Ohio Water Environment Association
Volume 95:1 | Issue 1 2022

Buckeye Bulletin

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pg. 40-45

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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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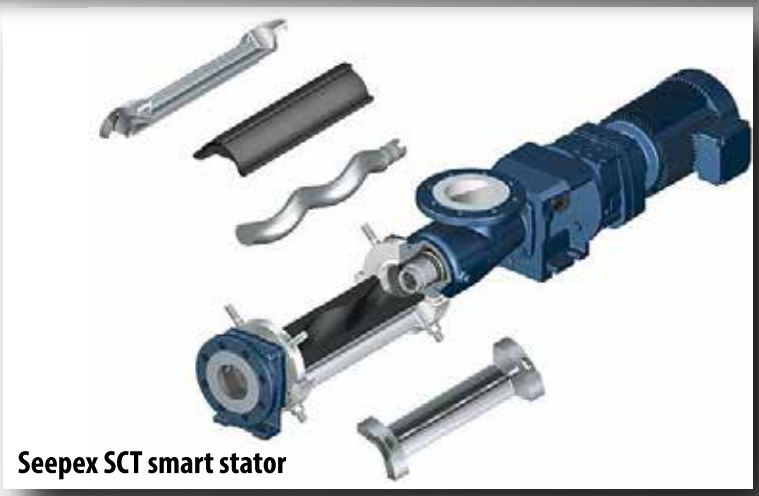
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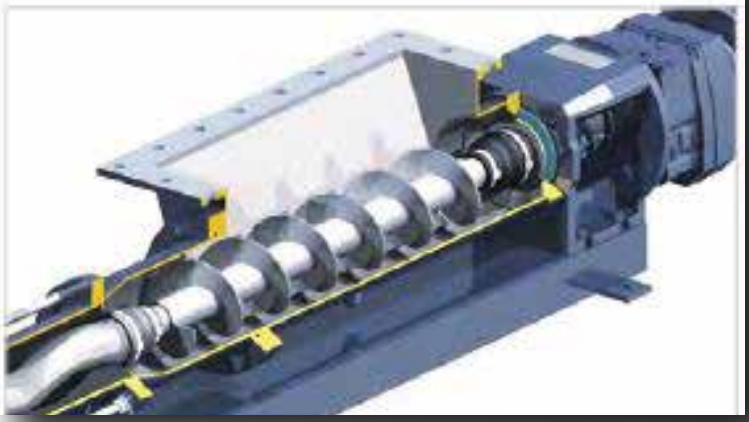

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President's Message

Jason Tincu
OWEA President

As I type my third President's Message, I am carefully navigating around the latest surge of COVID-Omicron-which is dancing across all facets of my life; at work, at home, out in public. The latest variant is proving to be much more contagious, but also much less severe in most cases. And as we enter year #3 (yes—three years) of this pandemic, it reminds me just how much I've learned as a result of living (dare I say 'thriving') through it! I learned what was and what wasn't important in life. I learned how important work/life balance is. I learned a lot about American society. I (re)learned how to grieve after the loss of my Father-In-Law. I (re)learned just how important the services that we provide are to our communities. I learned all about philosophy and stoicism through my studies. I learned that many of the things we did in the workplace never made much sense (so we went ahead and abandoned most of those). I, unfortunately, learned what 'doom-scrolling' was and how it could affect your daily life. Lastly, I learned that you can never give up HOPE!

Hope is defined as "a feeling of expectation and desire for a certain thing to happen, a feeling of trust, wanting something to happen." Hope, to me, is the pilot light inside of us that drives us through times of struggle and into the search for joy. It reminds us that something better awaits us if we are willing to look for it. Hope is knowing that we will eventually make it out of the pandemic. Hope is knowing that the societal challenges we have faced are only temporary. Hope is knowing that there is a brighter future for all of us at home, in life, and in society if we are willing to fight for it.

For our organizations, I have hope that the struggles that many of us have faced are temporary; the labor issues, the supply chain issues, the revenue issues, the workforce challenges, remote work issues, cut-backs, delays, etc. We are working our way through a slump. Everything is temporary, good and bad. This pandemic is nothing we are experiencing that previous generations haven't already had to burden, if not worse. We are just facing different factors and constraints.

For OWEA, I believe that we will continue to be a leader in the promotion, education, development, and advancement of Ohio's water quality professionals and organizations. We have done this since 1926, and we will continue to for decades to come. COVID has given us an excellent opportunity to evaluate where we are as an organization and where we want to go. Our mission and vision will continue to carry us into the future.

Upcoming Executive Committee Meetings

March 8, 2022 | May 10, 2022 | July 24, 2022

Jason Tincu is the Director of Sanitary Engineering for Greene County. He holds a Class IV Wastewater License and a Class II Water License. He has held a variety of positions within the water sector on both the municipal and consulting sides. He is a proud member of the Southwest Section of OWEA and is a long serving member of the Government Affairs Committee.

President's Message

Mission Statement

The Mission of the Ohio Water Environment Association is to:

- Educate our members through sharing information and networking
- Educate the public on preserving and enhancing our water quality
- Be proactive on water environment issues
- Build a positive professional image within and outside the Association

Vision Statement

The Ohio Water Environment Association shall be recognized as the leading water resource organization for preserving and enhancing Ohio's water environment.

For our industry, I have hope that we will continue to enhance our services while improving environmental conditions and reducing overall community risk. We have done this throughout our existence and there's no sign that this will ever stop. The work that we do has saved more lives than any other human development, by a long shot. And we will continue to improve these services through advancements and investments in people and technologies.

Lastly, for humanity, I have hope that we can rise above the challenges and struggles that we face and start dealing with some of our most pressing problems with dignity and respect.

Looking forward to seeing all of your smiling faces later on in 2022—cause I maintain lots of HOPE!

Best regards,
Jason Tincu

Welcome New Members

October 2021 - December 2021

Celeste Bauer
James Benschoter
Scott Bessler
Joseph Bishop
Neil Bodner
Corey Bremigan
Kristen Buccier
Carmella Caltagirone
William Collins
Jacob Crestani
Aaron Fletcher
Nathaniel Inkrott
Clayton Kovacs
Charles Lacy
Steve Lange
Raymond Longendyke
Peter Lopushansky
Brian McQuistion
Charles Mencke
Ross Nicholson
Clint Pemberton
Michael Potash
Travis Richards
Travis Rodriguez
Bryan Rupert
Mallorey Smith
AJ Smith
Kevin Strohl
Mark Suchan
Jeroen Van Acker
Emily Weidman
Alex Young

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

Stantec

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We care about the communities we serve—because they are our communities, too. This allows us to assess what's needed and connect our expertise (300+ professionals in Ohio); to appreciate the nuances and envision what's never been considered; and to bring together diverse perspectives to collaborate toward a shared success.

Stantec has a long successful history of service with a wide-range of local communities in the water and wastewater industries. While our large network and depth of expertise allows us to execute large projects, we also work on smaller projects and embrace the ability to improve the quality of life in any community.

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

Lima CSO Storage Tank Project:

The City of Lima, working with the Ohio and US EPA, negotiated a Consent Decree to reduce CSO flows into the receiving waters of the Ottawa River which flows through the City and provides greenspace to the community. As the City's trusted partner, Stantec determined the City could meet the CSO reduction goals by increasing the City's WWTP capacity to 70 MGD while providing 13.5 MG of off-line CSO storage and a 30 MGD dewatering pump station. These improvements protect the community and environment from combined sewer overflows to the Ottawa River.

With all work completed, the underground CSO storage tank sits beneath a green field, returning the area to the original purpose of the Simmon's Field site—a place for residents of Lima to gather, play, and enjoy the Ottawa River.

Financial Analysis & Management System:

FAMS
Financial Analysis & Management System | By Stantec

Considering the ongoing impacts of COVID-19, communities are seeing significant impacts to sales taxes, income tax, use fees, excise taxes, and state shared revenues. Many communities don't have the tools to quickly connect the capital improvement program you've developed with a payment plan. Stantec has a "high-tech" financial planning model that is easy to use, and quickly evaluates changing and developing scenarios. It provides efficient data management and updating. Learn more on how we can help your community: **stantec.com/fams**.

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

Greg Fraunfelter,
Mayor of Logan, OH

"The Stantec designed integrative approach for our Long-Term Control Plan has provided the City of Napoleon with the opportunity for the financial relief and flexibility we need to effectively plan for capital improvements in the future."

Chad Lulfs, PE, PS,
Director of Public Works –
City of Napoleon, Ohio

"Comparing scenarios created so easily in FAMS saved a significant amount of time and helped us make decisions in a timely manner."

City of Olathe, Kansas

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>80 Ohio staff

OWEA Volunteer Support:

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

>1,100 national staff

100% of revenue from water engineering

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

Cleveland Office

Akron Office

North Olmsted WWTP and Collection System

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

Columbus Office

Integrated Plan / Blueprint Columbus

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

Cincinnati Office

Miamisburg East Side PS and WWTP

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

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Executive Committee Positions Available

Interested in being part of the state executive committee? Nominations are being accepted through June 15, 2022 for the positions of WEF Delegate, Secretary-Treasurer and Vice President. If you are interested in one of these positions, send a letter of interest along with a letter of support from your employer to Nominations Chair, Fred Smith at *smithfj@cdmsmith.com*.

