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The Buckeye Bulletin (BB) is the official publication of the Ohio Water Environment Association, Inc., a not-for-profit corporation founded in 1926, dedicated to the improvement of water quality in Ohio and the continuing education of water professionals. It is one of the top five member associations of the Water Environment Federation.

The ideas, opinions, concepts, and procedures expressed in this publication are those of the individual authors and not necessarily those of the Ohio Water Environment Association, its officers, general membership, or staff.

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Photos in this issue provided by:

Cover Photo - Photo by Steve Hackney

Other photos OWEA Section and Committee photographers, article contributors, and advertisers, (list not all inclusive).

Contact Hour Information:

OWEA training is submitted for contact hour approval.

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.























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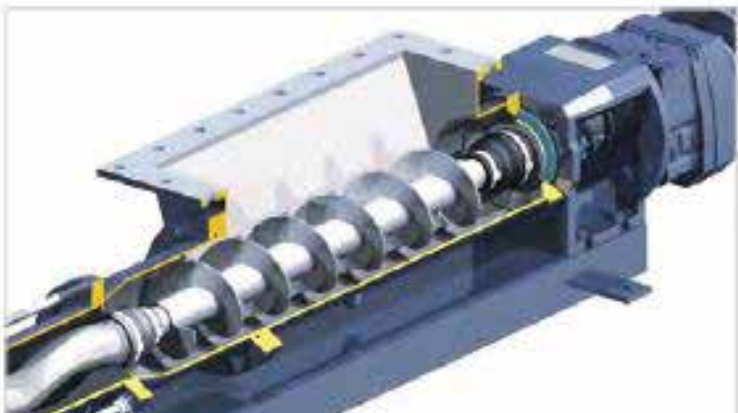
GPM @ 1000	Single Stage 0-50 PSI	Dual Stage 90-180 PSI
88	1B120G1L	2B120G1L
158	1B160G1L	2B160G1L
222	1F036G1L	2F036G1L
295	1F050G1L	2F050G1L
370	1Q065G1L	2Q065G1L
435	1Q090G1L	2Q090G1L
565	1H115G1L	2H115G1L
742	1J175G1L	2J175G1L

Dimensions

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
1B120G1L	42	14	12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
1B160G1L	42	14	12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
1F036G1L	42	14	12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
1F050G1L	42	14	12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
1Q065G1L	42	14	12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
1Q090G1L	42	14	12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
1H115G1L	42	14	12	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
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Hello OWEA friends. Hopefully this article finds you in the midst of the autumn season, where you can get outside and enjoy the crisp air and changing colors of the landscape. It is a great time to take a pause from our daily grinds and simply take in what mother nature has to offer and recharge our souls. As I thought about this article, I didn't want to just regurgitate all the events OWEA has done or will be doing. Please read further in the Buckeye Bulletin or visit www.ohiowea.org to see when future events are scheduled.

Alternatively, I would like to focus on a term that I have been studying recently and think is very relevant to OWEA and most of us in our personal and professional lives: Servant Leadership. What does **Servant Leadership** mean? From actual definitions:

Servant - One that serves others; to be a devoted and humble follower; to meet the needs of others; to complete a task without expecting a reward.



Brandon Fox
OWEA President

Leadership – The act of leading others or an organization; to influence and guide others; to inspire confidence and move a group to action.

As you read the definitions, the two words almost seem like antonyms and contradict each other. Servant tells us we should follow others while a leader is normally known as someone that directs traffic and gets things done.

However, if we dig a little deeper, I believe the two should *not* exist without each other. I am sure if I asked each of you to tell me about someone you respect and wanted to follow, their character traits would be very similar. Traits like kindness, caring, good listener, humble, flexible, authentic, grateful, empathetic, delegator. On the surface, most of these traits sound like a person that may not be a great leader. In order to get things done, we need a leader that is a direct, goal driven, cost watching and micromanaging dictator to tell us what to do, right? Wrong.

Upcoming Executive Committee Meetings

November 8, 2022

March 14, 2023

January 10, 2023

May 9, 2023

Brandon Fox recently changed roles to become the Project Manager for the City of Newark Division of Water and Wastewater. Prior to Newark, he was the Plant Manager for the City of Columbus Jackson Pike WWTP for seven years and the Residuals Manager for three and a half years. He started his career as an Operator in Training at Fairfield County Utilities in 2004 after earning a Bachelors Degree in Agriculture from The Ohio State University. He holds an OEPA Class 4 Wastewater License and a Class 3 Water License. Brandon is currently the President for OWEA. Away from work, he enjoys anything outdoors, woodworking, watching his children play sports, gardening, and spending time with his family and wife of 20 years, Mandy.

President's Message

As servant leadership has proven, some of the most influential and accomplished leaders focus on serving others first and the success comes from the positive influence they make on people, not processes. John C. Maxwell stated "People do not care how much you know until they know how much you care". I think this statement signifies the overall essence of servant leadership by understanding that people will do more and work harder for a leader if they feel valued and respected, and are treated like another human being and not just another employee.

Especially after the Pandemic, employees and volunteers of organizations like OWEA seem to have taken a more "me" centered approach to their daily lives and want what is best for me. Imagine if everyone woke up tomorrow and asked "What can I do to help someone else today"; wouldn't our world and workplaces be better. And this doesn't mean we should forget about ourselves, but the funny thing that happens when we serve others is, we usually

end up receiving more in return.

One final quote I want to share is from Harry Truman, "It is amazing what you can accomplish if you don't care who gets the credit". If I have 10 employees and my main focus is figuring out what I can do to make them successful, don't you think I *too* will be successful? And by being a servant leader, one would hope that the group gets the credit, not a single person. This type of behavior is evident within OWEA. I cannot tell you how appreciative I am to serve as the President of OWEA, because there are no big egos or personalities that want all the credit. We have common goals and succeed as a group, not a bunch of individuals.

I end by asking each of you to wake up tomorrow and figure out a way to serve another person. If we all do this, it is guaranteed to improve our families, our workplaces, OWEA and our world. Now go be a Servant Leader!

Welcome New Members

July 2022 - September 2022

Khaled Abdo	Christopher Daugherty	Mitch Lambert	Kevin Price
William Allen	Claire DeForest	Bo Liu	Harvey Redenback
Phillip Anderson	Johan DeMessie	Ben Lovejoy	Drew Richards
Vinny Anderson	McCallah Ferry	Robin Maliszewskyj	Jared Roe
Mike Arcidiacono	William Glenn	Alex Martynenko	Yoyce Saliba
Katharine Bechtel	Allison Gouge	Charles Martz	Benjamin Sizemore
Dustin Bellanger	Juliella Hankinson	Doug McClure	Joshua Smosarski
Steven Betz	Mark Heiman	Michael McFadden	Ed Spriggs
Mitchell Blue	Steven Honeycutt	James Muskera	William Vuyancih
Lindsey Brighton	Denario Jones	Jarred Myers	Alex Wohlgemuth
Mitchell Cetovich	John Keck	Yoontaek Oh	Da Yu
Peter Clarke	Hyun Chul Kim	Josh Poulin	
Monica Colberg	Robert Lamb	Jessica Preston	

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

2023 Webinar Dates

1/11/23 10 AM

2/8/23 3 PM

3/8/23 10 AM

4/12/23 3 PM

5/10/23 10 AM

6/14/23 3 PM

7/12/23 10 AM

8/9/23 3 PM

9/13/23 10 AM

10/11/23 3 PM

11/8/23 10 AM

12/13/23 3 PM



- All topics will be OM (Operations & Maintenance Approved)
- One hour long
- \$15 per webinar for members
- Topics will include PFAS, Collections, Financial Stability, Biosolids, Emerging Technologies, & more
- Conveniently the second Wednesday of every month with alternating times to accommodate various schedules

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Save the Date

Biosolids Workshop
December 13, 2022

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August 21-25, 2023

**One Water Government
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March 1, 2023

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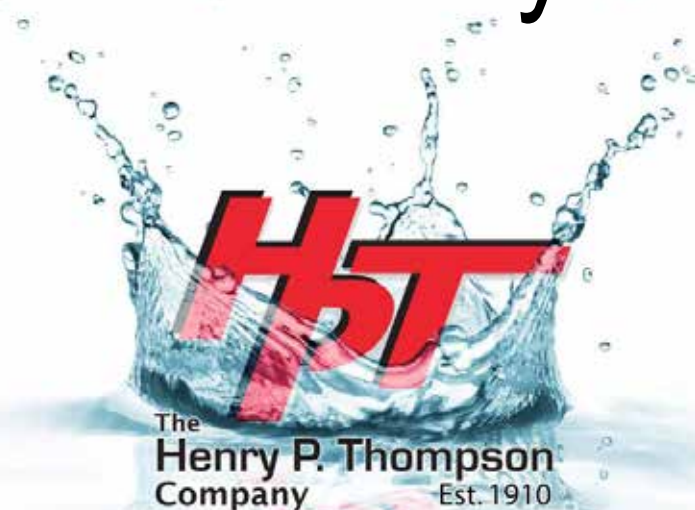
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Gary L. Kron Water Reclamation Facility

by Nicole Erkkila

Facility Name and Location:

Gary L. Kron Water Reclamation Facility, Mentor, OH

Plant Description:

The Gary L. Kron (GLK) Water Reclamation Facility is designed to treat 20 MGD, with a peak flow of 55 MGD. The Average daily flow is 13.9 MGD. The facility is a combination biological treatment plant with trickling filters and activated sludge process. The final effluent is discharged into Lake Erie. The sludge handling and disposal system includes “self-sustaining” anaerobic digestion, the dewatering of sludge and the addition of polymer. This end product is delivered to the Lake County Solid Waste Facility.

How many analysts/technicians work in the laboratory?

Our laboratory consists of three technicians who regularly perform analyses with a fourth analyst who manages the laboratory. Most summers we welcome in an intern to perform analyses and assist other technicians. The majority of sampling is conducted by Operators and our Industrial Pretreatment Department.

Do you accept samples from outside sources?

In addition to our own permit monitoring, we also analyze samples for four package plants and about 20



significant industrial users throughout Lake County. Though we are not a contracted laboratory, we are happy to assist other local municipalities when in need.

What analysis do you perform?

We perform analyses for CBOD, COD, pH, solids (TSS, TDS, TS), Ammonia, Phosphorus, TKN, Nitrate-Nitrite, E. coli, microscopic examination of activated sludge, Alkalinity, Volatile Acids, and Chlorine.

Other duties your laboratory is responsible for?

We perform low-level mercury sampling for GLK and one of our package plants. This includes preparing all equipment using clean techniques and performing the clean hands-dirty hands sampling technique. We also conduct routine cross training for operators in the laboratory to aid them in their study for EPA Operator exams.

Do you use a contract laboratory?

We use NEORS for metals, low-level mercury, O+G, and available cyanide, EnviroScience for WET testing, and EA group for organics analysis.

Do you have any permitted industries?

We have around 20 permitted industries that we monitor in Lake County at this time. Our Industrial Pretreatment Department is responsible for the inspections and sampling at these facilities.

Have you assisted with any pilot studies or uncommon testing?

GLK is collaborating with the Ohio EPA and Great Lakes Construction Company (GLCC) to aid in the clean-up of the Mentor Marsh Salt Fill remediation project. GLCC will be digging the salt out of the ground to haul away and GLK will be treating the water (ground



Lab Profile

and rain) from this process, as they are permitted as a significant industrial user to tie into our sanitary sewer line. The primary concern is TDS and we have been monitoring at the collection source, throughout lift stations, and in the GLK Influent and Effluent.

Is there anything else we should know about your Laboratory?

Fun facts about us: As a team, we enjoy participating in mindfulness activities, such as meditation, on a regular basis to improve our concentration/productivity, relationships with one another, and our overall well-being. We also have upwards of 16 plants in the lab to maintain the indoor air quality.



Lab Profile

Interested in showing off your lab? We want to hear from all wastewater labs around Ohio, big and small!

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Melodi Clark

MLClark@columbus.gov

Co-State Chair

Anthony Hintze

tjhintze@gmail.com

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A Chat With Cleveland Water Alliance's Bryan Stubbs

Interview by Megan Borrer

STAFF: Can you explain to our members exactly what Cleveland Water Alliance (CWA) does?

STUBBS: Our focus is on two key areas, one is accelerating new innovations, or new technologies, in the water sector. It's to identify market needs, and a good example there is our lead service line pipe farm in partnership with Cleveland Water. We went to Cleveland Water and said, hey, what's keeping you up at night? And they said, the identification of the lead service lines. There's not a technology in existence in the world right now to be able to detect lead service lines without breaking ground. We identified the need, we worked with Cleveland Water to build the pipe farm, and then we put out a worldwide ask for scientists, researchers, companies, to say, 'Come in, trial your technology in our pipeline and let's see if we can get your product to



the market.' There's not a utility on this side of the Mississippi River that doesn't need to identify lead service lines.

So that first part is the identification of market needs and accelerating those market needs through the innovation lifecycle, then to the market. The second is to support the blue economy workforce. It's to say, for Greater Cleveland, the

biggest growth sector year on year since 2015 is the water economy sector. So it's working with a utility, or a company like a Gorman Rupp or a Moen, just to make sure they've got the talent that they need. I'll add a third one to that, and of course, this all hinges on clean water, so the how is really identification of market needs, acceleration of this technology, serving the market need, and supporting our utilities and our companies in a variety of areas from innovation to workforce.

Fireside Chats

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



STAFF: What is your role with CWA?

STUBBS: I'm the President and the Executive Director so I wear many hats, depending on the day. I have a philosophy that it's an all hands on deck. There's no job too big or small for anybody in the organization. One day I'm Chief Fundraiser, the next day I'm speaking, as I did at One Water Ohio, we do that nationally and internationally. It's repping the great state of Ohio on a variety of different platforms. Some days it's mundane, it's HR, it's payroll, it's all that kind of fun stuff.

STAFF: What was your background before CWA?

STUBBS: I'm a reformed entrepreneur. I had a company out of undergrad college in Chicago and ran that for about eight or nine years and sold it. As I was selling it, trying to figure out what I wanted to do next, I went back and got a master's in business from the University of Illinois, Chicago. I got really deeply engaged in this idea of community-based economic development. How can we grow sectors within our local economy that provide positive good to the community, but also help grow the community? I just got really engaged with this field of economic development so I started doing that for about a decade in Chicago and then got a second MBA in more sustainable management. And just got deeper and deeper into this idea of the connection that you can do well and do good in the same breath. From that, I got recruited to apply for this new organization called the Cleveland Water Alliance. It was just a perfect fit because water is life and we have treated it not well over the last 100 years, but one only needs to look at the current news headlines to see all the water stress going on out there, all of our infrastructure challenges. It just seems like a home run to me in terms of having a center of clean water here on the shores of Lake Erie, the most biodynamic of the

Great Lakes, that utilizes our partners' innovation and technology to keep that water clean but also to grow the local economy. I was just like, 'Okay, that's it, that's the trifecta.'

STAFF: What's the most exciting project that CWA has been involved in?

STUBBS: Our testbeds are extremely exciting for a variety of reasons. One, we're trialing all sorts of exciting technology, so it's not just one thing a day. I mentioned earlier, trying to solve for identification of lead service lines, that's obviously compelling and extremely important, but we're also trialing real time in situ E coli sensors, that to me could change the industry.

We're working on a really cool microplastics capturing technology within the homes, as a spin out from one of our research institutions. It's hard to point at one single one but it's easier to point at, there's just a whole plethora of exciting new technologies that are either being developed here in Ohio, or they're being brought here to Ohio to kind of test them and validate them. Take your pick, every day is a little different, and every day is solving a real problem and working towards solving this problem. It's just exciting from that standpoint.

STAFF: CWA has several Lake Erie projects. How important would you say Lake Erie is to all Ohioans?

STUBBS: I think people don't realize Ohio is a water state. We have Lake Erie to our north, and we have the Ohio River to the south. That makes us pretty unique in many ways. Lake Erie has its own conversation, massively important. One, it's our greatest and biggest natural resource. It's a driver for industry, it's a driver to GDP, it's a driver for recreation. It's billions upon billions of dollars that that lake supports, but it's also realizing

Fireside Chat

that that lake needs to be properly stewarded in terms of clean water. It's always got these challenges in terms of influences of industry, and ag, and recreation, that we all have to balance. Again, look at the news today, and look at water stress, both nationally and internationally. Why wouldn't you want to be on the shores of Lake Erie for the next 100 years?

