll be sending out the details when everything is finalized. Hope to see you there!

If you haven't done so already, come join us in our Facebook Group, NWOWEA Lab Analysis Committee and join our email list as well. Contact Terri or myself for more info. (*thintze@fremontohio.org* or *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! And of course always remember, working in the lab is just like cooking in your kitchen, just don't lick the spoon!

LAC Contact Info

Co-State Chair
Denise Seman
(330) 742-8820
DSeman@YoungstownOhio.gov

Co-State Chair & SE Chair
Melodi Clark
(614) 645-1239
MLClark@columbus.gov

SW Co-Chair
Jim Davis
(937) 496-7051
DavisJi@mcohio.org

SW Co-Chair
Lori Kyle
lkyle@co.greene.oh.us

NW Co-Chair
Anthony Hintze
(419) 334-3876
tjhintze@gmail.com

NW Co-Chair
Terri Brenner
(419) 872-8041
tbrenner@ci.perrysburg.oh.us

NE Co-Chair
Bev Hoffman
wwlab@genevaohio.gov

NE Co-Chair
Tom Zocolo
tzocolo@akronohio.gov

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.

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.

Young Professionals Committee Update

by Lindsey Hassenauer, OWEA YP Committee Chair

2019 OWEA Young Professionals Award Winners

Every year the Young Professionals Award is given to one young professional from each section with an outstanding abstract to be presented at the annual conference. To be eligible, the person must be 35 years of age or less or have less than 5 years of experience in the wastewater industry.

The winners receive full conference registration from OWEA, an award from their section (usually covering their hotel stay), and get to present their topic at the annual conference. There were 19 abstracts submitted from YPs across the state for consideration this year, showcasing a wide variety of topics. Thanks to all the YPs who submitted abstracts – Keep up the good work!

This year's winners are presented below. Be sure to sit in on their presentations at the OWEA 2019 Conference this June!

- Northeast – Adam Dellinger - Airflow Ventilation of Sewers and Tunnels
- Southeast – Elizabeth Buening - Improvements for Nutrient Removal at a Package Plant
- Southwest – Adam Athmer - Retrofitting a Pump Station for Intermediate and Future Use
- Northwest – No YP abstract submissions

Young Professionals Committee

YP State Chair and Southwest Chair
Lindsey Hassenauer
Hazen and Sawyer
lhassenauer@hazenandsawyer.com

Southeast Chairs
Tucker Randles
City of Columbus
wtrandles@columbus.gov

Cody Allison
Arcadis
cody.allison@arcadis.com

Northwest Chair
Kevin Connor
City of Defiance
kconnor@cityofdefiance.com

Northeast Chair
Ashley Williston
Burgess and Niple
Ashley.Williston@burgessniple.com

Southwest Update

During 2018, the SWOWEA YP committee hosted five YP events, including three facility tours, a river cleanup, and a meet and greet event. Thanks to all the SWOWEA YP Committee members for organizing these events, and all the organizations for welcoming our group. We are looking forward to another successful year in 2019!

The last YP event of 2018 was a tour of MSDGC's SSO 700 High Rate Treatment facility located in Cincinnati, organized by the YP and Watershed Committees of SWOWEA. The treatment facility has a storage capacity of 3.6 million gallons with a peak flow for the CEHRS at 15 MGD. SSO 700 is equipped with Veolia's Actiflo and is a critical component of MSDGC's operations. The tour was presented by Rob Kneip (MSDGC) and Dan Murray (US EPA) and had about 35 attendees. A happy hour after the tour was sponsored by BL Anderson and was attended by about 20 members.

Northeast Update

2018 was a busy year of events for the Northeast Section Young Professionals Group; we had a total of 5 events. We kicked off the year with a tour from Kurtz Brothers and West Creek Conservatory of the bed load interceptor and West Creek Confluent project. We had a beach cleanup in June at Sim's Park in Euclid with AWWA's YPs and Cleveland State's Student Environmental Movement Group. Lake County Department of Utilities hosted our June 2018 event at their Gary L. Kron Water Reclamation Facility. In September, we headed to the Akron Zoo to meet "Big Hanna", a newly introduced composting machine designed to help the zoo achieve its zero waste goal. Our last event for 2018 was in mid-November and was hosted by quasar energy group at their new headquarters in Independence; the event included a technical presentation from 4 of their staff, tour of their lab/facility, and networking.

SW YP photos above and to the right.

NE YP photo below.

SAVE THE DATE - MAY 2, 2019

COLLECTION SYSTEMS WORKSHOP

Collections Committee Update

by Matthew K. Witter, P.E., NW Collections Committee Chair

The Collection Systems Committee held their annual Operator Hands-On Workshop series in all four sections in October and November. Nearly 150 people attended the four workshops, ranging from Collection Systems Operators to City Service Directors to Consulting Engineers. The main objective of these annual workshops, which are held at each of the four Sections, is to bring people in the collection system industry together to learn about common issues experienced in the field and to provide up to five contact hours. This year's topics included the following:

- Trench Shoring – Andy Cirata from United Rentals Trench Safety discussed the importance of providing proper trench protection and outlined the various types of protection that are available.