Doug Borkosky Joins Executive Committee as Northwest Delegate

Webinar Dates	
3/9/2022	10 AM
4/13/2022	3 PM
5/11/2022	10 AM
6/8/2022	3 PM
7/13/2022	10 AM
8/10/2022	3 PM
9/14/2022	10 AM
10/12/2022	3 PM
11/9/2022	10 AM
12/14/2022	3 PM

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- ★ 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 accomodate various schedules

Register at www.ohiowea.org

One Water

July 25-28, 2022

Huntington Convention Center **Cleveland, OH**

Let's get together SAFELY

We can't wait to see you again, safely, and IN-PERSON. While we anticipate there will still be some COVID-19 safety precautions in place, we KNOW that bringing together water and wastewater professionals will be a great time.

who should attend

- Utility professionals
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- Manufacturers
- Retired professionals

topics

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- Collections
- Distribution
- Ethics
- Management
- Treatment

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Ohio Section American Water Works Association

OWEA

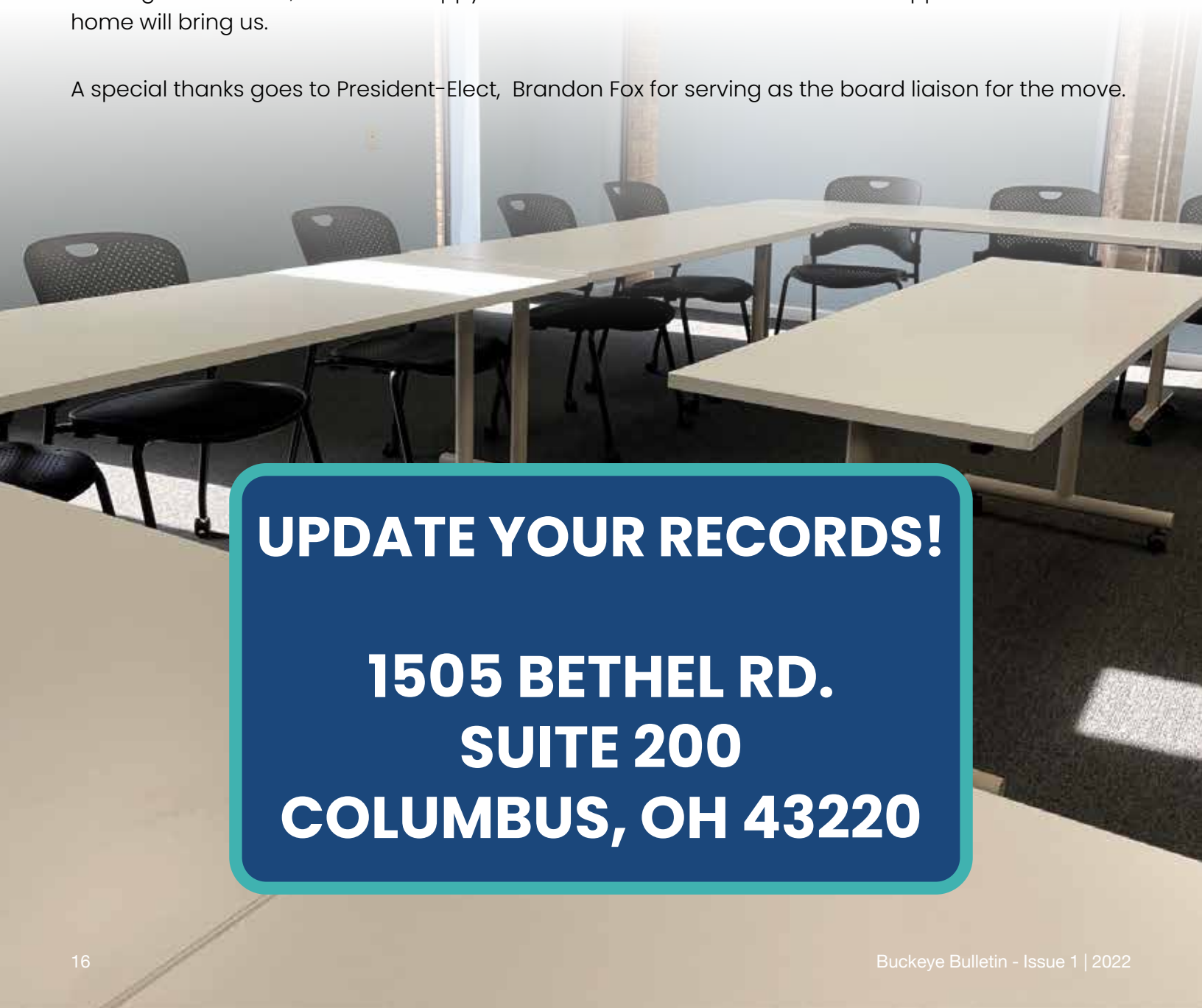
OWEA is on the Move!

We are excited to announce our relocation! We are now located in recently renovated space at 1505 Bethel Rd., Ste. 200, Columbus, Ohio 43220. Our email and phone numbers remain the same, but please take a minute and update your records with this new address. You can find an updated W-9 on the home page of our website.

This space will give us more options for meetings and small trainings. We were able to purchase previously used training furniture that will offer us multiple seating options. This means we can switch the way the room looks based on what's happening in it.

While at the time of publication we are still awaiting a few furniture items and still have some things to hang on the walls, we are so happy to be here! We can't wait to see what opportunities our new home will bring us.

A special thanks goes to President-Elect, Brandon Fox for serving as the board liaison for the move.




1505


MOVING DAY!

Alloway

by Jessica Begonia

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Mansfield, Ohio 44906

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Alloway - Columbus
1025 Concord Ave
Columbus, Ohio 43212

Alloway is a full-service environmental laboratory specializing in analyses on drinking water, wastewater, and solid and hazardous waste. We have four locations to serve you and more than 39 years of experience.

Our vision to be the ultimate laboratory resource drives us to produce a wide range of innovative products and services. Alloway's newest division, EnviroGo, specializes in customized, mobile monitoring and sampling stations. Alloway is also the exclusive distributor in the United States for Surcis respirometry products. Whether you need routine testing services or a specialized study, Alloway is your resource for defensible data.

How many analysts/technicians work in the laboratory?

Our many service offerings and analytical capabilities require a dedicated team of employees, and Alloway's growing staff of 83 continuously raises the bar in outstanding service.

Do you accept samples from outside sources?

Alloway accepts samples from both the private and public sector. Whether you want to drop off your samples at any of our four locations, schedule a sample pick-up through Alloway's convenient courier system, or request a quote for Alloway to collect your samples, we are here to serve you!

What analysis do you perform?

We offer an assortment of analytical services including:

- Biomonitoring/Bioassay: NPDES Monitoring (C. dubia, P. promelas), Toxicity Identification Evaluations
- Organic Characterizations for Drinking Water and Wastewater: Gas Chromatography, Gas Chromatography/Mass Spectroscopy, Total Organic Carbon, High-performance liquid chromatography
- Inorganic Characterizations for Drinking Water and Wastewater: Heavy Metals (ICP, ICP-MS), Low-Level Mercury Analysis, High-performance liquid chromatography, Ion Chromatography, Spectrophotometric and Specific Ion Determinations, Gravimetric and General Chemistry Measurements
- Solid/Hazardous Waste Analysis: RCRA Permit Requirement Analysis, Toxicity Characteristic Leaching Procedure (TCLP), Flashpoint / Ignitability, Reactivity, Corrosivity, PCBs, Inorganic and Organic Characterizations
- Bacteriological testing: E. coli, fecal coliform, total coliform, and heterotrophic plate count
- Microcystin testing: Total microcystins by ELISA and detection of microcystin producers by qPCR
- Respirometry: Toxicity and Biodegradability, readily biodegradable COD and slowly

biodegradable COD, and Specific Oxygen Uptake Rate

- Microscopic Examination of Activated Sludge

Other duties your laboratory is responsible for?

Alloway also offers a variety of environmental sampling and monitoring services. Our team can perform grab and composite sampling, river and stream monitoring, low-level mercury sampling, and onsite measurements for parameters like pH, temperature, dissolved oxygen, and chlorine.

In addition to sampling and analytical services, Alloway has become an established leader in training, laboratory development, software, and support. Alloway's staff have traveled the country helping municipal and commercial laboratories produce defensible data and achieve state and national laboratory certification. Alloway has developed training videos and led numerous seminars on Laboratory Quality Control/Quality Assurance and specific environmental analyses. Alloway is also a local, Ohio EPA approved contact hour provider, and we offer discounted training programs to our routine analytical customers as a value-added service.

Do you use a contract laboratory?

Alloway is the contract laboratory of choice for many municipal plants and private industries across the United States.

Have you assisted with any pilot studies or uncommon testing?

Imagine an analysis that enables an operator to see how operational changes such as the addition of certain chemicals, nutrients, waste streams, or bio-augmentation products will affect their specific biological wastewater treatment plant. This is respirometry and Alloway has led several studies to help our clients understand and troubleshoot the activated sludge process.

Recently a local industry was experiencing intermittent toxicity issues in their activated sludge process. With Alloway's assistance, the industry was able to determine the maximum amount of waste stream that could be

treated without detriment to the microorganisms in the sludge.

On a larger scale, Alloway assisted an international chemical manufacturer to determine if a waste stream could be treated by specific activated sludge processes. Alloway performed a biodegradability study to ensure that the waste generated would be treatable by an established wastewater treatment plant prior to the client selecting the location of a manufacturing facility in the United States.

Beyond the world of wastewater treatment, Alloway has been a part of assessing the effectiveness of farm management practices in reducing nutrient run-off using the EnviroGo trailers. The EnviroGo trailers were recently deployed at the Defiance County Agricultural Cascades as part of a study to evaluate the effectiveness of cascading waterways over a period of three months. Even in this remote location that lacked traditional power sources, the EnviroGo trailers offered automated sampling platforms and weather monitoring stations that recorded weather patterns and remotely triggered sample collections based on rainfall.

Whether it's respirometry studies or EnvironGo's mobile sampling platforms, Alloway continues to press forward with new innovations and growth opportunities.

Is there anything else we should know about your Laboratory?