STAFF: Why did the Cleveland Water Alliance choose Ohio, and specifically Cleveland and Lake Erie?

STUBBS: Cleveland has always had this incidence, kind of history with water. Of course, dating back to the Cuyahoga River, and it being recognized for catching on fire. Of course, most of the Great Lakes caught on fire every few years, 100 years ago, whether it was in Detroit, or Buffalo, or Cleveland, but it was a 1969 Time Magazine article, that was the most read issue of Time Magazine ever, and not because it covered the Cuyahoga River, but because of the Chappaquiddick incident. As people got into that magazine, and started

reading about the issues with the Cuyahoga River, that helped bring to board this national conversation around water quality that helped us get to the Clean Water Act and the Federal EPA. As a byproduct of that, we have really done an incredible job of restoring our water resources, but that took a lot of knowledge, know how, and companies.

In the case of Greater Cleveland, we have over 300 companies in what we define as the water economy, so it's a concentration. In economic development terms we call it a cluster. Cluster economic development is extremely popular in Southeast Asia, in Europe, in Australia. It's a little newer here. The easiest way I use to describe it is, think of Silicon Valley and the semiconductor industry, that's a cluster. You have all those companies, and expertise, and research institutions. Here, regionally, we have the same thing, but for water. We have these great research institutions that know a lot about water. We've got people like Ohio Sea Grant, we've got Case Western, and we have these

Stubbs speaking at the Kick Off Breakfast at the 2022 One Water Technical Conference & Expo



300 companies in our network. Whether it's an Eaton in their water filtration business or whether it's a Moen and their whole home smart water systems. We have this deep rich expertise here because of our troubled past so it's kind of like, you know that saying, when life gives you lemons, you make lemonade. We had trouble with our water, but because of that we have this deep expertise and this concentration of companies. So when we say, 'Why Cleveland?', it was a natural fit. We're not redeveloping something from scratch here. We're just getting it to do even more to accelerate it, to give it a little more rigidity in terms of things like technology acceleration.

STAFF: How can wastewater professionals help your mission?

STUBBS: First and foremost, it's talking with us about some of the things that you're trying to solve, and that you're having trouble solving for. You're not in this alone. If you're having this problem, the plant next to you in the county over is probably having this problem, which means there's probably somebody downstate having this problem, there's somebody probably in Indiana having this problem. It's the same one, you're not alone, and we serve to try to figure out these big challenges, these big problems.

You can help us by, one, working with us. A good example, one of our projects right now we have six utilities participating in an open innovation challenge around lead service lines. We can do the same thing on the wastewater side. 'What's keeping you up at night?' is my question. I would say, how you can help us is tell us what's keeping you up at night. Then let's work together to try to solve it. That's first and foremost, and then two,

we collectively have to do a better job of championing just the incredible resources of our utilities and our utility partners and our utility workforce. It's an amazing dynamic, a really dedicated bunch. They get the honor of actually making a difference every day, but all of our pipes are buried, so people and the public don't recognize that. So it's to be trumpeting, this is a driver of the economy - clean water - and we only have clean

water thanks to our wastewater and drinking water utilities. We collectively need to trumpet that story a little more so that we can also go out and help raise awareness around infrastructure funding.

STAFF: Anything else you'd like to share with the membership?

STUBBS: What we've built over the last few years here is this world-class asset of incubating water technology, water innovation. This is not something you just bump into. This is very rare, it's getting a lot of international attention. We have 70 European companies wanting to come here to trial their technologies currently and we want to ensure that those companies start their businesses here in Ohio and hire Ohioans. I just want to emphasize that what we built here is for all of us and it's a really cool thing. It's going to really help propel the next generation of our regional economies. There's only going to be more of a need around both drinking and wastewater at the industrial edge. We only need to look at Intel as a great example of that. We wanted Intel to come here, we're glad that we got them, but it's going to require a lot of good engineering by our wastewater folks. So it's just realizing you have an asset here, use us.

Zanesville WWTP

by: Tucker Randles

Photos by: Steve Hackney

History

The City of Zanesville WWTP was built in 1959 and is located at 1730 Moxahala Avenue in Zanesville, Ohio. Currently, the plant serves the City of Zanesville and the Muskingum County owned collection system. Presently there are 13,789 City customers and 4,598 County customers for a total of 18,387 customers. The yearly budget for the WWTP is 7 Million Dollars. The WWTP is an 11MGD design, with a peak daily flow of 27MGD, a peak hourly flow of 36.2MGD, and has an average daily flow of 7MGD. The wet stream process is made up of one influent primary screen and one influent bypass screen, primary pump station, two grit tanks, three primary tanks, secondary pump station, three trickling filters, one activated sludge train, four

Plant Overview

secondary tanks, and two Cl₂ tanks. Disinfection is done with chlorine gas and sodium bisulfite as a neutralizer. The solids stream process is made up of one sludge pit, one gravity thickener, two anaerobic digesters, one belt press machine, and a screw conveyor. The sludge cake is hauled away by a third party and used for land application. Currently the WWTP has 33 employees working in the different departments. The departments are Administration, Operations, Maintenance, Lab, Sewer Collections, and Pretreatment.

Plant Upgrade

During the last 50 years the WWTP has undergone four major plant upgrades. The WWTP completed its



last plant upgrade in 2009 increasing the plant capacity to 11.0MGD, 27.1MGD peak daily flow, and 36.2MGD peak hourly flow (PHF). To achieve 36.1MGD PHF the plant has to blend its final effluent with partially treated wastewater. The current NPDES permit encourages this blending to continue in order to eliminate CSO's and try to maximize as much flow to the plant as possible and treat all flow with at least primary treatment. Justification for this type of treatment is the City's collection system which is combined. The City's current NPDES Long Term Control Plan requires the city to eliminate all the CSO's within the collection system prior to the renewal date. The intent for the upgrade was to treat as much flow as possible, utilizing the current site until the CSO's are removed and the system is fully separated. During the design the engineers established maximum flow of 27.1MGD for primary, secondary, and disinfection. Further calculations found that the primary treatment portion of the plant could accept 36.2MGD. During the PTI process for the upgrade both the city engineers and the OEPA determined that when accepting 36.2MGD the plant could still meet the NPDES permit limitations.

Discharge Limitations:

pH	Maximum 9.0	Minimum 6.5
E. coli	Weekly 284	Monthly 126
CBOD ₅	Weekly 40	Monthly 25
TSS	Weekly 45	Monthly 30
NH ₃	Maximum Summer	8.85
	Maximum Winter	12.7

Chlorine Total Residual 0.038

Primary Pump Station

The influent flow enters the primary pump station below ground level (700.5) at an invert elevation (674.5) feet above sea level. The primary pump station has five submersible pumps. The pumps are the same and are rated for 9,000 GPM at 45 feet of head. All of the pumps discharge into a 42 inch ductile iron force main. One of these pumps is all that is needed to process the average daily flow through the next stages of the plant.

Coarse Bar Screen

The primary bar screen is a rack and pinion, climber type bar screen that is 72 inches wide and 48 feet tall with 3/8 inch opening between the bars. Its rated capacity is 40.6MGD. The advantages of the climber screen are the lack of moving parts in the wastewater stream and the drive system is never submerged. The cycling of the screen can be controlled by a sensor.

Grit Tanks

There are two grit tanks using gravity collectors, cyclone concentrator and hydrogritters for dewatering the separated grit. Each tank is 30 feet by 30 feet with 3.5 feet of side water depth. The design capacity with both units operating is 36.2MGD. Even with one unit off-line, the one operating grit tank meets all the criteria



Digester Building



WWTP Sign

Plant Profile

for detention time (1.9 min) and the overflow velocity (1.87ft/min) for 18MGD which is 1.5 times the design flow of 11MGD.

Primary Tanks

The City of Zanesville has three primary clarifiers. Each clarifier is 72 feet in diameter and 14 feet deep (SWD). In 2004 the clarifiers were designed based on the 2004 10 state standards. The surface overflow rate in 2004 was 1,500-2,000GPD/SF for tanks not receiving WAS flow which gave the clarifiers a capacity of 36.6MGD peak hourly flow. In 2010 the City of Zanesville hired an engineer to review the clarifiers after noticing that the tanks were not settling properly during high flow events. It was determined that the tanks were not settling once the overflow rate was greater than 1500GPD/SF. This means the tanks have the capacity of 24.43MGD. Because of this, the primary clarifiers at Zanesville have additional treatment (CEPT) system and a Wet Weather Bypass system.

Aeration Tank

Secondary Pump Station

The Secondary Pump Station has four submersible pumps that help push the water through the remainder of the plant. The secondary pumps are rated at 9,000GPM and have 35 feet of head. The wastewater is discharged into a header box and the hydrostatic pressure pushes the water out of one of the four rotary arms of the Trickling Filters.

Trickling Filters

Zanesville has three trickling filters that are each 59 feet in diameter and 21.5 feet tall. The secondary pumps force water out of the hole of the filter arms which drives the arms and distributes flow over the media. The media has a honey comb appearance and this shape allows the water to splash over the media mixing air with the water and allows aerobic digestion of the solids. Accu-Pac is the manufacturer of the media and calls their media Cross Flow PVC media with high surface area. The bacteria traps and consumes the solids as the water



flows down through the media. All three trickling filters are equipped with underdrains that collect the water at the bottom of the filters and channel the water to a manhole that leads to the aeration tanks.

Solids Contact Aeration Tanks

The activated sludge process is an aerobic, suspended growth, biological treatment method. It uses the metabolic reactions of microorganisms to produce a high-quality effluent by converting and removing substances that have an oxygen demand. The incoming effluent from the trickling filters is mixed in the aeration tanks with sludge collected in and returned from the secondary clarifiers. The return activated sludge (RAS) contains microorganisms which must have nutrients and oxygen in order to grow and maintain life. The bacteria metabolizes the suspended solids (food) and dissolved solids in the settled wastewater. Air is used to mix the wastewater and RAS (Mixed Liquor) through a series of diffusers located throughout the tanks. The air mixes the sludge and organisms and provides the aerobic (oxygen containing) environment necessary for the growth and reproduction of the microbial population.

Secondary Settling Tanks

The WWTP has four secondary settling tanks (clarifiers) provided to remove the suspended solids in the mixed liquor, and to recapture the sludge that is returned to the aeration tanks. Three of the tanks were

constructed in 1984 and are 85 feet in diameter and 10 feet of side water depth. A new clarifier was constructed in 2009 and is 115 feet in diameter with 14 feet of side water depth. The mixed liquor then flows to the influent chamber of the aeration tank. Flow enters the secondary clarifiers at the center and is baffled for the initial flocculation of solids to occur as the velocity of the wastewater slows. The flow is directed down to prevent short circuiting in the clarifiers. The wastewater then flows through the clarifiers and exits over the weirs into the Outer Channel around the outside of the clarifiers.

Chlorine Contact Tanks

May 1st through October 31st the NPDES permit requires the plant to disinfect the effluent prior to discharging to the Muskingum River. The City feeds chlorine for disinfection. The City is required to monitor for E.coli three times a week. The permit mandates a maximum of 284 colonies per week and 126 colonies as a monthly geomean. The plant operator collects a grab sample from the effluent flume prior to being discharged into the Muskingum River. The plant has four 1 ton cylinders of Chlorine on scales and feeds approximately 175 pounds of chlorine per day at a flow of 7MGD or on average about 3mg/l. The plant uses liquid sodium bisulfite to dechlorinate the effluent prior to entering the Muskingum River. The NPDES permit requires the plant to discharge at a chlorine level less than .038mg/l total chlorine residual.



Belt Press



Blower Room

Plant Profile

Dewatered Sludge

In 2006 the City installed a Komlin-Sanderson 2.0 meter belt press, Moyno positive displacement pumps, Serpentex conveyor, sludge augur and converted an existing building into a sludge storage building. The equipment was installed because the City was having trouble land applying liquid sludge during the wet months. The secondary anaerobic digested sludge with an average of 3.5 percent solids is pumped to the belt press. Monday through Thursday the operators run the belt press. Progressive cavity pumps feed the belt press a smooth and constant 120-135GPM at 3%-4% sludge. We average about 20%-22% solids and using a belt conveyor feed directly onto a truck.

Future Plans

The WWTP is currently in the process of starting another capital improvement project which will

upgrade several areas of the plant. We will be improving the Primary Pump Station with the addition of a backup automated screen; adding the capability of bypassing flow around the grit basins and primary clarifiers; making the Secondary Pump Station bigger; removing the trickling filters and replacing with another activated sludge train; increasing the size of the Secondary Clarifiers; changing to a different disinfection process; plant wide upgrade of the automation and PLC; converting the main power source to an automated switch when power is lost.

The WWTP's employees are great representatives of the city. Everyone works together as a team which makes this a great place to work and grow. The City of Zanesville's slogan represents this WWTP. (Proud Of Our Past. Pride In Our Future.)

Chlorine Contact Tanks





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Sustainability in Asset Management

by: Paul Fletcher, OHM Advisors; Krista Takas PE, OHM Advisors;
and Brian Wellman EIT, Jones & Henry Engineers

Introduction

Environmental infrastructure systems consist of assets; some assets are visible and easy to evaluate, while others are buried, making their evaluation more difficult. Assets are the physical components of the system and can include pipes, valves, tanks, pumps, treatment facilities and any other equipment operators use to make their system function. The assets that make up a water, wastewater or stormwater system lose value over time as the system ages and deteriorates. As the assets deteriorate, the level of service the utility's customers desire may become compromised, operation and maintenance (O&M) costs can increase, and the utility may face excessive O&M costs it can no longer afford.

On many levels, a water, wastewater or storm water system's management of assets is a cornerstone of sustainability and resiliency, supporting the insights, planning, and day-to-day discipline needed to optimize these both operationally and financially over the long-term.

The state of Ohio enacted legislation that mandates each water system to have an asset management plan in place by October 1, 2018. The plan requires all water systems to demonstrate the managerial, technical, and financial capability to operate a water system. In Michigan, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) has been including an asset management program requirement when reissuing National Pollutant Discharge Elimination System (NPDES) permits for major municipal wastewater treatment plant permits since 2012.

The Asset Management Plan (AMP) is a combination of procedures, protocols and guidelines backed up by a capital improvement plan and an inventory of the system assets that are used to operate their system. Inventories should be updated continually based on data collected in the field; any changes to procedures, protocols and guidelines should be updated as necessary. Generally, water systems have the required information in various locations. An AMP is the collecting and organizing of these documents.

Sustainability

This is part of a series of articles on sustainability in different areas of our industry. It serves as an introduction to the subject and to a Sustainability Committee formed by OWEA.

For more information about the Sustainability Committee, or if you would like to become a member, contact Paul Fletcher at pletcher1312@gmail.com.



Asset management is a planning process for ensuring that optimum value is gained for each asset and that financial resources are available to rehabilitate and replace those assets when necessary. Requirements associated with what is included in an AMP differ between states but generally follow a similar approach. Core Components of an AMP are typically Assets, Service Level, Asset Criticalities, Funding and Life Cycle Costs.



A piece of equipment or a complete treatment train should be viewed as an investment and treated in a similar way regarding its management and maintenance. Financial management of a portfolio of funds requires constant attention to each part to ensure no individual part is under-performing. If it is seen to be under-performing, it should be re-evaluated or replaced. In a similar way, AMPs look at individual assets in the process treatment train to resolve which are underperforming. A good financial manager will see down the road and re-balance their portfolio today; similarly, a well implemented AMP will maintain and replace parts of the process train before they fail, making the system both environmentally and financially

sustainable. Proper maintenance of assets can extend useful life and decrease emergency spending required by reducing the risk of sudden failure.

Asset Management Plans

AMPs assist municipalities with their sustainability goals by allowing for proactive instead of reactive failures in a system. AMPs are living documents and it is critical they are complete and updated regularly.