- Sewer Cleaning & Inspection – Jerry Weimer from Jerry Weimer Consulting discussed the NASSCO PACP/MACP/LACP pipe rating system and the role that it has played in standardizing collection system inspection analysis. He also discussed the importance of utilizing this data for the development of a thorough asset management plan that allows communities to attack their infrastructure needs in an educated manner.

- Pump Maintenance – Kevin Willis from The Gorman Rupp Company discussed common maintenance issues that collection system operators may experience with their lift stations. Topics discussed included how to disassemble and troubleshoot suction-lift and submersible style pumps, common maintenance issues encountered with pumps, and how to utilize the gauges within a pump station to determine issues that may be occurring within the pump, in the pump station piping and within the force main.

- Inspection & Maintenance of Underground Stormwater Detention Systems – Mike Cook with ADS Pipe discussed the operating principles behind a stormwater detention system and the maintenance requirements and procedures to keep a detention system operating properly.

- CCTV Technologies – Josh Cole with Doheny Companies outlined the many advancements in CCTV technology for inspecting collection system pipelines, including High Definition televising systems, 3D optical scanners, lateral launching systems with pan and tilt capabilities and lateral cleaning systems.

- Lateral Lining – Heather Spurlino from LiquiForce - A Granite Company, was on hand as a backup speaker and was able to talk to operators during the break periods and lunch to discuss lateral lining systems that eliminate infiltration on private property.

The OWEA Collection Systems Committee sincerely thanks all of the wonderful presenters and attendees for making this another successful year for the Hands-On workshops and we will see you again next year!

Photos from Michael Cook's presentation at the NW Collection Systems Hands-On Workshop at NWWSD.

Certification Update

by Kathy Richards, Certification Chair

Salutations!

I want to take this opportunity to offer my most sincere congratulations to those Laboratory Analysts that passed the Voluntary Certification Examination given this past October! A recent tally indicates we have well over 400 Ohio Wastewater Laboratory Analysts and Industrial Pretreatment Inspectors/Operators that are reaping the many benefits associated with certification.

Laboratory Analysts

Class I

Alyssa Blair
Stephanie Booher
Matthew Ford
Candice Garber
Eric Helldoerfer
Rebecca Kalinoski
Kimie Kilgore
Douglas McClure
Dinh Pham
Ryan Ruck
Emily Schroer

Class II

Debmal Bhattacharyya
Taryn Roberts
Walter Schroder
Seth Wilson

Class III

Melanie Warren
Thomas Zocolo

Industrial Waste Operator

Joseph Ross

Exams for Class I, Class II, Class III and Class IV are offered twice a year. The next opportunity to sit for the examination is Friday, April 19, 2019. Applications deadline is Friday, March 22, 2019. Applications and information can be found at: *http://www.ohiowea.org/lab_analysts.php.* Please review the exam conduct rules that were officially adopted in May of 2018 and are included at the end of this article.

Also, 2019 is a renewal year for all Laboratory Analysts. We will begin accepting renewals after we get results from the October examination. Anyone who passes an exam in 2019 will not be required to pay for this renewal cycle.

As always, should you have any questions or concerns don't hesitate to contact me.

Kathy Richards – Director, Certification Board
certification@ohiowea.org

Conduct during the application and examination process.

(A) No person shall engage in conduct that subverts or attempts to subvert the application, examination, or review process. Any such action shall cause a person's scores to be withheld and declared invalid.

(1) Persons holding a certificate issued by this body shall be subject to suspension or revocation of such certificate and shall also be disqualified from taking future wastewater laboratory analyst exams for a period of up to five years.

(2) Persons who do not possess a certificate issued by this body shall be disqualified from taking future wastewater laboratory analyst exams for a period of up to five years.

(B) Conduct that subverts or attempts to subvert the application, examination, or review process includes, but is not limited to:

(1) Conduct that violates the application process, such as falsifying or submitting incorrect information on the application for examination;

(2) Conduct that violates the security of the examination materials, such as removing from the examination room any of the examination materials; reproducing or reconstructing any portion of the certification examination; aiding by any means in the reproduction or reconstruction of any portion of or information from the certification examination; selling, distributing, buying, receiving, or having unauthorized possession of any portion of, or information from, a future or current certification examination;

(3) Conduct that violates the examination process, such as communicating with any other examinee during the administration of the examination; copying answers from another examinee or allowing answers to be copied by another examinee during the administration of the examination; possessing during the administration of the certification examination any book, notes, written or printed materials or data of any kind, other than the examination materials distributed or specifically listed as approved materials for the examination room in the information provided to the examinee in advance of the examination date by the Director. The examination process begins upon entering the location of the exam;

(4) Conduct that violates the credentialing process, such as falsifying or misrepresenting information required for admission to the examination, impersonating an examinee, or having an impersonator take the certification examination on behalf of the examinee.