Civic contributions are an important part of Alloway's culture and values. Participating in nonprofit organizations and volunteer roles allows Alloway to serve the Water and Wastewater Industry in addition to our local communities. Alloway's team supports the following nonprofit organizations as volunteers, sponsors, and/or members:

- Ohio Water Environment Association
- Water Environment Federation
- Ohio American Water Works Association
- American Water Works Association
- Water For People
- Environmental Education Council of Ohio (EECO)
- Ohio Energy and Advanced Manufacturing Center (OEAMC)
- Ottawa River Coalition
- Ohio Adopt-a-Highway Program - Gold Star Service Award for 25 years of service
- Johnny Appleseed Park District
- Crossroads Child and Family Services

Alloway's dedicated involvement in the local community and the water and wastewater industries are a major part of our continued success. We are committed to our vision of being the ultimate laboratory resource.

For more information on Alloway's products and services, visit our website at *www.alloway.com.*

A Chat With WEF Delegate Joe Tillison

Interview by Dawn Larsen

STAFF: What four words describe Joe Tillison?

TILLISON: I'm going to say energetic, creative and this would actually be two words, but I would say a good time.

STAFF: How did you first become involved in the industry?

TILLISON: I was working kind of a dead-end construction job. I dropped out of college due to money constraints, so I was working in construction and my father, he's actually been in wastewater for pushing 40 years, always said to get in a wastewater plant. So, I started applying and I finally got in at the City of Bowling Green and it first started as basically just a job, and it took four or five years before I realized that this was a career, not just a job.

STAFF: What did your dad think when you joined the wastewater community?

TILLISON: He was pleased. That's always been kind of a thing. It was kind of a thing for a while about who has more licenses, [LAUGH] but I'm not going to say who does. [LAUGH]

STAFF: I know you run a plant in a smaller community, Delphos, what's that look like?

TILLISON: As far as what type of plant?

STAFF: Yeah, what type of plant and what are some of the challenges that our smaller communities specifically face?

TILLISON: The City of Delphos is a membrane filtration plant, it's been online for 15 years. When the plant went online, after about three or four years, it started to fail. So currently we are in design and in construction of completely redoing the plant. Some of the

"I REALIZED THIS WAS A CAREER, NOT JUST A JOB."

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 Borror at: megan@ohiowea.org.

issues with smaller communities, especially for a town like Delphos, our plant is actually designed for a population equivalent of 70,000 people, but we only have 7,000 people in our community. We are heavily loaded by industrial users that make Dairy Fair food manufacturing, so we have a very high BOD. That's one of the main challenges that we have here with being a smaller community and those types of loads.

STAFF: Obviously COVID has been a challenge for everyone. What challenges has it brought to you both personally and professionally?

TILLISON: Well, professionally, here at the plant when COVID hit, we're a staff of five guys, so we're the only five guys in the municipality that can run this plant. I know OWEA offered up the list of the certified operators that could step in and help. But with us being a membrane filtration plant, that limits us to outside resources because most people don't have the experience in how our plant runs. So we had to be very careful on how we addressed the COVID situation. We actually split staff down the middle. Two guys work one week, two guys work the next week, and then we had our lift station guy. He never came to the plant, but he worked four hours a day both weeks. We did that for roughly five months. Then, we came back in the late summer, and then right before Christmas we did another almost five months of split staffing. There were other challenges too, not only with the delay in lead times on getting purchasing materials, but we did not have the manpower here. Basically for a year and a half we were treading water and that's not the philosophy that we like to run. We like to be proactive, not reactive, but unfortunately with COVID that was basically the mode that we were in.

Personally, I have a two young kids, a five year old and a seven year old. My wife, she's been working from home since all this started. When COVID started, of course everybody went into lock down, I still had to go to work. We were still in the early stages of all this fear. As I'm leaving to go to work every day to run this wastewater plant, now my family is concerned that I might have COVID. It took a while, but at the end of the day it was something I had to do. It wasn't a choice.

STAFF: What has been the highlight of your career so far?

TILLISON: Can I have two?

STAFF: Absolutely.

TILLISON: I'm going to say winning the maintenance event at WEFTEC with the guys from the EPA and getting my 5S shovel.

STAFF: What has been your biggest challenge?

TILLISON: I would say there for a while I was very intimidated by just my, I want to say intimidated by my peers because I felt like maybe I didn't belong. I was kind of a little standoffish, so that has taken me a while to get over that but I think I can be of help and be productive in this organization. I'd have to say putting myself out there was one of my bigger challenges.

STAFF: You've been involved with OWEA for quite some time, how did you get started?

TILLISON: Well, actually, it was about that whole time period of when this was a job, and now it's a career. We had a turnover in management at the old plant that I worked at and Doug Clark was very, very involved with OWEA. He had set up a young professionals meeting at our plant, and basically I was out working in the plant at three o'clock and he came and got me and said, you're going to this meeting. And that's how it started.

STAFF: You are our newest WEF delegate, what's that like?

TILLISON: Well, I'm still getting my feet wet as far as being WEF delegate. I attended WEFTEC out in Chicago and it was kind of an eye opener, because like you said in the previous question that I've been involved for a very long time. So I do know a lot of people, and it was kind of surreal to be sitting in a room with all these people that I look up to and being at their level. I think there is a lot of great opportunity being a delegate, there's a lot to learn and there's a lot of people to learn from. So I'm really excited actually.

STAFF: In addition to serving as our newest WEF delegate, you also serve as co-chair of the Plant Ops committee. What would you like our members to know about the Plant Ops Workshop and also about Ops Challenge?

TILLISON: Well, as most people probably don't know as of yet, but the Plant Ops Workshop has been moved from fall to spring. It will be in a new location this year. We are currently in planning mode to finalize an agenda. We're very excited and hopefully this will be a new beginning, post COVID and just restarting this whole thing.

Ops Challenge, we're trying to do a total reboot of Ops Challenge with COVID and the teams kind of fallen apart and people throughout the state changing jobs and everything. We are working very hard as a committee to try and pull that back together and get the energy that we've had. Historically, Ohio's had very good teams and represent the state very well at the national level. So we'd like to continue that and hopefully we can do that in the future.

STAFF: You're pretty passionate about Ops Challenge, what would you say to employees at a plant that are considering forming an Ops Challenge team and what would you say to management at that plant?

TILLISON: Well, I've had this discussion you know many times and we highly encourage it. Just from my experience, not only being on a team but being a judge at nationals, most of the people that I've been on a team with and/or been involved with from other states, a lot of these individuals go on to be in management because you put yourself out there. You want to get involved, you're learning, you're getting engaged, you're meeting people. I find that Ops Challenge, historically, is basically a career builder if that's the path that you want to take it to.

STAFF: Why should a new operator get involved with OWEA?

TILLISON: Well, I'll be really honest with you, I wouldn't be where I'm at today if Doug Clark wouldn't have made me go to that first meeting. Just the people I've met and the knowledge that I've gained from knowing those people. And just as far as a career builder, the amount of people you know, if you're willing to put in the time, get your licenses, use your contacts to your benefit, the opportunities are endless. I highly encourage it.

"I FIND THAT OPS CHALLENGE, HISTORICALLY, IS BASICALLY A CAREER BUILDER."

STAFF: I know that you were pretty involved with the section level first. What would you tell somebody about sections and why they're important?

TILLISON: I first got involved at section level as

the Plant Ops Chair. I did that for a couple years, got a little bit more comfortable with being in the organization and making decisions. Our section was looking for the next EC member, so I volunteered, went through the steps, became president. I learned a lot. It was a good experience. I think every year, as far as the section goes, we are looking for the next person to step up. And a lot of times people think that they're either not able or they don't have the time, but It's really not a big, time-consuming ordeal and there's always people around you to help you. I think that the four sections in our state all do various and different things in different ways, but as a collective group that makes the state of Ohio stronger and more together as a group by having them different sections.

STAFF: Where do you see our industry in the next ten years?

TILLISON: Well, we're going to have to get through all the new rules and regs and see where PFAS and everything takes us but it's kind of interesting just to stand back and look where we were at ten years ago as far as technology, and the way we're doing certain treatment processes. This industry is always going to be changing, so to predict the future, I don't have the crystal ball for that one.

Sustainability in Construction

by Paul Fletcher; and Jason Dosca, P.E., L.D. Dosca Associates, Inc.

Introduction

The construction industry is the consumer of the most unrenewable energy. Sustainability should play a vital role in the construction business. Considering how construction impacts the environment through various construction materials and work carried out, it is important to carry out sustainable practices from design, through manufacturing and sitework, to construction.

Sustainable construction isn't just ensuring that resources are being used in an efficient way in projects. It means considering the environmental and economic impacts that are created by the way materials are sourced, and the processes used to get the job done.

The goal of sustainable construction is to create and operate a built environment based on resource efficiency and ecological design with an emphasis on reducing resource consumption, reusing resources, using recyclable resources, protecting nature, eliminating toxics, applying life-cycle costing, and focusing on quality.

The Role of Sustainability in Construction

Buildings use resources (energy, water, raw materials, etc.), generate waste (construction, occupancy, and demolition), emit potentially harmful atmospheric emissions, and fundamentally change the function of land. Building owners, designers, and builders each face unique challenges to meet demands for new and renovated facilities that are accessible, secure, healthy and productive, while minimizing any negative impacts upon society, the environment, and the economy.

There can be great benefits to investing in sustainable technologies when it comes to construction. The current industry standard for sustainable construction is Leadership in Energy and Environmental Design (LEED) construction. LEED has been the standard for sustainable construction practices since its inception in 1994. It promotes a system of sustainable construction that goes above and beyond minimum building codes to ensure that new buildings will not only be functional today, they will also be energy efficient and made from responsibly sourced materials, making them sustainable into the future.

There are several drivers of sustainability in the construction industry**:**

Client demand: Growing demand by customers, especially local governments and other public sector organizations, for more sustainable and socially responsible projects.

Community and public expectations: Rising expectations from communities and the general public that business contribute community and

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 pfletcher1312@gmail.com.

social benefits. As construction is very visible to the public, these rising expectations are especially significant.

Changing workforce: Labor shortages and millennial employees will create pressure for improved social and environmental practices to attract, retain and engage employees.

Climate change: Climate change and the transition to a low-carbon economy is likely to increase physical, regulatory and brand impacts.