The main purpose of AMPs is to assist municipalities with understanding what infrastructure, resources, or any other assets of value a department is responsible for, what condition these assets are currently in and projecting when these assets will need to be replaced. This inventorying and evaluation of a system's assets can be divided up in any number of ways and can be customized to meet the needs of each individual municipality. Additionally, AMPs can include other procedures and guidelines

The intent of asset management is to ensure the long-term sustainability of the water, wastewater, or storm water utilities by helping a utility manager make better decisions on when it is most appropriate to repair, replace, or rehabilitate assets. By developing a long-term funding strategy, the utility can ensure its ability to deliver the required level of service in perpetuity.

A typical AMP will have contact information; succession planning; training record; non-technical description of the treatment system with a schematic and asset map of all pipes, valves, pumps, hydrants, and other appurtenances in the system; asset inventory and evaluation; criteria and timeline for rehabilitation, repair or replacement; capital investment plan; funding, operations and maintenance program; and emergency preparedness and contingency planning. Although AMPs concentrate on assets, they may also record and track other areas of business such as energy management, water efficiency, climate change and ties into regional planning. As assets are maintained and replaced, the AMP should be updated. This can be incorporated as part of construction projects, but at a minimum it should be done annually.

A successful long-term asset management program is built around continuous learning - “the more we understand about our assets, the better we can manage them.” Asset management is about creating a management framework that leads to sustained performance at the lowest life cycle cost (while meeting requirements of stakeholders at a level of risk acceptable to the community).

Asset Criticality

A common way to evaluate individual assets is to consider each asset’s probability of failure and its consequence of failure. Probability of failure considers how likely an asset is to fail based on year installed, condition, repair history and other related criteria to determine each assets remaining useful life. Consequence of failure, how much a system is impacted if an asset was taken out of service, can be determined by evaluating an asset’s importance to the system and redundancies.

To determine the consequence of failure, it is important to consider all possible costs of failure. These

costs include cost of repair; social cost associated with the loss of the asset; repair/replacement costs related to collateral damage caused by the failure; legal costs related to additional damage caused by the failure; environmental costs created by the failure; loss of business revenue to the community; and any other associated costs. The consequence of failure can be high if any one of these costs are significant or the accumulation of several costs occur with a failure.

Assets may not be equally important to a utility’s operation. Some will be highly critical to operations and others not critical at all. For example, a pump station serving a downtown area, or a remote residential area, may be deemed more critical than a pump station servicing an industrial park under construction. Utilities must examine its assets to determine which are more critical and why.

Determining an asset’s criticality will allow a utility to manage its risk and aid in determining where to spend operation and maintenance dollars and plan capital expenditures. Assessing criticality requires an examination of the probability of failure and the consequence of failure as discussed above. The assets that have the greatest probability of failure and the greatest consequences associated with the failure will be the assets that are the most critical.

Criticality is typically based on a mix of remaining useful life of the asset, public health and safety, unaccounted for water, maintenance issues (boil orders, blockages), status of engineering/readiness to proceed and reduced operating costs. These will be ranked differently depending on the municipalities’ requirements.

The table below is an example of assessing criticality. An analysis of different assets will reveal which asset has the highest criticality factor and, therefore, which

asset would require the most attention either for repair or replacement.

Assessing Criticality

Multiplied		Consequence (Cost) of Failure				
		Low	2	3	4	High
Probability of Failure	Low	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	High	5	10	15	20	25

To use this table, estimate the probability of failure from 1 to 5, with 5 being very high probability of failure and 1 being a very low probability of failure. Then assess the consequence of failure from 1 to 5 in the same manner. Different municipalities will have different ways of determining the values associated with probability of failure and consequence of failure. Methods can range from very computational and follow a very strict equation to simple assessments based on visual and verbal reports.

Using the number for probability of failure, move across the row until the column associated with the number for consequence of failure is reached. Alternatively, move down the column for the consequence of failure until the row for probability of failure is reached. Locate the number that is in the box where the row and column intersect. That is the criticality number for the asset. Using this method, possible criticality values will range from a low of 1 to a maximum of 25. The asset criticality is a calculation at one moment in time. To remain useful, the probability of failure should be reviewed periodically. The consequence of failure may need to be reviewed less frequently, depending on when major changes are made to the system.

Capital Improvement Project Plan

Because of under-investment in the past, many communities have a gap between costs and revenues that can only be closed by pressure on those two

variables. Strategies must be developed which lower the long-term costs or raise revenues to meet those costs. For most communities, the solution will lie in both, with the control of costs limited by the opportunities for efficiency and the raising of revenues limited by how much the members of a community can afford or are willing to pay.

Capital investment is a core component of effective asset management. The purpose of the Capital Improvement Plan (CIP) is to provide projected capital expenditures for the wastewater treatment and collection system assets, as well as when that expense is expected to be incurred. CIP requires a systematic evaluation of all potential projects at the same time. The CIP should be constantly reviewed and updated as required.

A long-term CIP should look at the utility's needs for the future. Ideally, the planning period would be at least 20 years, with a minimum of 5 years. Many municipalities will have a general 20-year plan that would include major projects, and a detailed 5-year plan with more information about projects, scope, and funding. It is understood that the specific expenditures and needs of the utility in the latter years, say years 15 to 20, are more speculative than the needs for the first 5 to 10 years. However, the inclusion of the needs for this longer time period will provide a better opportunity for the wastewater or stormwater system to plan for its capital needs. Capital improvement projects are projects that the utility has an extended period of time to plan for and are projects that usually cover high cost, non-recurring items. As part of the AMP, the CIP is reviewed and updated annually.

To generate an output that is of value to customers, stakeholders, communities and regulators, this output must transform input resources (cash, labor, materials, etc.) into output through the integration of work

Sustainability

processes, labor, materials, information and tangible assets. Conversion of inputs to valued output requires investment in assets.

Every step of a project is expensive. A project from planning and designing assets, through to replacing and decommissioning them is expensive, typically involving millions of dollars even for modest sized utilities. The utility determines the estimated cost of each identified project and the intended date for project initiation. The clear identification of the project, its cost, and the intended timeframe provides the utility with a defensible presentation for setting aside and safeguarding funds for projects.

The Capital Improvement Fund is funded on an annual basis and the accumulated Capital Improvement Fund monies can be used to supplement bonding for a particular project, act as a down payment, or cover

the entire cost of the project as determined by the utility. A CIP allows the utility to better project future revenue needs and focuses on preserving a utility's infrastructure while ensuring the efficient use of public funds. It should be viewed as an essential part of a local government's strategic planning and budget.

Conclusion

The intent of asset management is to ensure the long-term sustainability of water, wastewater or stormwater systems. By helping a utility manager make better decisions on when it is most appropriate to repair, replace, or rehabilitate particular assets and by developing a long-term funding strategy, the utility can ensure and maintain its ability to deliver the required level of service. There are a number of software packages available, developed specifically for the water and wastewater industry, that can combine with GIS software to help keep track of assets.

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WEF MEMBERSHIP

The Water Environment Federation (WEF) is a not-for profit technical and educational organization whose mission is to connect water professionals. WEF members are located in every state and across the world. OWEA is a Member Association of WEF and was one of the early members. WEF membership gives you the benefits of joining a large, national organization while staying connected at the local level.

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An OWEA State Only Membership offers those interested a less expensive, locally focused option. This membership will offer great discounts on OWEA events, the Buckeye Bulletin and many other advantages. OWEA is divided into four sections. These sections allow further involvement with the affairs of their particular region and offer members an opportunity to participate in our Association without extensive travel. The state only membership carries no WEF benefits.

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Subscription to the OWEA electronic newsletter	✓	✓
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A Comprehensive Assessment of the Akron Water Reclamation Facility

by Anna Soehnlén, McCallah Ferry, Noor Fahoum, University of Akron

The Great Lakes are an essential freshwater resource and the tributary communities have led the nation in developing effective nutrient removal in efforts to improve water quality. Nutrient removal helps prevent water quality concerns, like harmful algal blooms. Some of these water body quality issues are caused in part by excess nutrients entering waterways from agricultural runoff and combined sewer overflows. The City of Akron has taken various steps to improve the quality of water in the Cuyahoga River, tributary to Lake Erie, especially with the large fluctuations of storm events occurring in the area. These steps include various Combined Sewer Overflow (CSO) projects, part of Akron Waterways

Renewed!, and improvements & expansion of the Akron Water Reclamation Facility (AWRF). These projects have assisted the AWRF in managing the flows while maintaining Environmental Protection Agency (EPA) compliance, and the plant continues to work towards improvements as storm flows continue to present challenges.

The AWRF was recently interested in optimizing their aeration treatment process. This project was presented as the wastewater prompt for the 2022 NESOWEA student design competition. A team of students from the University of Akron's civil engineering program,



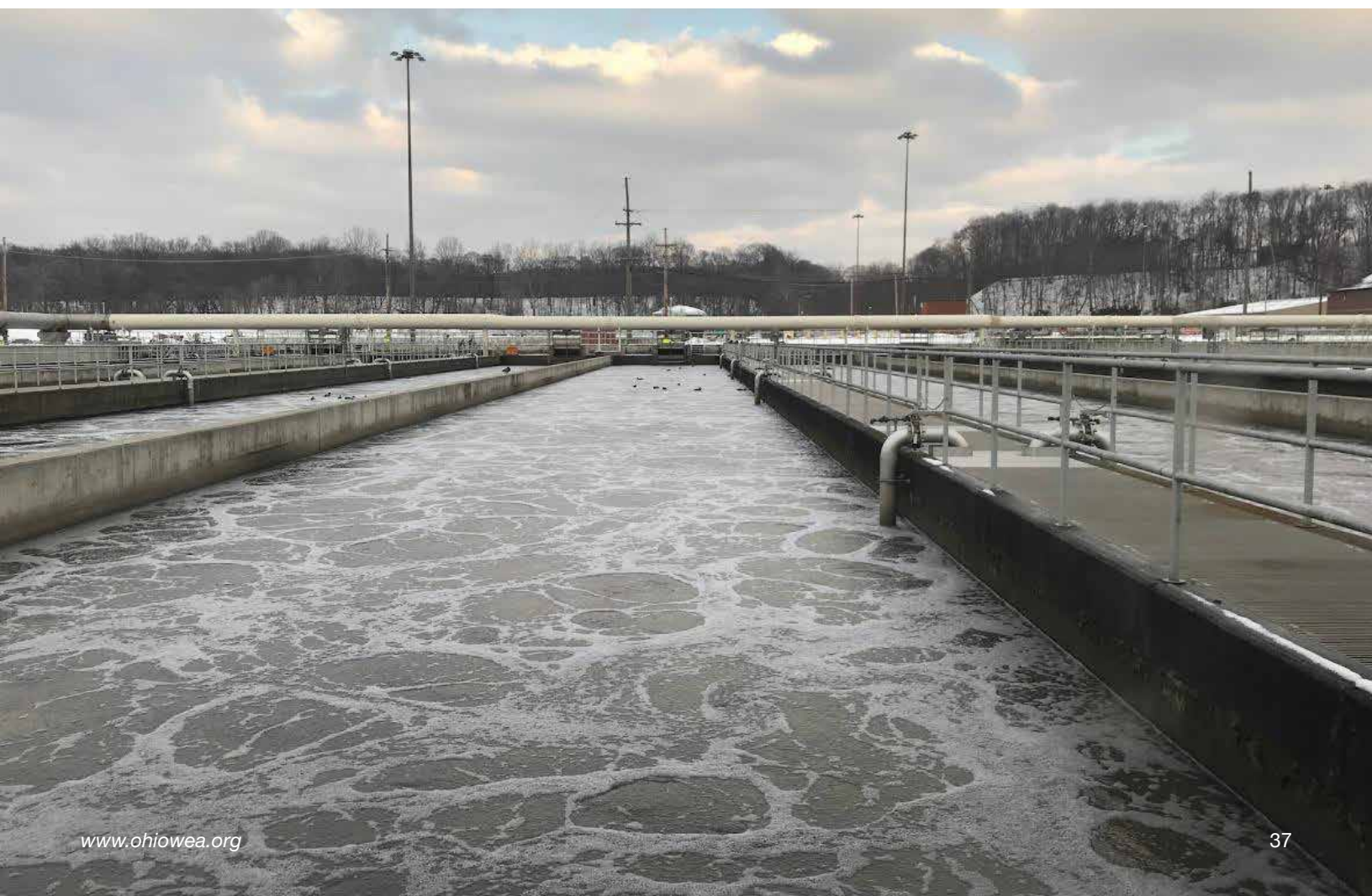
consisting of McCallah Ferry, Anna Soehrlen, and Noor Fahoum, worked together to develop a solution for the task at hand. The three areas the AWRF wanted to focus on included alkalinity adjustments, finding supplemental carbon sources, and analyzing the current step feed flow splits.

To determine the needs of the AWRF, the students used a BIOWIN model of the plant which was provided by Arcadis to run multiple analysis of all three tasks listed.

The BIOWIN model was initially run with the current aeration treatment split in place as a basis to compare the 15 flow splits the team formulated. These splits consisted of two different Biological Nutrient Removal (BNR) configurations. Average and peak flow were variables tested with each flow split adjustment. All effluent values from the different splits were compared

against the National Pollutant Discharge Elimination System (NPDES) permit values to ensure compliance. Some values noted include Carbonaceous Biochemical Oxygen Demand (cBOD5), pH, Total Suspended Solids (TSS), and Phosphorus. The results from the 15 flow splits concluded that the current split of the plant is most optimal. The AWRF is meeting the NPDES permit limits and maintaining sufficient alkalinity levels under current conditions.

For the carbon source analysis, the team researched various options including leachate. The AWRF currently brings in landfill leachate for treatment and to provide additional BOD for the aerobic bacteria. This is a mutualistic initiative between Akron's public services that repurposes a waste product. By adding the leachate as an input in the BIOWIN model, it was determined that leachate contributed to less than 10% of the total BOD under current conditions. This indicated that the



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leachate was not a large contributor of BOD, and the plant runs effectively using only the BOD present in the raw wastewater. With that in mind, the team researched alternate sources of carbon in the case that leachate is not readily available. The first option was Micro C, a sustainable by-product of the biodiesel industry. Micro C is safe and easy to implement to the plant's process. It is an expensive option in comparison to the commonly used methanol, but only a small dose is needed since the BOD concentration is high. Methanol is cost effective and a widely available carbon source, yet it has significant safety concerns and requires capital improvements.

With the use of the BIOWIN model and additional research, the University of Akron team demonstrated that the AWRF is running efficiently. The current

step feed flow splits are at optimal settings for the desired effluent parameters, there is a great source of BOD present in the raw wastewater which is used as a carbon source by the microorganisms, and the alkalinity is within a desired range. The City of Akron has been taking many steps towards improving the quality of water through treatment. This student design competition is a great reminder of the AWRF's efforts in constantly wanting to improve their processes to ensure that clean water is being returned to the environment. The University of Akron student design team is grateful for the opportunity to contribute to these efforts as we aspire to work with the environment in our careers, making a difference for the planet and for people. Our team is honored to be able to share our findings with the water and environmental community at WEFTEC.



Using Multiyear Financial Planning to Guide Your Facility

by: Doug Baldessari, CPA, Partner, Baker Tilly Municipal Advisors

Just as it would be nearly impossible to guide a ship without a map and compass, utility management needs a multiyear financial plan and certain tools to help them with making decisions, assuring viability, employing strategic planning, supporting operations all while minimizing rate impact.

Keeping up with increased operating expenses and declining cash reserves and revenues while at the same time replacing aging infrastructure and adopting new technologies is a challenge that requires effective multiyear financial and capital planning. Financial planning related to capital planning is even more important bearing in mind the economic impact of the recent significant expense and project cost increases may have had on a utility, which likely resulted in lower cash balances and reduced revenues available for operations and capital projects.

Utilities should understand the role and advantages of multiyear financial and capital planning as well as optimal methods for financing capital projects in the face of potential challenges caused by the pandemic and inflationary increases.

Role of financial planning

When properly implemented, this type of planning can offer a financial framework for decision-making and assurance of the utility's financial viability. It can be used as a tool for capital and strategic planning, and it can set a baseline for developing and minimizing rate impact.

A road map created for financial planning gives a utility a prospective or forward-looking approach. This is also an opportunity to involve employees to get their input and ideas along with their buy-in. Similarly, the utility should work to establish good will with its customers. Starting with those first steps can move a utility toward revenue stability and cost control.