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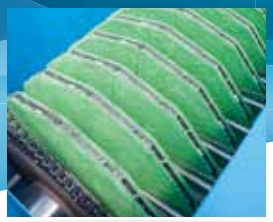

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www.hydrodynamicscompany.com

J. DWIGHT THOMPSON COMPANY
Water & Wastewater Manufacturer's Representative

Marc Nusser (Southern Ohio)
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OHIO WATER ENVIRONMENT ASSOCIATION

STUDENT MEMBERSHIP

HURRY, DON'T MISS OUT!

50 ANNUAL MEMBERSHIPS AVAILABLE

INTERFACE WITH WATER QUALITY PROFESSIONALS ACROSS THE STATE!

- OWEA members can offer mentoring, career guidance, tales of experience, internships, access to job opportunities, and more.
- Membership is designed for the specific needs of students - offering a solid foundation on which to build careers and gain credibility with water quality leaders.
- The Ohio Water Environment Association is offering a year-long OWEA/WEF membership to students with an interest in the water quality/wastewater field. This is a dual membership with OWEA (as the state member association) and WEF.
- Students must be enrolled in a minimum of 6 credit hours in an accredited college or university.
- Encourage students to apply for a free year-long OWEA/WEF membership at: https://www.ohiowea.org/membership.php

CONTACT

OHIO WATER ENVIRONMENT ASSOCIATION

614.488.5800 | info@ohiowea.org | www.ohiowea.org

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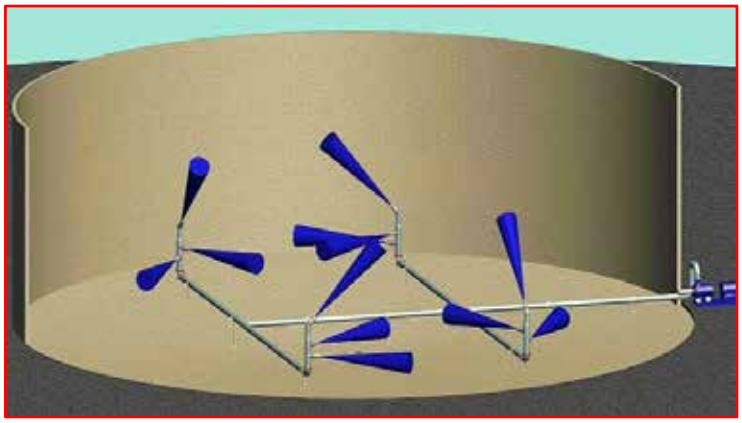
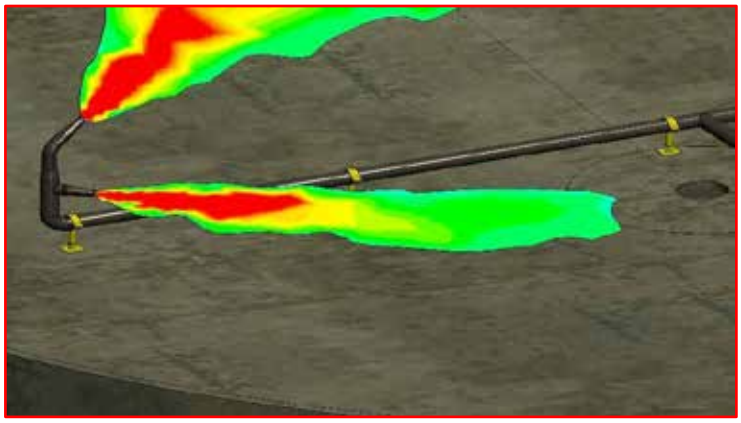
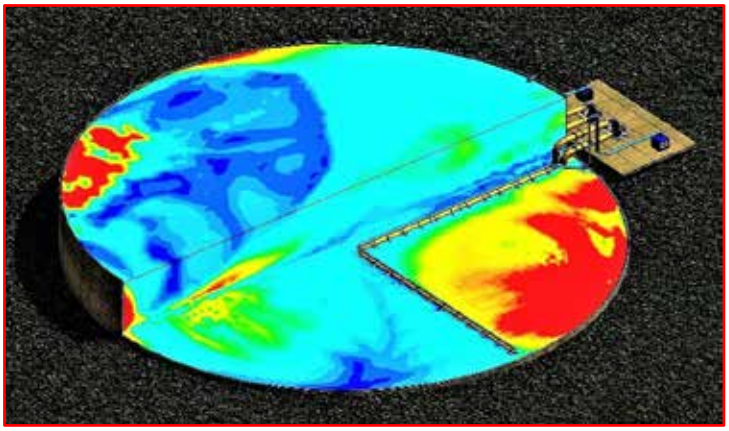


MULTIPLE ZONE SLUDGE MIXING



CFD ANALYSIS



CFD RESULTS

MIXING AND AERATION IN pH CONTROL TANK

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- Digester mixing
- Mixing anaerobic digesters
- Sludge holding tanks
- Equalization tanks
- Variable liquid level tanks
- Single, double and triple zone mixing
- No rotating equipment in digesters

HYDRAULIC SLUDGE MIXING BENEFITS

- Energy efficient
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- Nozzles hardened to a Brinell hardness of 450+
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- High chrome mixing nozzles
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