Legislation and regulation: Changes to building codes and bylaws over the next decade are expected to raise environmental and safety standards in order to improve the social and environmental impacts of construction.

Setting sustainability targets for your business and regularly measuring your performance against them is a great way to motivate your staff to follow green initiatives and boost your reputation as a responsible organization.

The 3 Pillars of Sustainability

The inclusion of Economic, Environmental and Social areas of sustainability can be applied to the construction industry. This means understanding projects not just regarding the bottom line and the benefit to business, but also in terms of the impact on the environment and the wider community. From steel manufacturing plants, lumber mills, to the job site, there are numerous opportunities for improvement.

Construction companies today should recognize that sustainable construction is becoming a greater and greater concern. It is estimated that the buildings consume 40% of the total energy of a facility. As a result, there are huge energy and efficiency gains to be made as more and more companies and clients buy into the importance of sustainable construction. Incorporation of environmentally friendly processes such as the use of solar power, rain gardens and rain harvesting are examples of this. More local governments are adopting green building standards and regulations or providing permitting and financial incentives for sustainable development.

Economic Impact

An obstacle that many companies may come across is the principal cost of sustainable construction. The consensus is that sustainable construction comes at a premium and the cost is higher than what the demand actually is, despite the evidence to the contrary. Nevertheless, as more interest in sustainability efforts continue to rise, more construction companies are making the switch to sustainable construction, with green building activity on the rise.

Sustainable construction can also provide jobs and boost the economy. As climate change affects the planet, efforts to combat its effects have increased, resulting in an increased demand for construction workers and a hike in construction jobs. According to the US Green Building Council (USGBC), the green building industry contributed $134 billion of labor income to US workers, making it a major economic driver in the country.

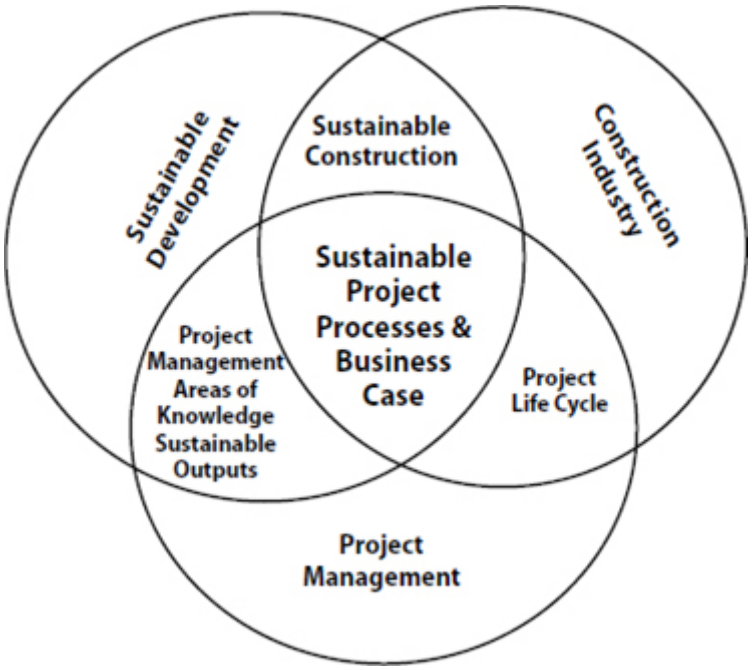

Figure 1 – The inteersection of construction practicies with sustainable development.

Design and Bidding

Thoughtful selection of sustainable building materials should occur at the beginning of each project. LEED building isn't the only way that sustainable construction can occur. There have been recent advancements in construction that can help reduce the amount of materials used and hopefully improve sustainability in construction. These and other advancements make it easier for companies to improve the sustainability of projects.

Adaptive reuse projects that transform old buildings instead of construction of a new structure is one way the industry can work towards sustainability. Specifying sustainable and recycled materials on projects, such as 100 percent recycled plastic, is definitely worth the investment, as structures made from this sustainable material can last more than 50 years — up to 20 years more than traditional structures made with concrete or wood.

Introduction of 3D Modeling

The technology around design and building information modeling, or BIM, can significantly aid the way structures are designed and built. BIM is becoming more and more accurate and can help with the necessary calculations of material and time. This can reduce the amount of excess building material companies purchase and improve the overall construction of the building. The information that construction companies can get from these models can improve construction overall and lead to better, more efficient building practices which reduce the resources needed. Because it isn't just the physical resources used in the construction of the building, it is also the resources that go into the construction; resources like gas and electricity can be saved through more efficient construction processes.

Construction Management

While a few reams of paper may not feel like a big waste when compared to a dump-truck filled with construction

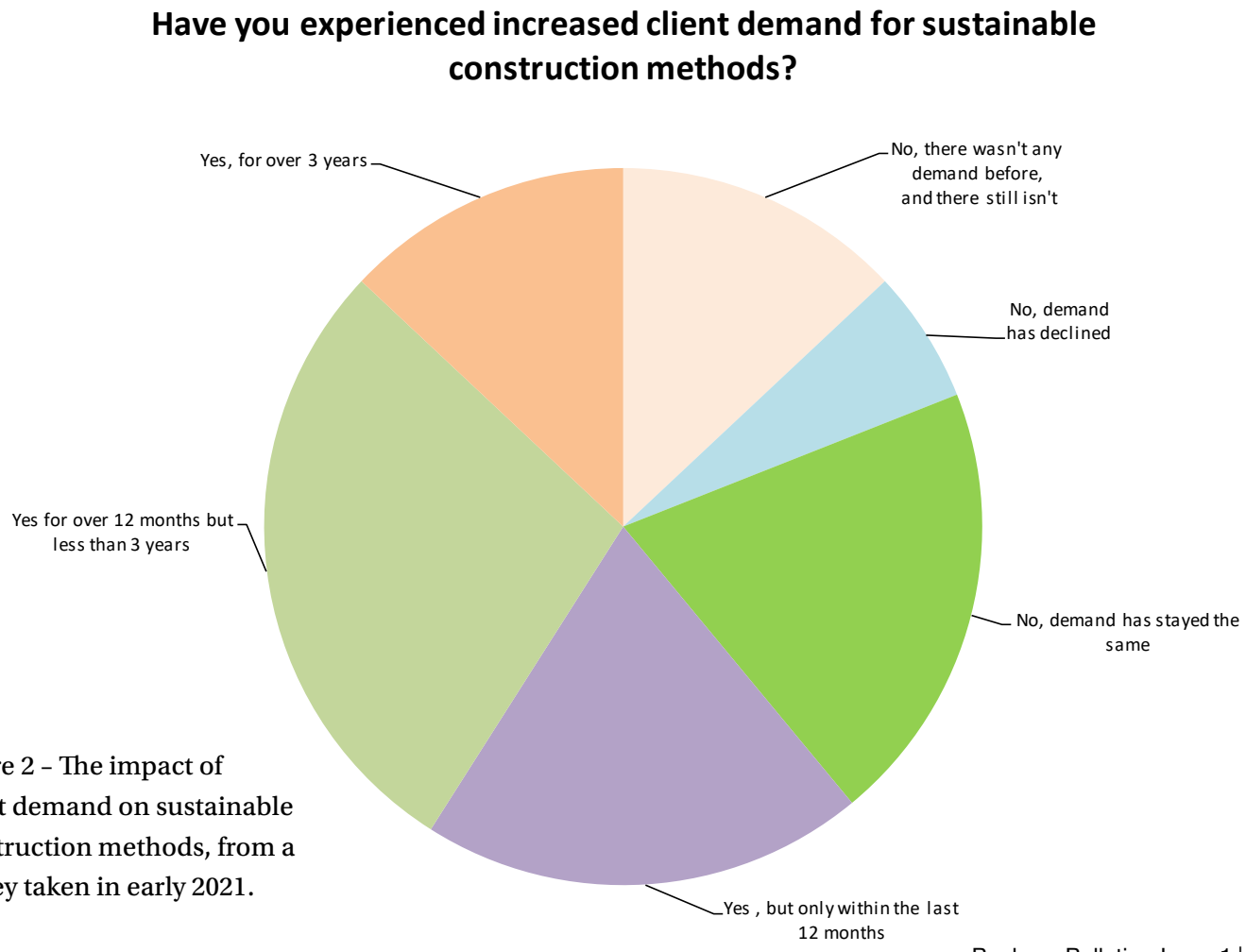

Figure 2 – The impact of client demand on sustainable construction methods, from a survey taken in early 2021.

debris, management of construction sites is not just about the paper — it's also about reducing rework and other construction waste. Sustainable construction companies use construction management software to replace paper plans and files across the project team. Investing in sustainable construction technology that eliminates paper plans and files saves valuable time and money. As an example, a billion-dollar General Contractor in Canada used a sustainable construction management system and saved $35,000 in printing costs on a single project. Once implemented, the software can be used for successive projects. The software can automatically notify the project team of updates in real-time to ensure everyone is always working from the same set of documents. This not only makes the construction team more efficient onsite but more sustainable because they're reducing paper waste.

Demolition

The 'Reduce, Reuse, Recycle' Mantra

According to the European Commission, the building sector produces approximately one-third of all waste, much of which ends up in landfill. Concrete accounts for half of all construction waste generated each year, more than 500 million tons worldwide. As a more sustainable approach, demolished concrete is often recycled; asphalt, and steel are other products that can also be recycled for reuse. In addition, saving old motors, tanks, piping, valves, steel beams and shapes for repurposing for later re-use is a sustainable solution.

Construction

Green building materials like recycled plastic, ferrock, and even hempcrete are all alternatives to using concrete and are sustainable construction materials that can be used on construction projects. Using a concrete mix that uses less sand and more recyclable materials, such as limestone dust, also makes for a more sustainable project.

Construction techniques, resources, and building practices have evolved over the years, and with the increased interest in sustainability and energy conservation, new methods of construction that focus on sustainability have been developed. There are two things that go into sustainable construction: the materials that are used and the methods that are utilized.