Having a financial strategy can be an indispensable public policy tool for communities in that they can see how to financially manage the needs of the system. Plus, using long-term rate management is more effective than having to make short-term adjustments.

Utilities need to think through several factors when building their financial plan, including the potential for a stagnant or declining customer base and higher-than-expected increasing operating costs which we have seen lately. Likewise, they should be evaluating needed infrastructure improvements, possibly overdue rate increases and unfunded mandates like agreed orders, consent degrees and connection bans. Furthermore, a challenge all industries are facing is replacing an aging workforce.

Key elements

Revenue forecasting

A critical component to financial planning is revenue forecasting, which means knowing the anticipated income from current rates and charges and being prepared for changes in the utility's customer base. For

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example, a utility should have awareness of whether large users are leaving or coming into its service area or whether a residential development is being built or expanding. The utility should also know how it will be affected by an aging population.

With increasing interest rates, utilities should look at what they are receiving from their local bank and review options for additional interest earnings. Moreover, they should think about system development charges, often called capacity or tap-in fees, which are one-time fees charged at the time of connection to pay for future capacity-related improvements.

Estimated operating costs

Each expense account within the utility should be budgeted for, using historical information and workforce knowledge. To get to that information, the utility should be considering what it spent in the previous year and what it has spent to date. The utility needs to be realistic and find areas where it can create savings, if possible. A best practice for staying on top of that information is having the controller provide periodic analysis of actual-to-budgeted expenditures to give the board a scorecard of how they are doing throughout the year.

Another factor that could affect operating expenses are wages. In this time of low unemployment rates and inflation, if a utility's wages aren't competitive, it may need to adjust its budget to increase pay.

Debt repayment

Utilities should assess whether their rates need to have a funding source for outstanding debt. They should also be contemplating the possibility of a debt issue on the horizon as well as when outstanding debt pays off. Finally, they should explore their opportunity to refund or restructure debt.

Capital planning

As mentioned before, capital planning is critical to long-term financial stability, and multiparty involvement, from the controller, board members, superintendents, engineers, financial advisors and other internal and external stakeholders, is a vital part of capital planning. The utility should consider its capital projects, like major repairs and replacements in addition to normal improvements to its systems, since such expenditures are a significant driver of rate increases due to the capital-intensive nature of utilities.

Asset management is another key component in capital planning as is gauging the age of the utility's infrastructure, taking into account the life cycle of the assets and end-of-life replacements, including cash flow analysis, based on timing and after weighing its funding options, e.g., cash on hand, lease capital needs and bond financing.

Minimum reserve recommendations/requirements

Utilities should keep in mind the minimum cash and investment reserve recommendations and requirements. These are oftentimes in the outstanding bond documents, which include minimum operating recommendations and debt service accruals and reserves. Utilities should also ensure they have a capital improvement allowance reserve, typically based on depreciation or one-year's capital improvements. Remember, if the utility is not meeting the requirements, it will need to generate cash from rate adjustments to fund reserves.

Connecting budgets

For a number of reasons, utilities should make time to look at the big picture, taking into account the city or town's needs as a whole. It will let them get a more

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accurate view of the impact taxes and utility rates have on constituents and visibility into how they can work with other departments within the municipality, such as cost-sharing opportunities and incorporating capital investment from utilities.

Rate phasing/regular adjustments

In an effort to reduce the shock customers may experience after a rate increase, utilities should consider phasing in or regularly adjusting rates. Typically, utilities have less public resistance and greater customer confidence with this type of plan as rate increases are usually smaller and can be easily budgeted. It also allows for capital and financial planning to occur more routinely, which makes unforeseen expenditures for the utility less likely. Rate phasing and strategic financial planning are integral components for minimizing the rate impact on your utility customers.

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How Will Unprecedented Times and Federal Investment Impact Utilities Now and in the Future?

by Wayne Hofmann, Client Funding Director, Wade Trim

While the COVID-19 pandemic has negatively impacted communities worldwide, it also opened the door to significant public investment in infrastructure and economic recovery. The \$1.9 trillion American Rescue Plan Act (ARPA) enabled billions of investments in infrastructure and the public appetite for economic stimulus in a crisis led to the passage of the \$1.2 trillion Infrastructure Investment and Jobs Act (IIJA). Together, these measures will increase federal investments in local water and sewer projects to unprecedented levels.

As 2022 marks the 50th anniversary of the Clean Water Act, unprecedented change is occurring due to the COVID-19 pandemic, significant federal investment, inflation, and changing labor demographics. What challenges--or opportunities--may be presented by these changes?

Infrastructure Spending

The American Rescue Plan (ARPA) and Infrastructure Investment and Jobs (IIJA) Acts will increase federal investments in water and sewer systems to unprecedented levels over the next several years, providing potential economic relief to thousands of communities across the nation facing compliance challenges. Will these investments be remembered for securing our infrastructure for generations, or as an example of political failings and the adage of “more money, more problems?”

With thousands of press releases issued by legislators and agencies at the Federal and State levels heralding billions of dollars in infrastructure spending, it may be fair to assume the water industry can declare “mission accomplished” in meeting our massive infrastructure

needs. However, the opposite is the reality. Of the \$1.2 trillion authorized, approximately \$60 billion is dedicated to water resources, a paltry 5%. The water industry must continue to fight any perceptions that these investments will meet our long-deferred needs. At the local, state, and federal levels, effective advocacy and communication is still needed to reinforce the value of water and investment at all levels.

The IIJA was unprecedented in some ways, yet its funding for sewer and wastewater treatment pales in comparison to the billions in straight grant funding provided for water pollution control in the late 1970s and early 1980s. Funding increases are much more extraordinary on the drinking water side, with an eight-fold increase authorized through the life of the IIJA.

One must also consider the impact of the ARPA, which provided \$350 billion in direct grant assistance to every state, county, and local government in the nation. Using an estimate of 20% of that funding going to water and sewer projects, this would mean an additional \$15-20 billion for the water system investments annually through the end of 2026 (*Figure 1*).

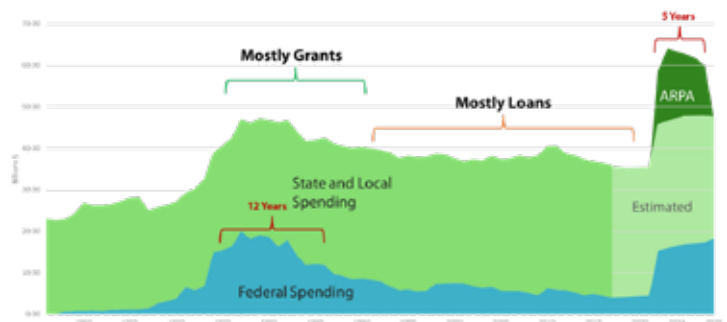


Figure 1: Federal, State and Local Spending on Water/Wastewater Utilities (Source: White House Office of Management and Budget/Congressional Budget Office)

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This will result in the largest collective investment in water infrastructure over 5 years in history. While much needed, this will create a stressor on an already hot market for utilities construction and materials.

At the federal level, our industry's voice is still needed to ensure Congress thinks long-term about infrastructure. In the FY 2022 budget, Congress did not appropriate funding for baseline State Revolving Fund (SRF) and several other programs to the full budget authority authorized in the IIJA, while leaving out funding for several water programs altogether. Further, Congress diluted the amount of grant and principal forgiveness funding available through the states by awarding over \$800 million in earmarks (*Figure 2*).

Current markups of the FY 2023 budget bills appear to continue this trend. By appropriating so much funding through earmarks, Congress will create challenges for Ohio EPA addressing its policy objectives. While shorting these programs may be prudent to avoid an overheat of demand, we must advocate for sustained investment beyond the authorizations in the IIJA, which extend through 2026.

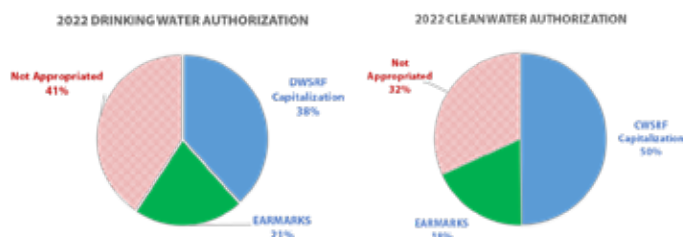


Figure 2: FY 2022 Federal Budget for State Revolving Loan Funds (SOURCE: HR 2471 Consolidated Appropriations Act, 2022)

The expansion of Buy America Build America rules by the Biden Administration to include manufactured components also provides a potential obstacle to the industry. Aside from adding complexity to funding programs that already intimidate some utility managers,

the requirements may contribute to domestic inflation of construction materials in the short-term. While the onshoring of manufacturing and production capacity may be a helpful policy, deferral of these requirements would provide time for the industry to effectively incorporate these policies into practice and also reduce inflation pressures.

State and Local Challenges

In total, the IIJA will result in approximately \$1.4 billion over the next 5 years, which will be primarily invested through the Clean Water and Drinking Water State Revolving Funds as loans, in addition to funding appropriated each year as part of the federal budget. Like several states that have sought to bolster water and sewer investment with ARPA allocations and enhanced revenues, Ohio used such funding to establish a Wastewater Grants Program with an initial investment of \$250 million in 2021.

An increase to principal forgiveness provides an opportunity to assist communities struggling with customer affordability, especially in urban areas. A recent policy change by OEPA, which removed the 10,000-population limit for communities to receive principal forgiveness, will help urban communities attempt to balance compliance obligations with affordability.

The IIJA and ARPA provided visions of free government money to fix most, if not all, infrastructure issues in the eyes of some elected leaders. However, this funding will only provide a short-term boost for capital infrastructure needs and cannot take the place of sustainable ratemaking approaches.

This combined federal and state investment will help many utilities play catch up on major capital improvements and deferred maintenance, but not solve every challenge or compliance issue. Local elected

leaders cannot fall into the temptation of reducing or pausing gradual utility rate increases for short-term benefit. It is important to demystify the “black box” of federal and state funding for elected leaders so they can make informed, rational decisions.

While the IIJA, ARPA, and state investments in water and sewer infrastructure provide an excellent opportunity to get utility systems on a more secure footing, they will certainly not secure the future. The industry must continue to communicate the value of water and sewer services, as well as the limitations of infrastructure spending in meeting utility system needs. This will be even more critical as the industry experiences generational turnover and passing of the torch to new leaders.

Inflation and Rate Hikes

All this investment comes at a challenging time of labor shortages and supply bottlenecks. System owners and municipalities have seen their buying power erode at an accelerating rate, giving older professionals in the industry visions of inflation and interest rates from their early career days and younger professionals a scary, new dynamic to consider.

Despite the memories of the late 1970s and early 1980s, there is very little to indicate a return to double digit interest rates is in the cards during the 2020s. The economic picture coming out of the COVID-19 pandemic is not dictated by regional or national developments, but an unprecedented global disruption reflected in unsustainable consumer and producer price index spikes across industries and market segments.

The current spike on construction material prices has no peer in post-World War II history. In May, the Producer Price Index for Construction Materials was 50% higher than the index was in March 2020 (*Figure 3*). Aside from three relatively brief 10% peaks after tax

reforms in 1986, 2003, and 2017, the only similar short-term increase was during the 2008 housing crisis. Such a short-term increase in construction and manufacturing pricing environment is unsustainable in the long-term.

While a complete price collapse to pre-pandemic levels is unlikely, a relative normalization of supply chains and even a mild recession should result in a regression of construction pricing toward the historical trend. Factor in rising interest rates and the supply and demand dynamic should continue to adjust.



Figure 3: Construction Materials and Producer Price Index from 1960-Present (Source: St. Louis FRED)

Considering the context of the IIJA being passed during the COVID-19 pandemic, many viewed the bill as a stimulus package as opposed to a long-term, sustained investment in the nation’s infrastructure. The quick infusion of money from states and the federal government has brought back the phrase “shovel-ready” to our lexicon. A holdover from the stimulus package enacted in the wake of the housing crisis of the late 2000s, it would be folly to use a shovel-ready policy approach in the current economic environment.

Changing interest rates will also impact approaches to funding infrastructure improvements. The low- to no-interest rate environment of the past decade has made bond financing an attractive option to many water and sewer utilities in comparison to State Revolving Funds. However, as rates begin to rise, SRF may become more

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attractive to finance officers that have been previously wary of the many requirements associated with Federal funding. With a strong increase in capitalization funding, SRF program managers will have more tools to provide competitive financing options with the bond market for years to come.

Demographic Challenges and Opportunities

Although inflation should begin to regulate as supply chains normalize, demographics present a danger for longer-term inflation trends on the construction and manufacturing side. Following a 10-year period where inflation increased by over 100% from 1972-1982, the Consumer Price (CPI) and Producer Price (PPI) Indexes became unchained (*Figure 4*). This created a period of relatively muted price inflation for producers and the construction industry for 40 years, until the COVID-19 pandemic.

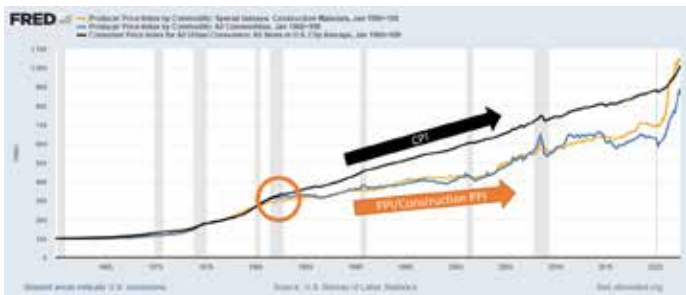


Figure 4: CPI, Construction Materials and PPI from 1960-Present (Source: St. Louis FRED)

In just over two short years, both PPI and Construction Materials prices have made up almost 40 years of price stagnation. While this is not a sustainable path and price will regulate once supply chains stabilize, long-term labor challenges will keep producer and construction material prices higher than the pre-2020 trend.

Following the stagflation and recession of the early

1980s, that decade introduced market shifts due to deregulation, automation, and globalization. While these contributed to lower price inflation for producers and construction materials, unprecedented demographic opportunities also contributed.

After World War II, the United States birth rate increased dramatically, creating the Baby Boomer generation. This was the first time since 1825 that the national birth rate would increase over an extended period, and only followed by a very small and brief increase in the mid-1980s (*Figure 5*). This significant increase in birth rate resulted in that generation hitting the job market moving into the 1980s. As a result, labor supply flourished. At the same time, immigration also greatly increased, adding even more labor to the economy.

The Labor Market in 1980

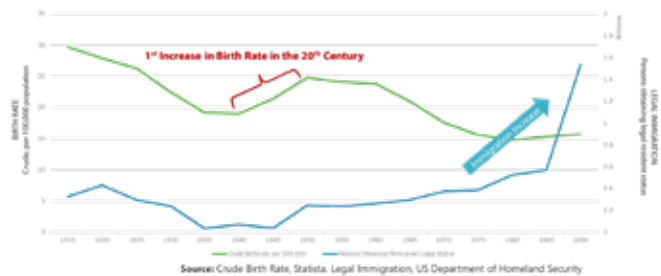


Figure 5: Birth Rate and Legal Immigration 1915-1990 (Source: Statista, Department of Homeland Security)

Today, we are missing those two significant demographic drivers, birth rate and immigration. The birth rate decline since the mid-1990s, which impacted K-12 school and college enrollment over the past 15 years, is now hitting the job market (*Figure 6*). Retirements among the Baby Boomer generation have accelerated through the COVID-19 pandemic, which not only disrupted labor markets through job loss and turnover, but also resulted in over a quarter million deaths among the working age population.

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The Labor Market Today

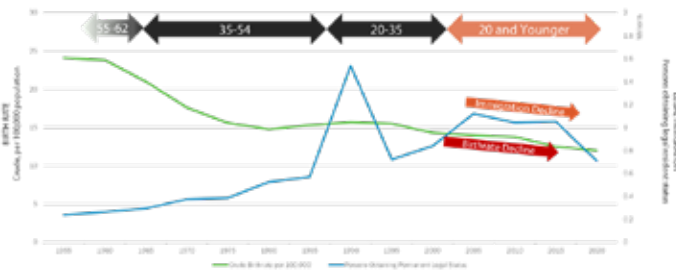


Figure 6: Birth Rate and Legal Immigration 1915-1990 (Source: Statista, Department of Homeland Security)

Opportunities in Unprecedented Times

We must stay optimistic about the future and look for opportunities, despite the challenges of COVID-19 rippling through our economy and the headwinds of inflation. We are finally seeing the federal infrastructure investment sought by the industry for decades, which will help utilities address lead in drinking water and other deferred investment. Technology also continues to advance, providing opportunities to create workforce efficiencies in the face of scarce labor resources.