Sustainability also has an economic factor during construction. Meetings are an often overlooked area where construction companies can be more sustainable. The use of Google Earth and virtual pre-bid meetings and job progress meetings (which has accelerated after COVID) are used more and more, cutting down on emissions and time involved in traveling.

Materials

Engineering and construction leaders face a number of competing pressures as they try to control costs and maintain efficient processes with multiple suppliers and subcontractors, and also focus on reducing energy costs and carbon footprint while using energy-intensive heavy equipment.

One of the best ways to practice sustainability in construction is through the materials that are used. There are several ways in which this can be done including selecting materials from local sources, and selecting recyclable or long-lasting materials during the design process. A new generation of stronger, lighter and more sustainable building materials (for example FRP, bamboo and laminated wood elements) can push current practices to be more sustainable.

Sustainable materials have the added benefit of protecting the environment by reducing the carbon footprint of the buildings that use these materials. They promote a cleaner planet and sustainability, while also being aesthetically appealing.

An example of a green building would be the use of prefabricated construction materials and methods. Also known as offsite construction, prefabricated construction is the practice of assembling parts of a

structure in a manufacturing facility and transporting them to site. A prefabrication factory can build almost every element needed and ship it to the location where it is assembled. The great benefit of this system is that the units are manufactured within a factory, so any excess used material isn't thrown out. Instead it can be recycled and reused in another unit. Prefabrication also allows for more accurate construction, so there is less material that needs to be recycled. Reports show it takes up to 67 percent less energy to manufacture a prefabricated building than it does to build a conventional structure onsite.

Methods

The reduction of construction waste is a beneficial side effect in building more green buildings. By their nature, they already use fewer resources, relying on recycled and renewable materials along with more sustainable construction methods and equipment. The use of sustainable materials is also beneficial to social sustainability as some paint, industrial cleaning products and building materials can be dangerous to human health.

Sustainable construction material management and demolition — such as with concrete, which happens to be the top contributor to construction waste — can be improved with Just-In-Time (JIT) production. As the name suggests, JIT production is a sustainable practice that calls for the production of what the customer wants, when they want it, and in the exact quantities requested. Instead of ordering large stocks of what the job may require, only the exact quantity is ordered when the job requires it or the customer requests it. This method eliminates waste for sustainable construction management by removing overproduction from the project lifecycle. As a result, the cost of storing excess material is kept to a bare minimum, free storage space is better utilized onsite, and fewer materials are disposed of at the end of a job. The implementation of BIM can also aid in JIT situations.

Construction companies aren't the only ones that can change their methods for the betterment of the environment. Whether it's using the right equipment, implementing value engineering to determine sustainable material alternatives or simply doing your best to be energy efficient, anyone can help progress sustainability efforts. A simple example is separation of recyclable waste.

Currently, the construction industry is making a profound impact on the environment; thus, it becomes extremely important that companies work towards maximizing the positive benefits while minimizing its negative components. Fortunately, there are plenty of steps construction companies can take to ensure both their materials and their manufacturing processes lead to sustainability in construction. These steps are good for the environment, as well as the company's bottom line.

Suggestions for embedding sustainability into a project from inception include

Cabins: Often, on-site cabins lack basic energy efficiency measures, such as proper insulation or LED lighting, which means there are plenty of opportunities to achieve some quick wins in this area.

Vehicles: Think about how much energy is being used (and potentially wasted) for transportation, as transporting materials to your site, and moving equipment around site, can account for a significant amount of carbon emissions.

Seek sustainable suppliers: When you have various suppliers involved in your project, it can be even more complex to keep your site emissions to a minimum. However, by seeking suppliers that also prioritize sustainable practices, you can ensure that everyone on your site is working in an eco-friendly way.

ROLL CALL

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

JEREMY COOK, PE

With more than 24 years of experience, Jeremy Cook, PE, has joined the ms consultants team. Jeremy has extensive experience in water and wastewater treatment systems, as well as water distribution and wastewater collection systems. Working with communities throughout Ohio and the Midwest, Jeremy's project experience includes design lead for sanitary sewers, pumping stations, treatment plants, elevated water tanks, and waterlines.

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Improving Biological Assessments with the Analysis of Environmental DNA

by Nathaniel Marshall, PhD, Stantec Consulting Ltd., Columbus, Ohio, U.S.A.

Activities needed to construct, maintain, and/or improve water infrastructure often require some kind biological and environmental impact assessment prior to implementation. These assessments aid in the protection of vulnerable biodiversity. Traditionally, characterizing biodiversity requires trained field crews with expertise in morphological identification, to physically capture and identify the organisms at a given site. Such surveys can be time-intensive, and some species may be missed due to their cryptic nature (e.g., species that can avoid traditional capture methods or are difficult to morphologically distinguish). As a consequence of these limitations, resource assessment professionals are always looking for more cost effective and accurate means to detect special status species. Recent technology is pushing the limits of what previously was considered science fiction, by seeking to identify aquatic species without the need to capture or even see them within the environment.

Over the past decade, there has been a rise in the use of genetic-based applications for biological assessment purposes. One such method detects environmental DNA (eDNA), which involves collection of genetic material (e.g., feces, urine, mucus, skin cells, or gametes) that an organism leaves behind in the environment (Figure 1). Similar to DNA analysis in criminal forensics, the detection of eDNA can confirm the presence of a species without direct observation of that species. Therefore, eDNA is quickly becoming a powerful survey tool to assess presence of species at low densities or cryptic species, as eDNA sampling can provide higher detection probability for rare organisms (Figure 2). eDNA surveys are less invasive on the environment, and can be less hazardous on the survey staff compared to some traditional methods (e.g., electro-fishing and scuba diving). Additionally, these surveys are often more cost-effective compared to traditional time-intensive surveys.

Figure 1. Environmental DNA (eDNA) involves the collection of genetic material (e.g., feces, urine, mucus, skin cells, or gametes) that an organism leaves behind in the environment.

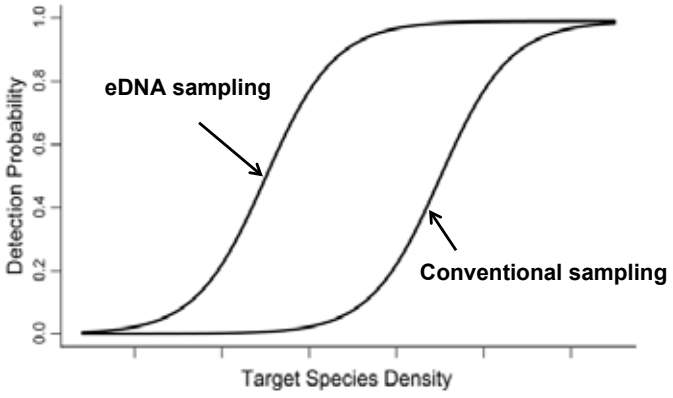

Figure 2. Hypothetical example of increased detection probability with environmental DNA (eDNA) sampling compared to conventional sampling for species at the low abundance or density.

The State of eDNA

eDNA can be collected from the water, soil, and even air, and then preserved for later analysis in the laboratory. Recent innovations (e.g., Smith-Root backpack eDNA sampler) have led to filtration and preservation of samples on-site. The state of eDNA within the environment, and the ability to successfully detect target species, is related to a combination of biotic and abiotic factors that directly influence its release and degradation. The biological and metabolic activity of an organism plays a major role in the amount of eDNA released into the environment. For example, many species display greater eDNA release rates during feeding activity. Additionally, abiotic factors (e.g., temperature and dissolved oxygen) may influence the biological activity of an organism, and thus impact the amount of eDNA released. Environmental factors also play a key role in the persistence of eDNA, with majority of degradation occurring due to the activity of microbes and extracellular enzymes in the water. Therefore, factors that influence microbial activity (e.g., temperature, pH, salinity, and dissolved oxygen) will have direct impacts on eDNA persistence. Acidic warm environments typically have high rates of eDNA degradation. Additionally, ultraviolet light can rapidly degrade DNA, and thus exposure to sunlight can impact eDNA detection. While persistence of eDNA has been found to last for several months within a laboratory setting, the length of persistence within a natural aquatic environment is more likely days to weeks.

Examples of eDNA

Due to the increased sensitivity in organism detection, some of the earliest work with eDNA focused on the detection of aquatic invasive species as they spread into new locations. The most prominent example involves the detection of invasive carps (Bighead and Silver Carp) within the Great Lakes basins, specifically within Illinois waterways and the Chicago Area Waterway System. These invasive carp have been identified as a major threat to the Great Lakes' ecosystem, and in 2009 the U.S. Army Corps of Engineers (USACE) implemented an eDNA monitoring program focused on determining the geographic extent of invasive carp within this system. Invasive carp eDNA monitoring along the Chicago Area Waterway System and throughout the Upper Mississippi River, Ohio River, and Great Lakes continues today, but now samples are processed and analyzed by the Midwest Region of the U.S. Fish and Wildlife Service (USFWS). Results of this monitoring program are made available through the USFWS (*https://www.fws.gov/midwest/Fisheries/eDNA.html*). This early employment of eDNA for the detection of invasive species has been instrumental in the development of eDNA applications for a range of invasives throughout the Great Lakes region (e.g., round goby, Eurasian ruffe, zebra and quagga mussel) and the Ohio River (e.g., snakehead).

In the past decade, eDNA projects continued to advance and now its applications are recognized as a complementary survey tool to aid in water resource management projects. Several projects have employed eDNA sampling to evaluate the success of restoring connections in riverine habitats. Following the removal of two dams on the Elwha River in Washington State, eDNA successfully documented the re-colonization of 11 fish upstream of previous dam sites, providing direct evidence of the migratory barrier elimination (*https://doi.org/10.1002/edn3.134*). In this case eDNA outperformed traditional methods which required site specific observations of the target species. Additionally, eDNA provided evidence of fish usage within a newly constructed channel passage to reduce ecological impacts of the Itaipu Hydroelectric Power Plant (2nd largest in the world) along the Paraná River between Paraguay and Brazil (*https://doi.org/10.1038/s41598-021-02593-5*). As riverine habitat restoration and monitoring becomes more common practice, the use of eDNA will no doubt be

a valuable survey alternative. eDNA has additionally been utilized to help determine species presence associated with water intake construction projects and even dam decommissioning projects. The removal of the Six Mile Dam on the Walhonding River in Coshocton County near Warsaw, Ohio, included a biological assessment of the freshwater mussel community. In tandem with a mussel conventional survey, eDNA samples were collected to assess the presence of threatened and endangered mussels (*https://www.stantec.com/en/projects/united-states-projects/s/six-mile-dam-removal-edna-native-freshwater-mussel*). eDNA analysis provided similar results to traditional methods for describing community composition along the Walhonding River, including detecting two federally-listed mussels (Figure 3), with only a fraction of the search effort. eDNA provides opportunities to expand temporal and spatial surveys beyond many of the constraints associated with conventional methods.

While not necessarily falling directly under the definition of "eDNA", the collection of water and

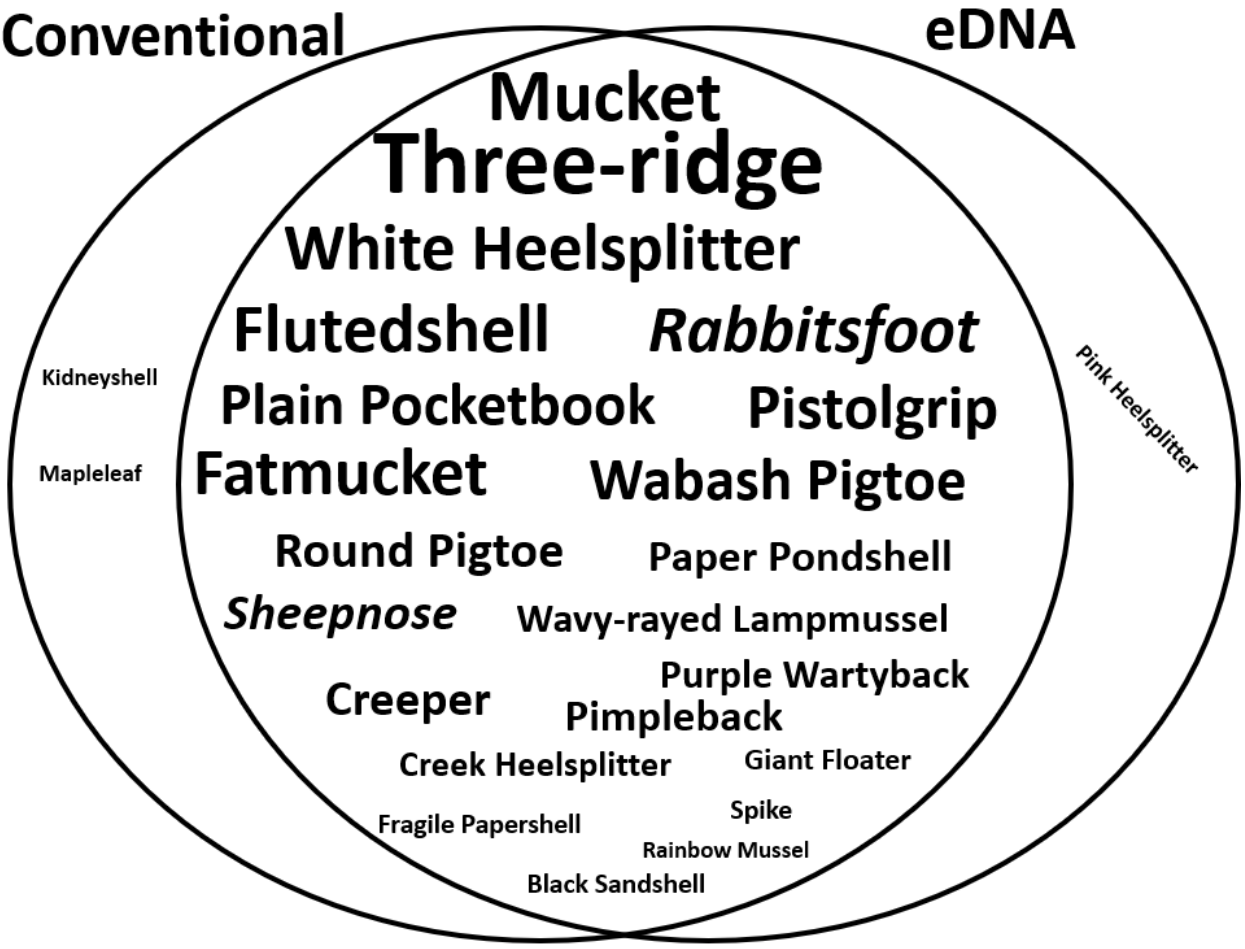

Figure 3. Detection of freshwater mussel species at the Six Mile Dam on the Walhonding River in Coshocton County near Warsaw, Ohio, with eDNA detecting two federally-listed mussels (Rabbitsfoot and Sheepnose) plus several others that were collected as single animals. Font size represents relative mussel abundance of each species found with a conventional survey.

subsequent genetic analysis provides an opportunity to detect the presence of harmful or nuisance microbial and algal communities. Anthropogenic activities and climate change have largely altered ecological communities worldwide. Eutrophication of freshwater systems by humans often leads to formation of harmful algae blooms (HABs), along with decreases in water quality, reductions in biodiversity, and increasing threats to human health. HABs throughout the western basin of Lake Erie caused by toxic *Microcystis* blooms have presented unique challenges for water intake plants. DNA analysis has become an instrumental monitoring tool for tracking and assessing the prevalence of *Microcystis* throughout spring and summer months within Lake Erie (*https://www.glerl.noaa.gov/res/HABs_and_Hypoxia/habTracker.html*). Furthermore, fecal contamination and consequently its associated pathogens is a major environmental and public health problem that is correlated with increases in waterborne disease. Identification of fecal contamination and the associated pathogens through DNA analysis provides critical information for water managers, river authorities, and public health officials. In a similar fashion, monitoring municipal wastewater for the DNA/RNA of a virus, for example COVID-19, allows for the detection of the specific virus within a population and can provide an early warning of positive and asymptomatic cases. DNA analysis of water samples is not restricted to macro-organisms, but can also provide detailed information about the microbial community.

Current Limitations of eDNA

While there are many advantages to eDNA applications, there are a few important considerations that must be recognized to effectively implement an eDNA survey. For example, eDNA can be shed at different rates across different organisms, and thus understanding the biology of the target species is crucial for appropriate implementation strategies. Additionally, eDNA might have different shedding rates across life-stages of an organism (e.g., reproduction versus hibernation), and thus eDNA concentrations are likely to vary seasonally. As mentioned previously, eDNA degradation is largely dependent upon environment-specific factors, and eDNA persistence will vary across environments. Careful consideration of these factors can help determine how recently a species was present in the environment, to avoid detecting potential "legacy eDNA". The persistence and detectability of eDNA will also be affected by the hydrology of the system, with potential downstream transport occurring in streams and rivers. Many researchers are currently focused on addressing issues related to eDNA transport and how to appropriately interpret eDNA detections. Proper sampling design, with the help of an experienced professional, can limit uncertainty regarding certain environmental variables, such as the potential transport of genetic material. Lastly, conventional biological surveys often include population and density estimates based on the abundance of an organism collected. While the quantification of eDNA has shown some promise in establishing abundance or biomass estimates, many factors influence the concentration of eDNA within the environment, and the current state of the science does not allow for reliable direct estimates.

In conclusion, eDNA is an emerging approach for detecting aquatic species (from macro to micro-organisms) and is beginning to advance management and monitoring practices. The examples provided here only begin to scratch the surface for the potential of eDNA as a survey tool. From describing community composition, to detection of federally-listed or invasive species, eDNA methodology provides complementary tools to conventional methods. As eDNA transitions from the realm of pure research to widespread application, much

work remains to optimize field and laboratory techniques. Nevertheless, the potential for eDNA to improve the characterization of aquatic biodiversity is clear, and it can considerably improve the monitoring and management of aquatic ecosystems moving towards the future.

Dr. Nate Marshall,
Environmental Scientist
nathaniel.marshall@stantec.com

An environmental scientist, Nate has experience developing and implementing environmental DNA (eDNA) methodology for improving biological assessments. His enthusiasm for innovation and biodiversity is contagious—he is always searching for new ways to assess biological communities through a collaborative approach.

Nate has a masters from the University of Texas where he aided in unionid freshwater mussel conservation by studying the interaction between host fish and unionid mussel larvae. Nate obtained his PhD from the University of Toledo, where he developed eDNA methods for the early detection of invasive dreissenids (zebra and quagga mussels) and implemented eDNA metabarcoding for the description of entire aquatic macroinvertebrate communities.

When Nate is not working, he enjoys walks with his two dogs—a husky named Yeti and a lab mix named Miggy.

Tiffin Water Pollution Control Center

by Maria DeLuca, P.E., AECOM

Reviewed by Caitlin Ruza, P.E., AECOM; Brian Benedict, AECOM; Kevin Hughes, City of Tiffin; Matthew Noelker, P.E., Peterson Construction Co.

Background

Overview

The Tiffin Water Pollution Control Center (WPCC, Plant) is located along the banks of the Sandusky River on the northern edge of the City of Tiffin, Ohio (City). The WPCC has an average dry weather flow of 4.0 MGD and serves a population of 17,963 (2010 Census) from the City of Tiffin and surrounding areas including several industrial dischargers. The City's collection system consists of areas of combined and separate sanitary sewers. As a result, during wet weather events, the WPCC and collection system receive high peak flows which historically caused bypassing and combined sewer overflows (CSOs).