While other parts of the nation face climate related challenges, Ohio remains a resilient geography that is even gaining recognition as a “climate haven” due to its proximity to the Great Lakes. With a relatively affordable housing and a competitive economic development strategy, the state also is poised to attract more residents and commercial investment. For communities that have had shrinking populations leading to oversized infrastructure systems, this is a prime opportunity for revitalization.

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Responding to The Great Resignation with DEIB

by Donnell Duncan, Arcadis

According to a study by the Brookings Institute, “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.” (Kane & Tomer, 2018) Yet that’s not all. Now insert The Great Resignation into the mix and see what happens.

What’s the Great Resignation? According to Dictionary.com, “The Great Resignation is an informal name for the widespread trend of a significant number of workers leaving their jobs during the COVID-19 pandemic. It’s sometimes also called the Big Quit.” (Dictionary.com, 2022) How did it get its name? On May 10th, 2021, Anthony Klotz, a researcher of employee resignations and professor at Texas A&M University broached the concept in an interview with Bloomberg Businessweek. (Cohen, 2021)

The Center for Marketing and Opinion Research, an Akron-based market research firm surveyed 5,000 working-age adults across Northeast Ohio. They developed demographic profiles for the 11 counties included in the survey (Cuyahoga, Geauga, Lake, Lorain, Mahoning, Medina, Portage, Stark, Summit, Trumbull, and Wayne). They also conducted sampling that would produce a statistically valid data set—meaning that from these results we can reasonably extrapolate to the broader population. Surveys were sent out in early February 2022 and results were first made public on May 20, 2022. (Burke, 2022)

Here are some interesting outcomes of the project. Only 40% of respondents were employed full-time, 23% were retired, 20% were not employed and 15% were employed part-time while only 3% had been laid off/furloughed. More than 20% of the workers quit their jobs last year. Over half the people who quit, did so without securing another job first. When asked why they quit in an open-ended question, the top answers were grouped into four main categories.

Why People Quit

1. Toxic work environment
2. Low pay
3. Life changes
4. Work schedule

These trends are projected to continue over the next year. Of those surveyed, 40.2% of currently employed respondents said they would look for a new job in the next 12 months. That doesn’t necessarily mean that they all plan to quit, but they will be exploring their options. On the other hand, 20.5% of those surveyed have already made up their minds and said they do plan to quit. Of the group that plans to quit, 83.4% will look for another job

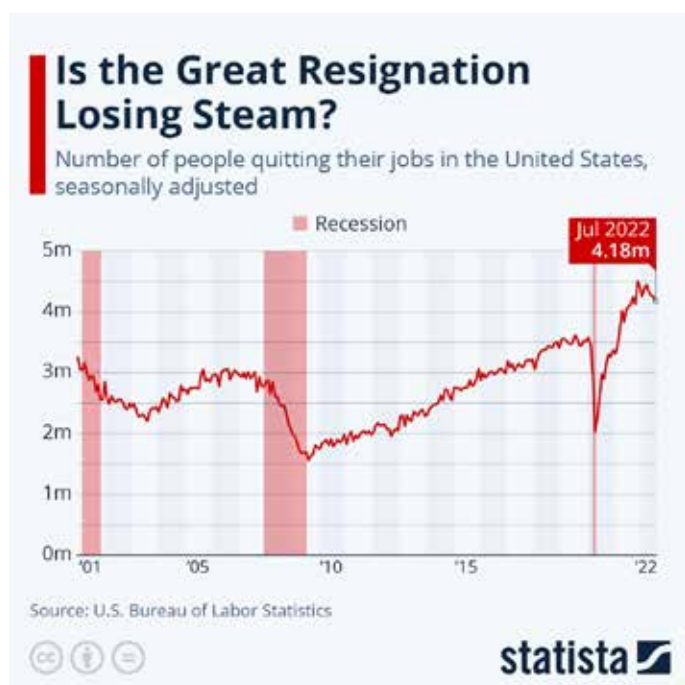


Image 1: Resignation Chart from the Great Resignation (Source: Statista)

while 16.6% will not. Nevertheless, there is some good news. Of those planning to quit, 55.8% said they would be willing to stay with their current employers for the right reasons. Here are some of them.

Top Reasons for Staying with an Employer

- 1. Good wages:** 81% said it's very important, 17% said it's important
- 2. Meaningful work:** 57% said it's very important, 35% said it's important
- 3. Flexible Hours:** 55% said it's very important, 35% said it's important
 - a. 40% want a hybrid work environment, 23% want to be fully remote
- 4. PTO:** 62% said it's very important, 27% said it's important
- 5. Advancement:** 48% said it's very important, 35% said it's important

Zero in on Culture

"An organization's culture defines the proper way to behave within the organization. It consists of shared beliefs and values established by leaders and then communicated and reinforced through various methods, ultimately shaping employee perceptions, behaviors and understanding."

- Society for Human Resource Management (SHRM)

Four Attributes of Culture (Groysberg, Lee, Price, & Cheng, *The Leader's Guide to Corporate Culture*, 2018)

- 1. Shared:** It's a group phenomenon.
- 2. Pervasive:** It permeates multiple levels.
- 3. Enduring:** Its impact is long term.
- 4. Implicit:** It acts like a silent language.

An online survey was conducted by The Harris Poll

on behalf of Glassdoor from June 10 – 13, 2019 among 5,113 adults aged 18 and older, among which 2,025 were in the U.S., 1,041 were in the UK, 1,027 were in France, and 1,020 were in Germany. Of the group, 2,757 were employed full-time/part-time/self-employed, 937 were employees in the U.S., 582 were employees in the UK, 583 were employees in France, and 655 were employees in Germany. Here are some key outcomes. (Glassdoor, 2019)

1. When searching for a new job, 77% of respondents said they would consider a company's culture before applying.
2. American millennials are more likely to care about work culture over salary (65%) than those age 45 and older (52%). Similar numbers were found in the U.K. (66% vs. 52%).
3. 89% of adults polled told researchers that it was important for employers to "have a clear mission and purpose."

Diversity, Equity, Inclusion and Belonging (DEIB) Matters

"A visible commitment to I&D (Inclusion and Diversity) during the crisis is likely to strengthen companies' global image and license to operate. In times of crisis, stakeholders typically interrogate a company's purpose and values even more closely, potentially even more so in the current pandemic." – McKinsey & Company (Hunt, Prince, Dixon-Fyle, & Dolan, 2020)

Diversity - Diversity is about celebrating differences. It is welcoming people from different backgrounds, perspectives, identities, and demographic groups to ensure that all who could be present are equitably represented. (Duncan, 2022)

Equity - Equity is consistency in how people are valued. It's the guarantee of fair treatment, access to

Diversity, Equity, & Inclusion

information and resources, opportunities, advancement, and the equal potential for similar outcomes for all. (Duncan, 2022)

Inclusion - Inclusion is building a culture where people feel like they belong. It's a culture that fairly shares power, resources, and opportunities while actively involving all in processes, activities and decision making in a positive environment. (Duncan, 2022)

Belonging - Belonging in the workplace means feeling valued through positive connections with others and being able to bring the authentic self to work. People are always looking to develop a sense of connection in their personal and work lives because that is how they validate their feelings and fulfill the need of belonging. (Orechwa, 2022)

To understand why DEIB matters to your workforce and how that understanding should fit into your organization's retention strategy, think a little about the psychology of your employees. People tend to pursue two overarching goals in life: happiness and/or meaning. (Ryan & Deci, 2001) Per Klotz, "The extent to which our job is a positive source of satisfaction and purpose plays an outsize role in whether we feel that our lives are happy and meaningful overall." (Klotz, 2021) Many of our employees spend more time and energy working than doing anything else in their lives so it's easy to realize how impactful their experience at work

is on their mental health and wellbeing. Klotz continues by saying, "*The pandemic has made many realize their job does not contribute enough (or at all) to their pursuit of happiness and meaning, and they have decided to invest their energy elsewhere in new jobs, new careers or in other aspects of their lives (e.g., family, travel, creative endeavors).*" (Klotz, 2021)

The Path Forward – A Systematic, Business-Led Approach

Surprise, surprise! While I write this, I just received word of another unexpected resignation. My response to this type of news is, "The Great Resignation has struck again!" It's becoming even more expensive and inconvenient to an employer to lose a tenured employee and onboard a new one as a replacement. Therefore, a retention strategy is a business strategy. According to McKinsey and Company, "*Companies need a systematic, business-led approach to inclusion and diversity, as well as bolder action on inclusion.*" (Hunt, Prince, Dixon-Fyle, & Dolan, 2020) Here's how they break down the approach.

1. Systematic, business-led approach to inclusion and diversity (I&D)
 - a. Increase diverse representation, particularly in leadership and critical roles
 - b. Strengthen leadership and accountability in delivering on I&D roles

Diversity, Equity, & Inclusion (DE&I)

OWEA has a new Diversity, Equity, and Inclusion (DE&I) Committee! This committee's mission is to define and educate our members on DE&I, to demonstrate and implement DE&I throughout our organization and to increase inclusivity. OWEA is committed to valuing diversity, equity and inclusion. Each issue of the Buckeye Bulletin will have an article that focuses on this topic. If you would like to contribute an article, please email Megan Borrer at Megan@ohiowea.org. Celebrating and acknowledging the differences within our membership will allow OWEA to better serve our members and the diverse water workforce.



2. Bold steps to strengthen inclusion

- a. Enable equality of opportunity through fairness and transparency
- b. Promote openness, tackling bias and discrimination
- c. Foster belonging through support for multivariate diversity.

As an industry, we are tackling issues head-on that have seemed impossible to solve due to a variety of factors including replacing lead service lines, emerging contaminants, enhanced regulations, climate change and so much more. If we use the same level of determination to face these workforce issues, we can find sustainable solutions also.



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No Longer a Pipe Dream Creative Piping Solutions

by Carmella Caltagirone, PE, Stantec

For any given capital project, it can be easy to get caught up in the seemingly ‘big-ticket’ items. Large tanks, pumps, or complex new treatment equipment can take center stage during the design and construction of new plants or pump stations, expansions, and retrofits. While care and attention should be given to all aspects of a project, it is easy and unfortunately common to overlook one component that can make or break it: Piping.

Piping typically takes a backseat as a project focus – it’s often not seen as exciting compared to other parts of a job. Giving attention to piping design early and often can help ensure that this critical project component is given the investment it deserves. Increased focus

on piping layouts during the design phase can help in anticipating construction sequencing challenges and allows designers to build in tools to address these challenges before ever breaking ground.

Well-designed piping systems can provide operational flexibility to treatment plant, collection, and distribution system operators that is unmatched by other approaches or products. Innovative piping layouts have the capability to eliminate the need for new structures or give new life to existing ones, resulting in savings in construction costs. Retrofits and expansion projects present a unique opportunity to evaluate and rehabilitate existing piping assets that could result in

Buried transition between 54” prestressed cylinder concrete pipe (PCCP) and 54” fiberglass reinforced pipe (FRP) to connect a new 42” force main.



savings on capital cost by maximizing the use of existing infrastructure. Creative piping modifications can also be used to increase existing capacities and improve access for maintenance activities.

Good piping design requires careful consideration of a laundry list of factors, and early attention to the details discussed below can not only prevent confusion during project bidding and construction (saving time and money), but also help provide an asset uniquely capable of serving a water or wastewater system for years to come.

Size: Pipe size selection must balance present and future flow capacity requirements while maintaining an appropriate flow velocity for the fluid that is being moved. Piping designed to move fluids such as raw sewage or grit should promote minimum scouring velocities to avoid settling of solids. Piping on either side of a magnetic flowmeter can be reduced in size to provide an increase in velocity, sometimes resulting in more accurate flow measurements. In facilities where redundant equipment or even entire redundant treatment trains are highly desirable, pipes must also be sized with a number of hydraulic conditions in mind such as parallel flow paths or units/trains being taken offline for short-term or extended durations. Existing piping doesn't always need to determine the size selection for a retrofit project. Several technology and construction-based solutions such as pipe bursting or slip-lining methods can provide a physical increase in pipe size or provide more favorable hydraulic conditions within the existing size, thereby increasing flow capacity.

Material type and compatibility: Not all fluids are the same to a pipe wall, and requirements vary significantly based on fluid service. The physical effects of grit slurry conveyance call for lined pipe and long radius bends. Chemical corrosiveness must be considered not only for pipe and lining material



Completed overland river crossing of a 42" force main.



Not giving piping design the attention it deserves can lead to early failure of pipe joints.

selection, but also in how it may impact preferred pipe jointing method. The fluid being conveyed may require a specific gasket material or necessitate a particular welding method. Specialty welds or x-ray requirements during construction can come up as ‘surprise’ costs if there is little attention to detail during piping design.

Fittings: Fittings and jointing methods must consider not only pipe and fluid material, but available space for maintenance, nearby equipment/valves, and staff preference. Additionally, changes in pipe material



Equipment such as membranes require multiple header pipes to be positioned nearby and can result in the need for custom pipe support structures.



Creative piping design can lead to flexibility in raw water source blending ahead of pretreatment.

may require isolation between incompatible materials, or specialty fittings to accommodate differences in pipe wall thickness. Where a prescriptive jointing method isn’t required, a project could save on costs by allowing current market conditions to inform the preferred method at the time of construction. Likewise, if care isn’t taken during the initial field investigation of the design phase, existing conditions could be missed that make dictating a specific pipe jointing method the only option.

Supports & Restraints: From water hammer to thrust, fluid flows develop forces that can lead to system failure if not appropriately calculated and accounted for during design of traditional, custom, or structure-based support systems. Temperature of the fluid being moved can also impact piping expansion and contraction – a key consideration when designing how and where supports will be located. Additionally – nearby equipment may impart vibrations onto piping systems that can be catastrophic if not accounted for. Allowing flexibility in pipe restraint methods for buried lines can shorten construction duration by circumventing the need for concrete thrust blocks with long curing times.

Air Management: Virtually all pipelines will require methods to allow air to be released or introduced to the flow and the best approach can vary by pressure conditions and nearby equipment or valves. While many municipalities and water providers like to standardize air valves and sizes, attempting to simplify piping design in this way can result in specific conditions being missed, such as low seating head. This could result in improper air management for a pipeline and ultimately, damage to the entire connected system.

Surge Protection: While not all pipe design requires consideration of potential surge conditions, early planning and discussion around this topic with the entire project team can eliminate surprise costs or schedule delays. When necessary, surge modeling can be performed as one of the initial design tasks to



Nearby equipment and valves can dictate the need for accommodations in piping expansion, vibration, or dismantling.

allow enough time for inclusion of specialty or large equipment such as surge anticipation valves or surge tanks in the piping and facility design.

Protection From Environmental Factors: A pipe's material and environment of installation may lead to a variety of required coatings, wrappings, or cathodic protection. Additionally, sub-surface ground conditions may require protection against differential settlement between piping segments or structures. Sometimes these conditions are inherently understood by required space/room classifications, and sometimes these conditions require investigative fieldwork during design. Buried piping alignments that include creek or river crossings could be considered a complex element of a project and carry a high risk factor, warranting additional attention to detail during design.

Flexibility: Various conditions can create the need for pipeline flexibility, including some discussed previous such as thermal expansion and contraction or differential settlement between structures. Considering flexibility in design can not only address these specific conditions, but can also allow inevitable imperfections in installation during construction without compromising the integrity of the piping system and seals.

Operation and Maintenance: Every project, no matter how small, represents an opportunity to improve upon existing O&M operations and/or consider regular O&M tasks in design. For piping systems, this means considering the installation of features that make regular maintenance tasks easier to perform. This could mean including dismantling joints next to equipment or valves that may need to be removed from service or including items such as pigging stations to assist with cleaning operations for solids-handling pipelines. Additionally, the location of nearby valves should inform the inclusion of drains along a pipeline for start-up and shut-down of various systems. Fluid services such as solids, grease, or grit may warrant the inclusion

of temporary or permanent flushing connections, which could create a need for nearby high-pressure water for this operation.

Allowable Downtime & Available Space: Particularly for retrofit or collection/distribution system projects, allowable downtime and available space to perform work may ultimately dictate many of the factors described above, such as pipe size, material, fittings, and surge protection. The need to quickly perform work in a tight space or install an alignment in an area with virtually no lay-down can dictate pipe material and jointing method. Surge management methods such as tanks can present a footprint challenge for many facilities, even new ones. Identifying space constraints as a design boundary condition opens up the conversation for creative alternative methods of providing similar surge protection systems for piping with reduced footprint requirements.

Current market conditions: Supply chain issues fueled by Covid-19 have created a somewhat novel condition which could require rethinking selection of piping material, size, or fitting type in order to meet construction schedule and budget requirements. Early identification of these challenges can allow the project team to pivot or include built-in contingencies in anticipation of long lead times or unavailable materials.

While piping may seem like a simple aspect of a project from an overall viewpoint, it is clear that all of the variables listed above can lead to it quickly becoming a cost and schedule headache if not given proper attention during design. Consideration of all the elements discussed are crucial to project success, and it can be easy to overlook or simplify these aspects thinking it may be a benefit to the project later. Investment in proper piping design from the beginning of a project can not only save significant costs but also provide some of the most creative solutions in the water industry while creating an incredible asset for years to come.

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SVI₅ comparison of aerobic granular sludge (left) and conventional activated sludge (right)

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Communicating the Value of Water & Wastewater After Covid: Lessons Learned from the Pandemic

by Mike McGill, President, WaterPIO

Most of us remember when it first hit us that Covid wasn't just some random illness that might disappear before it got to U.S. soil. For some, it was hearing Tom Hanks – *Tom Hanks* – had contracted the virus. For others, it was discovering both the NBA season and March Madness had been cancelled.

For me, it happened on March 13, 2020. I was about to hop in the car to drive to Myrtle Beach and speak at the South Carolina Environmental Conference (SCEC), the state's largest confab of water and wastewater professionals. I was going to talk about PFAS, the "forever chemicals" whose impacts are now ricocheting all over the Water and Wastewater Worlds.

Because I have a lot of stories to tell about handling PFAS panics, I was looking forward to sharing my latest tales of Daring Dos - and Don't Dos - with professionals I've come to know rather well over the years. One of the great things about attending conferences is the fellowship, and there have been many times when old and new friends have taken me out for drinks after I've scared them half to death with my presentations.

But there wouldn't be any fellowship this time. The email cancelling SCEC came in, honestly, as expected. The world had officially changed for me, once and for all.

I knew what was coming next. Soon all of my firm's clients were all turning to us to help them figure out both what to do and what to say.

Because of my past life in news, I'd been called upon to serve as a top spokesperson for city and county emergency operations centers for years. Especially

during Hurricane Season. And that's what Covid initially felt like, a Category 5 hurricane coming ashore.

I decided to mirror client preparation for Covid with my emergency work during tropical chaos. After all, you can see a hurricane coming several days in advance, and we had time to prepare before the virus made "landfall."

Whenever any storm of strength lands, it can punch you in the mouth, creating a few days or even weeks of recovery before life returns to normal for nearly everyone except the hardest hit.

But life does eventually return to normal.

I'm about to state the most obvious, "Gee, you think?" lines of this piece. With Covid, our lives didn't return to normal. Not in a couple of days. Not in a couple of weeks. Not even in a couple of months. Many would argue we're not back to normal after two-plus years.

One aspect of our lives, however, did return to normal. Actually, it never stopped being normal, even as thousands of people were being infected every day: our water and wastewater services. Covid didn't impact whether we could turn on the tap or not. The virus didn't dictate when we could take a shower or flush our toilets.

Take a second and close your eyes. Imagine if Covid had broken through our treatment systems. Imagine what life would've been like in every village, town, city, and county if everyone had to scramble to find clean drinking water every day.

Our world would've been absolute chaos.

Crowds hundreds of times worse than Black Friday shoppers would've been fighting it out for safe drinking water, instead of the top toy or gadget, as the deadly virus was spreading like wildfire. Cases, hospitalizations, and deaths would've skyrocketed. It's possible every pillar of our society would have teetered on the brink of disaster.

But that didn't happen, and it was because our water and wastewater treatment systems – operated by dedicated men and women – took care of the virus. We saved the day.

During the first weeks of Covid, I worked with utilities every day to help them communicate with their customers, elected officials, community leaders, and the media so everyone would know their water and wastewater services weren't missing a beat.

Together, we told the stories of dedicated employees leaving their own families to staff plants for days on end so they could keep the water in full supply and the wastewater treated. We also explained how the utilities would work with our customers as they faced economic hardship on a scale not seen in decades.

As a result of these efforts, our performance served as one of the few bright spots during the early days of Covid, when no one knew for certain what was going on or where we were headed.

A bit more than 20 years ago, I used to produce CNN's Reliable Sources, which dissected how the news media did its job. During that time, there wasn't all that much difference in how major stories were covered. Political opinion shows ran only for an hour or two in the evening and on the weekends.

Today, the media landscape is far different; every cable network tilts its coverage in red or blue ways. One subject, however, wasn't tilted during Covid's shock-and-awe days. Stories about our water being safe ran on MSNBC, CNN, and

Fox News and their scripts didn't differ much at all.

Even wastewater – a subject not usually covered on the nightly news – got its due. As the pandemic pushed on, wastewater testing spotted hotspots; the Mayo Clinic even called it “the clearest path to understanding infection.” Story after story ran nationwide about wastewater systems (and staff) protecting the public's health. One particularly effective angle highlighted how Covid clusters were being found outside of college dorms. Wastewater pros were literally safeguarding the lives of young people when they were hundreds of miles from home. Those stories also ran the same way on MSNBC, CNN, and Fox News.

We all know how the pandemic pushed on, disrupting our lives. Most utilities decided they wanted to get back to normal, so they stopped talking about their Covid performance and returned to being out of sight and out of mind. To our detriment, the press and the public took that as their cue to move on.

Two surveys fielded during the pandemic confirmed the harm caused by the silence. J.D. Power, the experts in customer satisfaction, surveyed people nationwide. More than four in 10 people surveyed felt concerned that Covid might spread through their water, even after months into the pandemic. 13 “actions” like “offering additional advice/guidance” and “late payment forgiveness” were surveyed on a scale of 1 to 7, with one being the worst. Utilities didn't get a single average score above a 5. The best score? 4.42 for “supporting the community.” The worst score was particularly telling; it was 3.66 for “I'm not aware any changes have been made.”

AWWA conducted a survey that uncovered similar results. Only 60% of customers were more likely to rate their utility excellent for their Covid efforts, and just 28% of them - 28% - even recalled receiving information from their utility.

I've been preaching for years that consistent,

proactive communication creates positive reactions from customers. Staying silent has the opposite effect. Even during an emergency like Covid where our industry's protection of the public health was unassailable, when we stopped communicating, the public stopped giving us credit.

Before we throw up our hands and walk away, know this. We can still win the day. There's still time for water and wastewater professionals to tell their customers how they came through during the pandemic. In fact, wastewater testing is still being used to track Covid, and now it's on the hunt for polio and monkeypox.

There's also a self-preservation aspect to this communication work. We need to build a bank of trust with our customers as we face challenges that will threaten public confidence in drinking water.

Not only is it estimated that there will be 40% more systemwide lead exceedances under the new Lead and Copper Rule, but PFAS discoveries are going to dramatically jump nationwide. In June 2022, the EPA announced health advisory levels for some PFAS compounds that utilities will never be able to meet; they were set at parts per quadrillion levels that can't even be reliably tested for. These levels were put forward in advance of coming Maximum Contaminant Levels that are expected to be at or near non-detection, and before the start of the Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) in 2023.

UCMR 5 will require the nation's water providers to sample for 29 PFAS compounds multiple times a year between 2023 and 2025. While regulations are years and years away, that fact won't matter to the public. The data created will be public records, detections will be reported in water quality reports, and customers will demand these chemicals be removed from their water.

So how can utilities still make a name for themselves? It's not as hard as you think, and it

doesn't require new staff or mountains of money. While it's understandable that some will have more trepidation than others, communication approaches can be tailored for comfort and still be successful.

A standard level of outreach involves getting the word out via press releases, bill inserts or brochures, Web content, and use of social media at an "announcement" level, where interaction takes place but is limited to taking the customer offline. This communication strategy works best for utilities that have been largely silent and want to walk before they run.

An intermediate approach is the sweet spot for most utilities. It uses a higher level of engagement focused on working with the news media, elected officials, and community leaders with briefings that provide essential information and build trust. Immediately after the interactions are over, the word then goes out to the customers, including a use of social media that encourages interaction.

There, I've said those magic words. Social media. Almost everyone I work with in water and wastewater hates them and I understand why. It gives a powerful voice to people who are always angry at a utility.

Here's the thing that many people don't understand. What I've discovered during my years handling crisis communication is that only 5-10% of the people on social media are what I call the "Always Angry," people who attack you at all times. The other 90-95% of people online are looking for information that assures them they're going to be okay. They don't want to worry about their water if they don't have to, and if you're on social media providing the information they're looking for, you've made it harder for the "Always Angry" to stir them into a panic.

That's why you must be in the mix on social media. You must be part of the conversation online about who you are, what you do, and how you do it.

Otherwise, the angriest voices own what is said about you. (Don't worry, there are policies and procedures you can put in place to protect your people.)

An advanced communication approach involves deeper work working with the media. As a former news producer, I can tell you that contacting us and offering looks behind the curtains will go a long way. Walk them through how you protect the public every day. Show them what your rates pay for by walking them through your construction projects and CIPs.

I once oversaw the planning of coverage for a local station in Washington, DC. An adage from those days applies well with Water World work: "If I hear from you first, I trust you first. If I hear from you last, I trust you last."

Sounds simple, right? It's also successful. If you reach out first about your services, you will look transparent and helpful; you'll get better coverage. If you stay quiet and difficult news hits, you'll look like you've been hiding from the people you serve. And the press will treat you accordingly.

Submitting opinion pieces with the local paper or top online outlet provide transparency on your terms; I know because I've written dozens over the years. Op-eds successfully target the most politically active people in your community with up to 700 words of your choosing. In the case of Covid, a piece would focus on your performance and how you're applying that success toward preparations to meet future challenges.

Finally, there's the ultimate positive placement, independent editorials from your top news outlets. Sit down with the editorial boards of your local media and walk them through your work. If they come down on your side in writing, you can use their independent support as confirmation you're making the right decisions for months, if not years, to come.

By using one or more of these approaches, water and wastewater utilities can apply the communication lessons learned during Covid to

set up success both now and when future challenges might create even greater chaos than Covid.

With Lead and Copper Rule compliance and PFAS discoveries on the horizon, it's never been more important for utilities to get out front and communicate with the people they serve.

Reminding them about our industry's life-supporting performance during the pandemic is a great place to start.



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Researchers Propose New Definition for ‘Green Infrastructure’

by Justin Jacques

The definition of green infrastructure (GI) is nebulous and poorly defined, confirms a recent study published in the journal *Frontiers in Ecology and the Environment*.



finds that GI is generally well-regarded, but that many cities fail to incorporate the full range of GI co-benefits into their infrastructure decisions.

Confusion surrounding GI's forms, functions, and benefits could give potential adopters the perception that GI is risky and untested, posing a serious obstacle to both implementation and innovation, the study describes. In what authors describe as “the most comprehensive examination of GI in U.S. urban planning to date,” the analysis of more than 100 municipal development plans

“Green infrastructure is broadly understood to be a good thing, but many city plans lack a clear definition of what it actually is,” said lead author Zbigniew Grabowski of the Cary Institute of Ecosystem Studies (CIES; Millbrook, New York) in a statement. “This narrow view can limit project funding and cause cities to miss out on vital social and ecological services that more integrative green infrastructure can provide.”

Open to Interpretation

Even before the U.S. Environmental Protection Agency (EPA) provided a simple definition of GI in 2007, billing it as a nature-based approach to help manage stormwater according to Clean Water Act requirements, the term has long-appeared in a variety of municipal documents. These include, for example, written plans and policies detailing a city's approaches to sustainable development, climate action, combined sewer overflow management, or watershed restoration.

The research team, all from CIES, analyzed 303 of these plans from cities in every part of the U.S. that include references to GI. They specifically focused on planning documents that referenced GI and those that defined it, narrowing the field to 122 plans from 20 mid-to-large-sized U.S. cities from Seattle to San Juan.

Analysts found that about 59% of plans studied



A recent analysis of how 20 U.S. cities define green infrastructure reveals significant differences in what types of projects and practices the term does or does not include. This ambiguity, as well as the diversity of forms and applications that green infrastructure can take on, represent roadblocks to green infrastructure adoption and innovation, study authors write. Image courtesy of Alisha Goldstein/U.S. Environmental Protection Agency

defined GI primarily by its hydrological benefits, and therefore promoted such GI designs as permeable pavers and biofiltration systems that are typically associated with stormwater management more so than other GI co-benefits. About 17% of plans defined GI as an approach to landscape design, emphasizing natural landforms, rain gardens, green roofs, and other aesthetic features that primarily target human health and happiness. Only about 15% of plans introduced GI in ways that equally emphasized both hydrological and human benefits, with 9% describing GI by different criteria altogether.

Despite their varying conceptions of what GI is and is not, more than half of municipal plans analyzed for the study specifically listed trees, rain gardens, blue-green corridors, and green roofs as examples. In total, the 122 municipal plans referenced 693 unique GI designs between them, indicating significant variability surrounding interpretations of the term's meaning across U.S. cities.

An Approach, Not a Design

By and large, all but a few municipal plans included in the study introduced GI as either predominantly natural or predominantly engineered, as well as either intended mainly for stormwater management or mainly for aesthetic purposes. Drawing on perspectives from each of these plans, the research team proposed a new

definition for GI that frames the term as an approach to urban planning than any particular infrastructure design.

The team defines GI as “a system of interconnected ecosystems, ecological–technological hybrids, and built infrastructures providing contextual social, environmental, and technological functions and benefits. As a planning concept, GI brings attention to how diverse types of urban ecosystems and built infrastructures function in relation to one another to meet socially negotiated goals,” according to the study.

“The U.S. is poised to make large-scale, needed, investments in urban infrastructure,” co-author and CIES research fellow Timon McPhearson said in a statement. “To ensure these investments build environmental resilience in a way that benefits the lives of all urban residents, we’ve put forth a more comprehensive definition of green infrastructure to guide planning, policy, and practice – with the goal of facilitating more equitable urban greening.”

Read the full, open-access study (<https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2445>) in *Frontiers in Ecology and the Environment*. Explore additional findings on a new website built based on results of the analysis (<https://giequity.org/>).