The Tiffin WPCC was originally constructed and commissioned in 1956 and modified in 1968 and again in 1988. In 1968, the plant was upgraded to include secondary biological treatment with the addition of aeration tanks and final settling tanks. In 1988, the screening and grit systems were modified and the raw sewage pumping capacity was increased to reduce the amount of bypasses during wet weather. The storm water chlorine contact tank was also added in 1988. In 2015, the City completed upgrades to the headworks and aeration tank controls and equipment to allow for storm mode operation. The plant was recently upgraded in 2021 to increase the WPCC wet weather capacity from 6 MGD to 13 MGD as part of the City's overall Long Term Control Plan Update (LTCP) program.

LTCP Update

As a CSO community, in 2006, the City submitted a LTCP in accordance with the requirements of the Ohio EPA National Pollutant Discharge Elimination System (NPDES) Permit to eliminate CSOs by performing sewer separation projects throughout the City. The City began work on the separation projects; however, the cost of some projects escalated to nearly 150% of the original estimate. Additionally, all of the CSOs that were closed post-separation eventually had to be re-opened due to basement backups that continued to occur after completion of the separation work in these basins.

The City completed and submitted a LTCP Update after it was determined that implementation of the original LTCP was unaffordable and separation projects were unsuccessful at eliminating CSOs and basement backups. Several system-wide CSO control technologies were evaluated including conveyance upgrades, inflow reduction, storage, high-rate treatment and WPCC improvements. Technologies were screened, selected and evaluated for site suitability, efficiency in addressing issues, cost, feasibility, and non-monetary factors. At the WPCC, the existing condition of each process unit was evaluated to determine the useful life of operation and to identify bottlenecks that existed at the WPCC. Ohio EPA approved the LTCP Update in 2017 and the City has been making substantial progress in completing projects in the new plan. The overall LTCP Update consists of a three-phased approach over the course of a 23 year schedule and has an estimated cost of $82.4 Million. To date, the City has completed several early action projects including a 36 inch downtown interceptor sewer project and updates to headworks and aeration tank controls and equipment in addition to the WPCC Upgrades.

In 2015, improvements were made to the headworks and the aeration basins at the WPCC which were completed as Early Action Projects under the City's LTCP Update. These modifications included replacement of

1	Influent channel	**6**	Anaerobic tank	**10**	RAS pump station
2	Grit building	**7**	Blower building	**11a**	UV & post aeration building
3	Main administration building	**8**	Aeration tanks	**11b**	Post aeration tank
4	Lab building	**9a**	Final settling tanks splitter box	**12**	Electrical building
5a	Primary settling tanks splitter box	**9b**	Final settling tanks nos. 1-3	**13a**	Chlorine building (Repurposed)
5b	Primary settling tanks	**9c**	Final settling tank no. 4	**13b**	Storm chlorine contact tank (Abandoned)
5c	Sludge pump building	**9d**	Scum pit	**14a**	Anaerobic digesters
				14b	Digester control building

the coarse screens with fine screens at the headworks and installation of fine bubble diffusers and additional improvements at the aeration tanks.

The City's LTCP Update implementation schedule also includes a $13.6 Million WPCC Improvements Project to upgrade the WPCC's wet weather capacity from 6 MGD to 13 MGD. These upgrades were selected for the LTCP Update based on feasibility and estimated costs of implementation and capture performance demonstrated in the hydraulic modeling.

LTCP Update WPCC Improvements

The WPCC Upgrades planning phase began in March 2017 to evaluate several different technologies to meet or exceed the City's NPDES Permit phosphorous and

nutrient discharge limits. Biological nutrient removal upgrades included a new anaerobic tank for biological phosphorus removal with a replacement ferrous chloride feed system as backup. Other upgrades included a new final settling tank, UV disinfection, post aeration, final settling tanks splitter box, rehabilitation of three existing final settling tanks, aeration improvements, rehabilitation of two primary settling tanks, influent pumping upgrades, a new RAS pump station, and elimination of the intermediate settled sewage lift station. Design was completed in 2019 and construction began in Spring of 2020 with final completion in 2021. AECOM and the City worked with Ohio EPA to secure $14 Million in 0% loans through the WPCLF CSO Discount program.

A detailed description of treatment processes and 2021 upgrades at the WPCC are provided below. The 2015 headworks and aeration tank improvements are also included in the process descriptions.

Treatment Processes

Influent Screening and Pumping

Influent wastewater flows by gravity from a 36-inch influent sewer into a splitter box before entering the grit building. The grit building houses two mechanical screens which are designed to meet the EPA biosolids disposal regulations requiring less than 5/8" screening for land-application. Two (2) grit channels provide conventional unaerated settling and bucket and chain collection mechanisms.

The Duperon raked bar screens have ¼" openings and were sized to maximize flow in the existing 3-foot wide channels while not significantly impairing the existing grit removal system. Each screen is sized for a maximum capacity of 13 MGD assuming 25% blinding. Solids and other debris retained on the screen are lifted from the screening channel and deposited into the SPIRAC screenings compactor inlet hopper. From the inlet hopper, the solids are conveyed by a screw press which separates soft organics from undesirable solids through the Duperon washer/compactor spray wash system. The undesirable solids are compacted, dewatered, and discharged into a dumpster. Solids in the dumpster are transported off-site for landfill disposal and the organics and wash water are returned to the screening channel.

Fig 1. Duperon raked bar screen washer/compactor

Next, flow enters the influent pump station which consists of four (4) pumps that convey screened wastewater to the primary settling tanks splitter box. The influent pump station is capable of pumping 13.0 MGD with the largest pump out of service. The influent pumps are Gorman Rupp self-priming centrifugal pumps with VFD control that discharge to a common 20-inch header.

Primary Settling

Screened influent wastewater is then pumped to the primary settling tanks splitter box which splits flows between primary settling tanks no. 1 and 2 (east and west, respectively). The primary settling tanks are center-feed, peripheral outlet with Walker Process Equipment plow blade sludge collection mechanisms.

Each settling tank is equipped with skimmers that collect and direct floating material into the scum trough. Primary effluent flows to the anaerobic tank.

During the 2021 WPCC improvements, the primary settling tanks underwent major modifications including replacement of internal sludge collection equipment and raising of exterior walls to facilitate gravity flow through

the remainder of the WPCC. This allowed the settled sewage pumps at the downstream aeration tanks to be removed. Following the 2021 modifications, the hydraulic profile downstream of the Influent Pumps is controlled by open channel hydraulics and weir structures.

Figure 2 shows the west primary settling tank with raised walls complete in comparison to the east primary settling tank with its original walls.

Fig 2. West primary settling tank raised walls complete

Biological Phosphorus and Nitrogen Removal

The WPCC is classified as a five-stage Bardenpho activated sludge process and consists of an anaerobic zone installed ahead of the aerobic zone to favor the growth of phosphorus-removing bacteria for enhanced biological phosphorus removal (BPR).

Primary effluent is typically conveyed to the anaerobic tank for BPR. The tank is equipped with an AquaDDM floating mixer to maintain biological suspension of mixed liquor suspended solids without the introduction of air.

The aeration tanks consist of a total volume of 1.06 MG and are comprised of (3) tanks, each with one (1) anoxic zone and one (1) oxic zone. Each of the anoxic zones are equipped with both OTT Magnum silicone fine bubble diffusers and a Pulsed Hydraulics Inc. coarse bubble pulsed air mixing system and therefore are considered "swing" zones with dual capability to provide aerobic or anoxic conditions. The pulsed air system is designed to provide mixing without the introduction of oxygen when operating in anoxic conditions. Oxic zones are equipped with fine bubble diffuser skids. Two submersible KSB internal recycle pumps are also provided to recycle mixed liquor from the last aerobic zone to the first anoxic zone in the upstream tank.

To prevent wash-out of solids, the aeration tanks are designed to operate in step feed mode during high influent flow conditions when organic loading is typically low. Several process air valves are electric modulating and can be controlled automatically by the plant SCADA system in tandem with DO sensors. Similarly, several influent flow control gates have been motorized for automatic operation.

Fig 3. Aeration tanks with OTT Magnum fine bubble diffusers

Additionally, the WPCC is equipped with a ferrous chloride feed system which can provide chemical phosphorus removal in the event that the biological phosphorus removal processes (anaerobic tank and aeration tanks) are taken offline or are insufficient to meet total phosphorus effluent limits. The replacement ferrous

chloride system was installed during the 2021 upgrades.

Final Settling

Mixed liquor is conveyed to the final settling tanks splitter box which directs flows to final settling tank nos. 1 through 4 through a dedicated weir gate. Each of the three (3) smaller settling tanks are 50 feet in diameter and are equipped with Walker Process Equipment spiral type rake arms to collect settled sludge. Final settling tank no. 4 (80 feet in diameter) was added during the 2021 upgrades and is equipped with Walker Process Equipment suction header style sludge collection. Skimmers convey floating material outward into the scum trough, where scum flows by gravity to a dedicated scum pit. Secondary effluent flows to the UV and Post Aeration Building. Stamford baffles are installed in all final settling tank to aid in solids settling.

Fig 4. Final splitter tank no. 4

Return Activated Sludge (RAS) from each of the final settling tank is conveyed to the RAS pump station. During the 2021 upgrades, the existing RAS pump station was demolished and a new building was constructed to house four (4) new Gorman Rupp self-priming centrifugal pumps with VFD control. One (1) pump is dedicated to each final settling tank with a dedicated flowmeter for optimum RAS control. The RAS pumps are used for RAS and WAS pumping as well as tank draining. The plant also has the ability to direct RAS to the anaerobic tank or aeration tanks during step feed operations. WAS can be directed to the primary settling tank splitter box for co-settling in the primary settling tanks or to the digesters.

Fig 5. RAS pump station

Disinfection and Post-Aeration

Secondary effluent enters the UV and post aeration building through a 36-inch pipe. Prior to the 2021 upgrades, the plant utilized chlorine for disinfection and a new building was constructed for the UV and post aeration processes. The new UV disinfection system is a Trojan Signa UV System and consists of a 4-ft wide channel with two (2) UV banks, sixteen (16) lamps per bank and a channel bypass.