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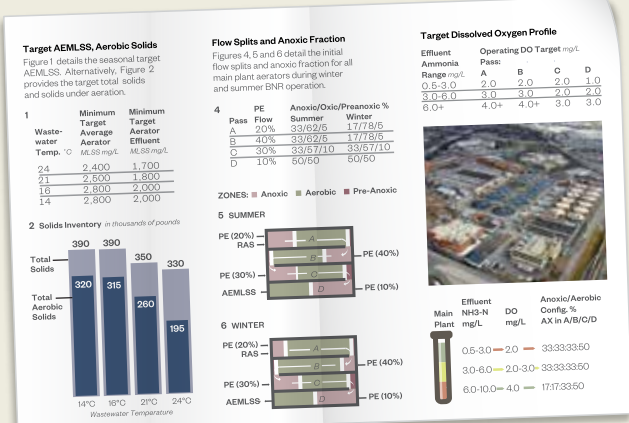
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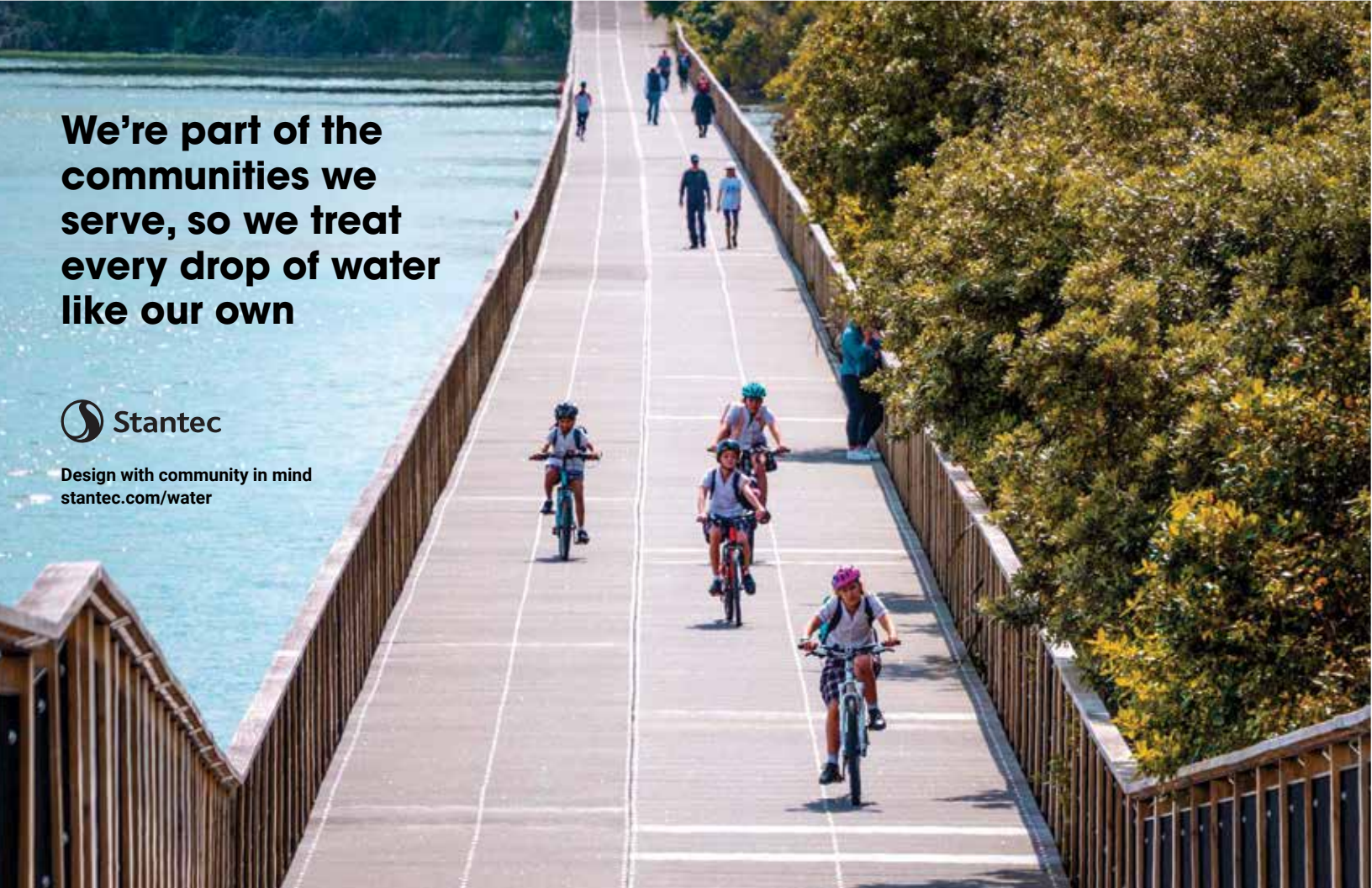
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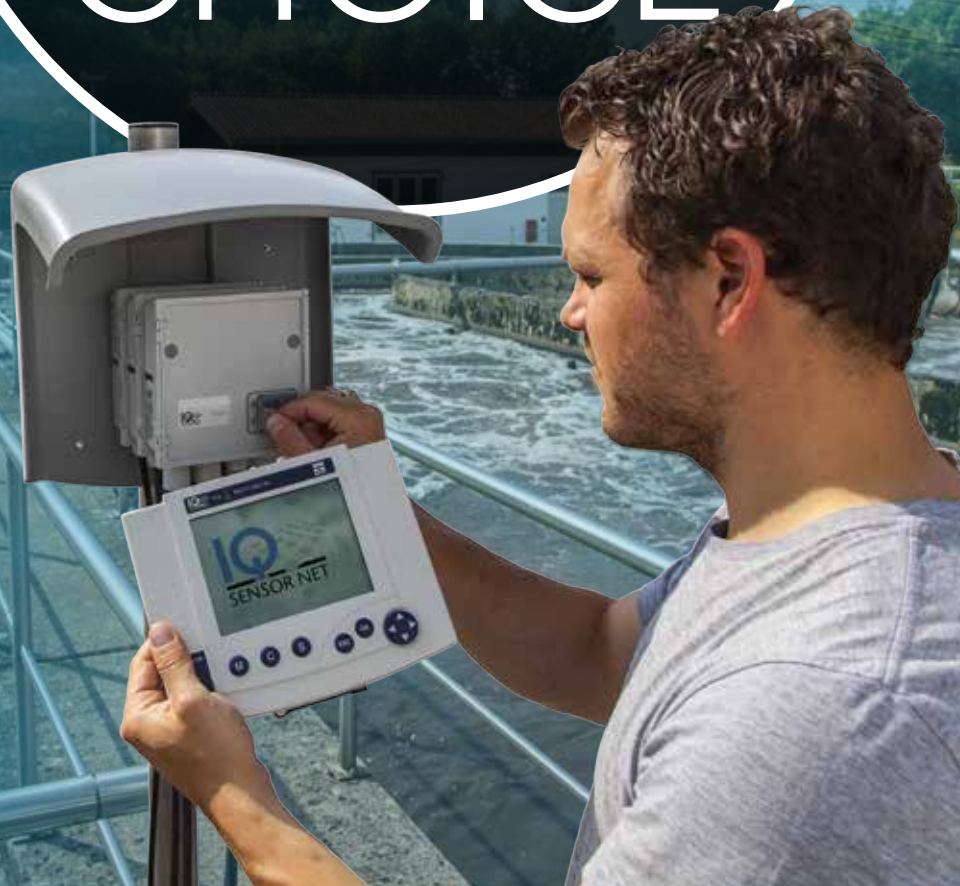
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WEF Utility Partnership Program

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 35 municipalities signed up for the Utility Partnership Program.

To learn about the benefits for your utility visit

<http://www.wef.org/UtilityPartnership/>



Ohio UPP Members

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Avon Lake Regional Water
Butler County
City of Bellevue
City of Canton
City of Celina
City of Columbus
City of Dayton
City of Fairborn
City of Fairfield
City of Harrison
City of Jackson
City of London
City of Lorain
City of Marietta
City of Mason
City of Newark
City of North Royalton
City of Oberlin
City of Painesville
City of Solon
City of Steubenville
City of Troy
City of Twinsburg
City of Urbana
City of Warren
County of Summit
Delaware County Regional Sewer District
Fremont Water Reclamation Center
Greene County
Lake County
Lucas County
MSD of Greater Cincinnati
Montgomery County Environmental Services
Northeast Ohio Regional Sewer District

Office Offerings

Often this time of year gives us pause to give thanks. At OWEA it is no different. We are thankful for each and every member, sponsor, advertiser and volunteer. Without you we couldn't do what we do! I wanted to take this opportunity and give some special acknowledgements and also let you know what all your support will be making possible for next year.

I would like to recognize our Executive Committee. They have nothing but the best for OWEA in mind and work so hard to make sure YOUR association is the best it can be. They have been receptive to new ideas and because of their willingness to embrace change, we are doing some pretty great things and have even more headed your way.

I would also like to thank our sponsors. These companies support our industry and association. They give of their time, talent and provide needed financial support. They are truly why we can operate like we do and we couldn't exist without them.

In addition, I would like to acknowledge our advertisers. These companies help make the Buckeye Bulletin being in print possible and help fund various association programs. The Buckeye Bulletin is a great resource when looking for vendors. Support the companies that support your association!

Our volunteers are truly the lifeblood of any association and ours are no exception. As the saying goes many hands make light work and our volunteers are proof of this! We are a small staff of three and without all our volunteers there is no way we could serve our members and industry like we do. One of the best examples of amazing volunteers are our section leadership teams. Our sections are our "boots on the ground" and their programming connects us to so many water professionals we would never reach.



Finally, I would like to express gratitude for our staff. Chelsea Cameron and Megan Borrer are two of the hardest working people I have ever been privileged to work with. They are enthusiastic about their jobs and true joys to work with.

I feel truly blessed to be surrounded by such passionate, caring people. They take of their own time and often money to help better our industry. Because of our great leadership, the support of our advertisers and sponsors and of course, our volunteers, we have some pretty exciting things going on at OWEA.

STATE ONLY MEMBERSHIP!

Yes, I put it in all caps as it is that important. OWEA now offers two membership options, full WEF membership and state only. This means that those who membership was out of reach for will have an option as low as \$50 per year.

We now have a Diversity, Equity, and Inclusion committee! This is a great step towards our goal of being open and available for EVERYONE. This committee will ensure OWEA stays relative to all water professionals. They will have the tough conversations and help our executive committee to lead OWEA into the future. We have two great co-chairs and an excited staff liaison for

Office Offerings

this committee, and I can't wait to see where it goes.

Another initiative that will help YOUR association continue to grow is a member and event code of conduct. All WEF members already agree to WEF's code of conduct. You agree to it upon joining, renewing, or attending a WEF event. Since we now have a state only membership option and nonmembers that come to our events, we need to ensure that everyone is held to the same standard. This code of conduct just ensures that all attendees and members are treated in a respectful, professional manner. You will start to see these codes when you register for an event or renew your membership.

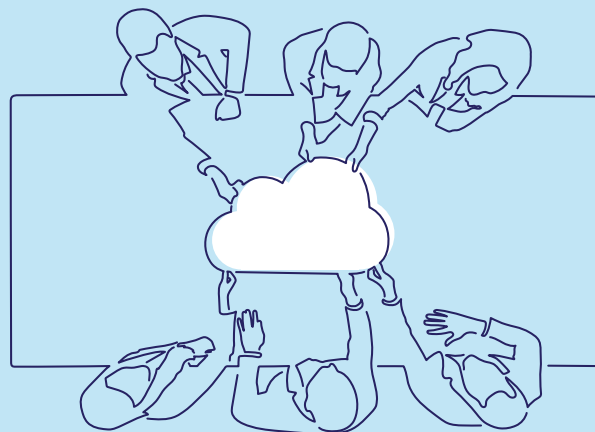
One of the most exciting projects we have coming up is our Operator Training initiative. As you might know this has been in the works for quite some time. We now have a dedicated group focused on ensuring that OWEA leads training the operators of the future. Our first big milestone will be a pilot fundamentals class that will help prepare entry level operators for success at the plant and when taking their licensing exam. You will see and hear more about this and much more soon.

As Fall draws to a close and we start reflecting on what all has happened this past year and what's heading our way in 2023, please take a moment and pause to think about all those who make everything at OWEA possible. Do you maybe have some time you could dedicate to help your profession in 2023? It doesn't need to be a huge commitment. You could get involved with your section, write an article for this magazine, or give a couple hours at One Water. Again, many hands make light work, so please consider giving your association a hand in the coming year.

DAWN LARSEN, CAE,
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LET'S BUILD SOMETHING DIFFERENT



When the Fundamentals We Trust Change

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

Introduction

When describing my wife in the past, I have sometimes said that she is the granddaughter of Hungarian dairy farmers. The family's 70-acre dairy farm was in Western Pennsylvania. This is a rural area with rolling terrain. This heritage enriched her life and mine. The family history of the land and surrounding area dates back one century.

There is a small stream running on the property. I understand that it flowed year-round and had minnows at one time. But now, it flows very little and is nearly dry many months. After piecing together recollections from different people, we understand that the upstream tributary area included a wetland that was altered a few decades ago. Mystery solved!

This small example shows how the use of background data as a predictive tool is not accurate when conditions change. Statistical methods lose validity.

Little Ice Age

While the above is an example of what can happen when background conditions change, there are much larger events from history. A good example is the Little Ice Age, which was a period of global cooling in the Northern Hemisphere that occurred from about 1300 to about 1850. Contributing factors to the Little Ice Age included cyclical lows in solar radiation, heightened volcanic activity, and changing ocean currents. In the United States, the year 1816 was called *the year without a summer* due to impact of recent volcanic activity. The Little Ice Age impacted the social and economic structure of Europe including eroding the feudal system.

During this period, farming practices in Northern Europe changed to include cool weather tolerant crops and shorter growing seasons. They had to recognize what was occurring and adapt. What they had relied upon from the past was no longer possible.

Public Works Projects

I have participated in the development of systems and plant evaluation studies for public works projects for many years. Basis of designs emanating from these studies included information on flows, loadings, sludge production, current and projected effluent limits, changes in commercial and industrial base flows, averages, medians, and maximum monthly flows and loadings. From here, tanks, facilities can be sized and levels of service calculated.

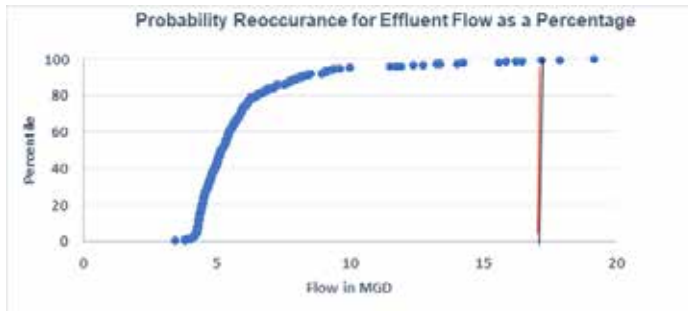
When given correct and sufficient information, this analysis is often straightforward. What is more challenging is consideration of unusual events such as floods or when the service area grows faster than expected, the so called *what if* factors. While oversizing facilities is often seen as a waste of money, facility under sizing is proven to result in a loss of functionality and flexibility. As a consulting engineer for 32 years, my approach was to provide generous, but reasonable sized facilities, the ability to take units offline for inspection and cleaning, and include provisions for expansion, through strategic site planning.

How Statistics Can Be Used

As water professionals we discuss design storms, conditions, snow loads, hydraulic flows, and how to handle these extreme conditions if they happen to be exceeded. This is based on historical information. We discuss events such as the 10 year or 100-year storm event for planning purposes. Discussions in resiliency planning for high-risk areas consider higher storm events such as the 500-year storm of flood.

I have used statistics to determine average, median, and maximum loading of treatment works. I paid particular attention to the maximum month per year,

which corresponds to 91.7% on the diagram below and one safeguard against effluent violations.



Again, the usefulness of this approach requires an accurate data base with no changes in underlying conditions.

A 1,200-Year Drought

We recently heard of the severe drought in the southwest United States including California. Experts state this is a 1,200-year condition. Lake Mead is running dry and getting close to the *dead pool* level threatening water supplies for an entire region. Dead bodies are being uncovered from decades ago.

I found it difficult to locate planning information used to size Hoover Dam and Lake Mead. All I could find is the vision statement by President Theodore Roosevelt to design a large system located in a suitable area on the Colorado River, consistent with the way he conceived of doing larger than life projects. The reservoir system services 25 million people and irrigates an abundance of agricultural land in Arizona, Nevada, California, and Mexico. Now, officials are discussing what measures to take should these severe conditions continue.

How Should We Respond?

Many of us can hardly fathom a 1,200-year event of any kind. Like the Little Ice Age, a set of events altered the behavior of the climate, increasing temperatures in the region and reducing snow melt in the Rocky Mountains is

not something that can be easily quantified. Something appears to have changed.

As a way of meeting the demand for potable water I know from my involvement in WEF and AWWA that toilet to tap water systems are becoming more common. While attending an Ohio AWWA section meeting in 2015, I learned that the number of reuse systems increased dramatically between 2000 and 2015. Many are on the west coast, but some are throughout the United States.

I don't have answers to this problem. But I do know that increased focus on planning for resiliency is one of the keys. Planning must address questions such as what happens when we see a 500-year flood, or we experience a 1,200-year drought? This requires a shift in thinking.

WEF's Involvement

In my work with the WEF Government Affairs Committee, I know that the Water Environment Federation (WEF) has been actively involved in topics of climate change and resiliency to provide clean drinking water and treated effluent under both expected and unexpected conditions. I feel better knowing that WEF and AWWA are working to help our elected officials plan for the worst while hoping for the best. One of the things I like about WEF and AWWA is they represent a voice of factual, science based information to foster intelligent decision making.

Ohio's Abundant Water Resources

We know that the abundance of safe drinking water is essential to continued life on this planet. Ohio is truly blessed with abundant water resources. I advocate that the abundance of clean water is one of the many virtues of our great state. The work we do individually and collectively makes a difference!





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Section Reports



Josh Holton, President

It's hard to believe that 2022 is almost over. I want to acknowledge all the work our utility people have done to provide a valuable service to the community. Our industry, like many others, has had the pleasure of dealing with extremely long lead times, significantly increased costs, dwindling workforce, high growth rates in Ohio, and the ever-changing rules and regulations. Throughout these challenges, water professionals continue to protect the environment and serve their customers.

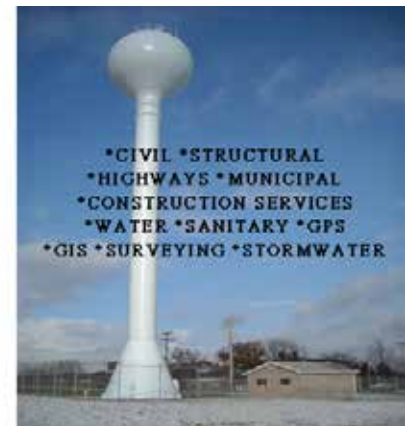
The patron program for the section is still underway. The patron program allows the section to continue to provide low-cost events for its members and give back to its members and charities. If you were not contacted and wish to be included in patron program membership, please reach out to one of the executive committee members.

The southeast section is deeply intertwined into winter

and spring event planning. If any utilities would like to host a meeting in the future, please reach out to an executive committee member so we can plan a visit in the future. This also extends to anyone wanting to present a technical presentation. In addition to our traditional section meetings, we are looking at hosting small hands-on workshops on a variety of topics for operators such as biosolids, electrical, and process troubleshooting. Keep on a look out for these notifications. If you have not been receiving section emails, please reach out to me at jholton@swlcws.com.

With regards to section meetings, the state has initiated the state only memberships at a more affordable cost. It is our belief that every operator/engineer should take advantage of either the full WEF membership or a state membership. With the introduction of small hands-on training workshops for operators, now is the time to get them registered for the state only membership. This will provide low to no cost training for operations staff.

I hope everyone enjoys your friends and family this holiday season. I implore you to take time and enjoy each other's company and give thanks. The executive committee is very thankful for all that you do. We look forward to seeing you at our events in 2023!





Jennie Celik, President

Greetings from the Northeast Section!

The NESOWEA held our Fall Section Meeting on September 22 at Painesville's Water Pollution Control Facility. We had over 100 attendees tour the facility, and then gathered for lunch and three technical presentations. A total of 4.5 contact hours were available to attendees. Many thanks to the City of Painesville for hosting our event!

At WEFTEC, the 2022 winning Student Design Team from the University of Akron represented OWEA at the WEF Student Design Competition. The Student Design Competition at WEFTEC is comprised of teams from across the country, as well as internationally. The winning team from University of Akron had the opportunity to compete in this international competition at WEFTEC in New Orleans. UA also happens to be my alma mater. Congratulations to the team, and all the supportive professors and volunteers that helped make this possible. Go Zips!

Upcoming Events

Looking forward, plans are underway for upcoming events. We have a lot of exciting events planned for contact hours, networking, and social activities:

- **Collections Systems Hands-On Workshop** will be held on October 13 at the Akron Water Reclamation Facility.
- **Supervisors and Ethics Seminar** will be held on November 3, located at the Brushwood Pavilion in the Summit Metroparks in Richfield. Topics

will include supervisory and leadership topics, as well as 1-hour of ethics training. This event is free for members!

- **Clambake** will be held on November 5. We are moving to a new family-friendly at the Buckeye Woods Park located in Medina. Activities will include fishing, playground, yard games, and baseball/soccer fields are available for kids to use.
- **Past President's Holiday Luncheon** will be December 2, returning to Lock 15 Brewery again, located in Akron.
- **Operations Seminar** will be held on January 19, returning to the Quality Inn in Richfield.

Save the date for these meetings and events!

Volunteer Opportunities

OWEA is assembling a **Diversity, Equity, and Inclusion Committee** that will be comprised of members from each Section. **The NESOWEA is seeking a member to get involved!** (That means you!) Activities may include developing articles and meeting seminar topics. If you are interested in representing our Section on this state committee, please reach out!

With Gratitude,

Jennie Celik, NESOWEA President



Section Reports



Andrew Gall, President

Hello OWEA from the Northwest Section.

It seems like just yesterday, that our Past President Tony Hintze welcomed me to the Northwest Section Executive Committee with a chuckle and the ceremonial passing of the plastic tote that contains “everything” needed to serve as the Northwest Section secretary. The last few years flew by and I am excited and honored to serve as the Northwest Section President for the 2022-2023 year.

I would like to thank our Past President Tony Hintze for his years of service as a member of the Northwest Section Executive Committee and for his leadership as section president last year.

My journey to a career in the wastewater field began when Elizabeth Wick hired me for an internship with Ohio EPA following my sophomore year of college. I completed several internships at Ohio EPA and was hired to work in Ohio EPA’s Central office after graduating from the University of Toledo with a Civil

Engineering degree. A desire to do inspections and field work led me back to Bowling Green where I took on the job of doing inspections of wastewater facilities with a focus on how they were meeting Ohio’s rules for the treatment of sewage sludge and beneficial reuse of biosolids. I spent the next 15 years of working as the “Sludge Guy” handling all things biosolids related in NWDO and writing NPDES permits and doing compliance inspections in Huron and Defiance Counties. I am thankful that longtime NWDO-DSW manager, Al Rupp, invited me to attend my first Northwest section meeting and that he and my supervisors encouraged involvement in OWEA. I served as the Northwest Section Residuals Committee representative and have been involved in Operations Challenge as a competitor and as a judge at Ohio Events and WEFTEC.

In the fall of 2019, I accepted a job with Ohio EPA’s Division of Environmental and Financial Assistance (DEFA) as a member of the Wastewater Compliance Assistance Unit. I am still based out of NWDO, but now spend my days traveling all over northern Ohio to assist wastewater facilities that need help in meeting their NPDES permit requirements.

Our section had two events in August. The first being a Nutrient Management Field Day that Aaron Harter, Northwest Section Residuals Committee



Chair, did an excellent job in planning and hosting at a biosolids land application site near North Baltimore. Over 50 attendees heard presentations on the Maumee River TMDL project, Nutrient Management strategies for residuals and saw a demonstration of biosolids land application methods. The second event was the Northwest Section Friends and Family Day held this year on Put-In-Bay and included a great buffet lunch and time to catch up with friends and enjoy a day on the island.

I want to thank our members for attending section events and being involved. Your Northwest Section Executive Committee for 2022-2023 is:

- Tony Hintze, Past President, City of Fremont
- Andy Gall, President, Ohio EPA
- Renee Bodkins, 1st Vice President, Village of Crestline
- Eric MacMichael, 2nd Vice President, City of Bellevue
- Dave Sprague, Treasurer, Retired City of St. Marys
- Kevin Connor, Secretary, City of Defiance

We look forward to serving the members of our section by getting back to our more typical schedule of events having a fall section meeting and plant tour followed by an early spring section meeting in late March and our May section meeting/golf outing. We are always looking for facilities to host a future section meeting or individuals to give a presentation at a section meeting. Please reach out to me if you are interested in hosting a section meeting at your facility or want to give a presentation at an upcoming section meeting. Lastly, I encourage you to invite someone to join you in attending a section meeting or other OWEA event. We look forward to seeing you.

Andy Gall, Northwest Section President – *andrew.gall@epa.ohio.gov*

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Collections Committee

by Dan Martin and Afaf Musa, Collections Co-Chairs

Planning for our annual May Collection Systems Workshop is getting underway. Please keep an eye out for our call for papers. Potential topics include:

- Alternate Collection System Projects and Operational Experiences
- Green Infrastructure Projects and Maintenance
- CSO and SSO Long Term Control Plans
- GIS and information transfer in Collection Systems
- Asset Management of Collection Systems
- Pump Station Rehabilitation
- High Efficiency Pumps
- Odor Control at Pump Stations and in Collection Systems
- Fats, Oils, and Grease Handling in Pump Stations and Collection Systems
- Pump Station Maintenance
- Force Main Air & Vacuum Release Maintenance and Design
- Workforce Innovations and Management

The Collection Systems Committee held their annual Operator Hands-On Workshop series in each of the four Sections this fall. It is great to offer these workshops after a two-year COVID hiatus. Information for each Section is as follows:

- Northwest Section was coordinated by Matt Witter on November 3rd at the Northwestern Water & Sewer District in Bowling Green
- Northeast Section was coordinated by Don Gallimore on October 13th at the Akron WRF
- Southeast Section was coordinated by Julie McGill and

Afaf Musa on October 20th at the Delaware County Regional Sewer District's Central Maintenance Facility

- Southwest Section was coordinated by Adam Athmer and Dan Martin on October 6th at the Main Office of Montgomery County Environmental Services

These annual workshops gather collection system operators and other professionals to learn about common frontline field issues. Attendees were treated to 4 contact hours, lunch, and networking. Attendance has continued to grow through the years as more and more operators realize the benefit of the hands-on workshop format. This year's topics included the following:

- Watertight Manhole Integrity – Kayla Hanson and Sam Lines from ConSeal discussed various strategies to extend the watertightness and longevity of concrete manholes and tanks
- Chopper Pump Solutions For Problematic Wastewater Pump Stations – Tom Marshall from Crane Pumps & Systems (supported by Carl Wootten from Excel Fluids) discussed mechanical solutions



to minimize clogging issues with pumping raw wastewater. Various technologies were discussed including types of “non-clog” pump impeller technologies, control panel features, pump types, pump station operating parameters, variable frequency drives (VFD) and how each perform in various applications. Special thanks to Crane for providing a demonstration unit with a functioning pump that our attendees could view.

- Pump Station Operation and Maintenance – Joe DeSantis from Pump Systems, LLC Presented on pump station design, operation and maintenance, and common collection-system-related problems impacting pump systems.
- Sewer Nozzle Selection & Sewer Cleaning – Ed Fitzgerald with Doheny Co discussed the various tools available for cleaning sewers within the collection system. Training was provided to allow operators to understand how each of the tools works and how to select the correct tool for each cleaning situation.
- Critical Lift Stations By-Pass & Contingency Planning – Jeff Gallimore with United Rentals outlined the process used in properly engineering a critical lift station bypass. Jeff discussed proper pump sizing, the process, and system layout commonly used for sizing and setting up a critical lift station bypass for planned and unplanned outages.

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

If you have any questions or would be interested to learn more about our active, dynamic committee, please feel free to contact our co-chairs Afaf Musa and Dan Martin: musaab@cdmsmith.com, dmartin@raconsultantsllc.com. Have a great holiday season!

Certification Committee

by Kathy Beckett, Certification Chair

September 2022 marks the one year anniversary since OWEA implemented computer based testing for Wastewater Laboratory Analyst examinations. Implementation has not been without some hiccups, but the new program has been very successful. This past year OWEA issued 17 Wastewater Laboratory Analyst certifications for Class I (7), Class II (7), Class III (3), and one certificate for Ohio Industrial Waste Inspector. Computer based testing allows approved candidates to schedule certification tests at their convenience. The flexibility of this testing method provides candidates with their scores the same day of testing and permits those that fail a test to retake the test no earlier than 30 days after the failing test result.

The following individuals achieved OWEA Wastewater Laboratory Analyst certification from July - August 2022.

Class I Wastewater Laboratory Analyst

Eric Helldoerfer

Class III Wastewater Laboratory Analyst

Seth Wilson

Join me in congratulating these professionals on their accomplishments.

Please reach out to me if you have any questions about OWEA Wastewater Laboratory Analyst certification at kmrish@columbus.gov or visit the OWEA certification webpage for more information on applying for certification at <https://www.ohiowea.org/certification.php>.

OWEA Creates Committee Focused on Diversity, Equity and Inclusion (DEI)

by Miyah Bayless and Kari Mackenbach, DEI Co-Chairs

At the One Water Conference that took place in Cleveland, Ohio this past summer, OWEA leadership took steps to create a DEI Committee to better focus on the needs of our members and industry to better diversify and promote DEI throughout our organization.

What is DEI?

As our parent organization, “Water Environment Federation believes that enhancing DE&I with respect to sex, pregnancy, maternity, marital or family status, genetic information, age, race, color, ethnic or national origin, citizenship, gender identity/expression, sexual orientation, disability or perceived disability status, religion, accent, ancestry, veteran status, socioeconomic status, cultural heritage, personality type, political perspective, job classification, and all other characteristics of DE&I allow us to better serve our members and the diverse water workforce.”

Diversity

Diversity encompasses the varying experiences, strengths, skills, perspectives, personal characteristics, cultures, and backgrounds represented by and within the WEF community.

Equity

A commitment to equity means an environment where everyone has the opportunity and access to realize their full potential, and no-one is disadvantaged because of their group identity or other socially determined circumstance.

Inclusion

The act of inclusion embraces and celebrates the

perspectives, voices, values, and needs of each individual to generate a culture where all feel heard, respected, valued, and included in the broader WEF purpose.

How does it Impact you and Your Organization?

Because we all recognize that in our industry diversity can:

- Increase profitability of companies
- Increase productivity power
- Increase recruitment and staff retainment
- Decrease discrimination and racism

OWEA will focus on these themes in the coming months.

DEI Mission Statement

- Define and educate our members on what DE&I is
- Demonstrate and implement DE&I throughout our organization
- Diversify, Equate, and Include

DEI Vision Statement

As a leader in water resource organization, Ohio Water Environment Association is committed to valuing diversity, equity, and inclusion.

Introduction to Sub-Committee Chairs



Miyah Bayless, OWEA Diversity, Equity and Inclusion (DE&I) Committee Co-Chair, Research and Control Specialist, City of Dayton Water Reclamation Facility, B.S. Chemistry from Bowling Green State University

Have you ever been the first at something? That seems implausible. I have been a “first” in at least two positions at the City of Dayton, and I want to make sure I am not the last. I was the first female Operations Supervisor at Water Reclamation, which has been in operation for 93 years. I am the first female and black in my current position. I am a second-generation City employee, and I only knew about municipal employment because my father worked at the City. DE&I is important to me not only because I fall under multiple classes, but differences come with diverse ideas. To me DE&I is not just black vs. white and male vs. female. DE&I encompasses a multitude of facets and claiming exclusiveness due to not being like or similar is unjust. DE&I can change the conversation. Are you ready?



Kari Mackenbach, OWEA Diversity, Equity and Inclusion (DE&I) Committee Co-Chair, Vice President Strategic Pursuits, ms consultants inc., B.S. Policies and Planning from The Ohio State University

Kari Mackenbach has more than 28 years of project management experience in sustainability, resiliency planning, stormwater, and floodplain management across the country. As the Vice President of Strategic

Pursuits at ms consultants, Kari is responsible for identifying, assessing, and developing capture strategies for all major pursuits in the Water Division. Kari is a strong advocate for diversity in the workforce and sits on several related boards—both within ms and with professional organizations—that work to increase diversity. Her personal focus is on mentoring young female and minority engineers who have entered the workforce and are looking for their niche in the engineering community. Internally, Kari has been instrumental in championing mentor/protégé relationships. In addition to participating in the firm’s DEI efforts and initiatives, Kari shared her insight and experience at the recent ACEC conference on the topic of how increasing diversity in the workplace also increases profits.

If interested in learning more about the DEI sub-committee or participating in upcoming meetings or events, please send an e-mail to Miyah Bayless Miyah.Bayless@daytonohio.gov or to Kari Mackenbach at kmackenbach@msconsultants.com.



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- 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

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