Fig 6. Trojan UV disinfection system

Plant Profile

Disinfected effluent flows into the post-aeration tank over a series of finger weirs and is aerated with OTT Magnum fine bubble diffusers. The plant's non-potable water system is also housed in the UV and post aeration building and draws disinfected effluent from the UV effluent channel for conveyance throughout the plant and for tank cleaning.

Effluent

During the 2021 Upgrades, a new outfall was constructed that conveys aerated effluent flows through a 36-in effluent pipe to the Sandusky River. System hydraulics were developed to allow gravity discharge to the river at a peak flow of 13 MGD when the river level at the WPCC outfall is equivalent to or less than the 100-yr flood elevation (717 feet NAVD88).

Performance

The LTCP WPCC Upgrades were proven to be successful as supported by plant nutrient discharge data. Effluent total phosphorus (TP) data following commissioning of the anaerobic tank shows TP values consistently below the average monthly NPDES limit of 1.5 mg/L while using 35% less ferrous chloride coagulant, proving high performance of the biological phosphorus removal system (Aeration tanks) as a stand-alone phosphorus treatment process. Average monthly effluent TP data is summarized below.

Date	WWTP Effluent TP (mg/L)
1/2021	0.45
2/2021	0.40
3/2021	0.46
4/2021	0.48
5/2021	0.56
6/2021	0.57
7/2021	0.22
8/2021	0.49
9/2021	0.52
10/2021	0.67

Striving for Equity at the Source

Water workforce builds visibly solid communities

by Mariah Walters Orose

Originally appeared in the December 2021 issue of Water Environment & Technology magazine. Reprinted with permission from the Water Environment Federation. All rights reserved.

Changing the water community begins with strong, diverse leaders. In the WEFTEC Live Studio, Laura Schwartz explored the personal side of water by looking at how top leaders' experiences mold the community. Several water sector leaders sounded off about their experiences.

Leadership Playbook

Kari Steele, Commissioner at the Metropolitan Water Reclamation District of Greater Chicago (MWRD) expressed how a person's journey influences their leadership style. She began her career at the Jardine Water Purification Plant in Chicago as a water chemist and MWRD as a water sampler and lab technician. That experience shapes how she leads people today.

"I relate to my staff," Steele said. "I know how it is to feel like you're unheard or no one really cares about what you have going on at home."

David Gadis, CEO and General Manager of DC Water, also shared how lived experience affects leadership. He noted he is a third-generation water worker, and he has seen many changes firsthand.

"My grandfather started in the business in 1932. My dad started in the business in 1962, and I started in the business in 1999," he said. "My father, when he returned from work on a day-to-day basis, he was dirty and had mud and all kinds of things on him. It was because they didn't have a locker room for him to go to. It was whites only. That was the era I grew up in."

Now, Gadis is in a roll to effect significant change.

"One of the first things I did when I came to DC Water was I created a leadership team that looked like the community, that looked like our employees," Gadis said. "We're in Washington, D.C., formerly known as 'The Chocolate City,' and 75% our employees are people of color. To have an executive team that is all white males — that's not the way it should work."

His actions to have leadership reflect the workforce and community served, he said, are where diversity, equity, and inclusion start.

"My job is to level the playing field," he said.

Gadis has instituted a leadership culture around his own set of three P's: people, place, and pay. He said he aims to match skills and talent among his people, provide a place they want to come to, and pay everyone similarly.

Passion and Participation

Angela Charles, Director of Charlotte Water (North Carolina), shared another key attribute: Passion.

"You have to be passionate about what you do," Charles said. "The water industry is just so wide, and there's so many different careers. That's why I always tell new folks: 'Discover your niche. Nurture that niche. Work in that niche."

Charles began her career in stormwater, in uniform. She advanced throughout her career, she said, by remaining open to new assignments.

"I had built my career on being an expert in water distribution," she said. "When wastewater collection entered the picture, that was new assignment."

She now tells employees hoping to advance their career to accept new assignments and perform well in those new spots.

She relies on her journey to help guide new employees, telling them "If I can do it, you can do it."

One final essential attribute came from Pam Elardo, Deputy Commissioner, Bureau of Wastewater Treatment at New York City Department of Environmental Protection: Participation.

For Elardo, building workforce participation — where people can be wholly present and comfortable contributing — is paramount to the success of community equity.

"I don't discriminate," she said. "I take wastewater from everybody! We supply water to everybody."

She said, being a diverse workforce means bringing all aspects of the person to every situation all the time.

"If we have to change who we are, we can never feel comfortable fully contributing," she said, noting that race, sexual orientation, and gender identification play significant roles in one's ability to fit in. The workforce, Elardo said, needs to continue challenging itself to accept all types of people.

David Gadis, CEO and General Manager of DC Water, joined Laura Schwartz in the WEFTEC Live Studio for a discussion on diversity, equity, and inclusion in the water sector. These themes stretched throughout WEFTEC 2021.
Photo credit: Oscar & Associates

"It's an evolution," she said of culture changes. "It seems like stuff happens overnight, but it is over decades. When you think of the Civil Rights Movement, the Women's Movement, the Gay Liberation Movement, and more recently, the Black Lives Matter Movement, these are big social changes. And why it's different is because it permeates a consciousness. Maybe there's resistance from older generations, but when younger generations grow up in this environment, they get it quicker — and they are more open to change."

Noticeable Change

Gadis said his employees notice the changes he is making. While at WEFTEC, he hosted a dinner for all DC Water employees in attendance. It is the first time DC Water has conducted such an event at WEFTEC, and one employee made sure to mention that to him.

For Elardo, social evolution has hit home.

"Speaking for the queer community, I never imagined I'd be able to get married," she said. "I grew up in a time where people in my community were 'going to destroy civilization,' 'were bad for children.' We should never be allowed to get married. I heard it all, and I never expected I would be able to participate fully as a citizen of the United States — and get married! I just never thought that would happen. And then it did."

Elardo noted that while some people still resist change, "We're trending in a good direction."

Steele mentioned her early open-door policy and workforce advocacy pays off.

"I get emails often from staff: 'Thank you for doing this' or 'Thank you for listening," she said.

Mariah Walters Orose is the Managing Editor of Water Environment & Technology. She can be reached at morose@wef.org.

Acting on Conscious Decisions

Buffalo is New York state's second largest city. The U.S.-Canada border city boasts all the diversity that comes with a metropolitan area.

According to the most recent data available from the U.S. Census Bureau American Community Survey, the city is about 43% white, 37% Black, 12% Hispanic or Latinx, and 6% Asian.

However, in the early 2000s, the Buffalo Sewer Authority noticed its workforce was not-so-diverse.

"In 2005, only 5% of Buffalo Sewer Authority employees were Black, Indigenous, and People of Color (or BIPOC)," said Oluwole McFoy, P.E., General Manager of the authority. Even more noteworthy, McFoy noted, was that there were zero BIPOC in executive positions.

Buffalo Sewer Authority made a conscious decision to build a stronger workforce, one that looks more like the population it serves.

In 2020, the authority had boosted its total BIPOC representation to 37% in the overall workforce and 50% among executives.

McFoy presented at the WEFTEC 2021 Workshop, Transforming into Communities of the Future through Water Equity on Sunday, October 17. One of his key messages was that people are the sector and change from within can be a powerful driver.

Simple steps to create a safety program at your facility

by Nathan W. Coey, Safety Co-Chair

Greetings my dear Water Warriors, your strength and resilience is felt each day! Keep up that great work!

First off, don't forget to share your successful safety program at your facility with other section members. The deadline for the OWEA Safety Awards is April 15, so don't wait any longer to brag about your team. Each applicant will, at minimum, receive a certification for their program. The best in each category will receive an award for their great efforts. The best of the best will be nominated for the WEF Burke Award. It's a "prestigious award" that will affirm the great efforts in safety.

The process is easy, please visit *https://ohiowea.org/safety.php* to complete the form.

If you really want to be one of the safety rock stars from Coolville High and want an award but don't have a sweet program at your place yet, there are some great tools to get this off the ground.

The first stop is to check with your local Ohio BWC representative. Your place of work has contacts with these folks and they can share the requirements of your safety program. Public employers have an additional resource known as "Public Employment Risk Reduction Program" (PERRP) that ensures the safety requirements and programs. This group can provide you tools and resources to create a solid written safety manual. Please visit *https://info.bwc.ohio.gov/wps/portal/gov/bwc/for-employers/safety-and-training/safety-consultations/perrp* for helpful information and tools to get rocking on a program. There is online training available, safety videos, and safety grant opportunities for equipment to help you work safe, not hurt. Here is the link to program requirements: *https://www.bwc.ohio.gov/downloads/blankpdf/trainingchecklist.pdf*

If your safety program is on a light budget because you are purchasing all the PPE and safety gear to ensure folks go home every day, I have another helpful resource. Ohio BWC has free safety talk topics. These work great to be the focus of your first safety meetings while you are building your own program. This tool provides discussion points and group activities. Topics range from Defensive Driving to Contractor Safety. The link to the two dozen (one for every pay period) topics is located here *https://info.bwc.ohio.gov/wps/portal/gov/bwc/for-employers/safety-and-training/safety-video-library/safety-talks*

This is our government tax dollars hard at work, please take advantage of these resources!

There are some great professional hands on safety trainers for confined space training. This is a great tool to practice scenarios. Share the cost with another department or facility. If your local Fire Department does not provide AED, CPR and First Aid training you can always look to the folks at America Red Cross. Take advantage of any hands on training programs, not only are they fun, it's a great team building adventure.

Safety Hall of Famers have another option for solid safety training. While in person is always fun, it is not always practical (#covid). For those that have shift

workers it can be a challenge to get everyone together. Wooster Water Utilities has networked with 360Water for online safety courses. This Ohio company provides safety and online operator training modules, tailored to your needs. If you have the world's only manual hand crank belt press, the staff can work with you to create a general training module and a safety course specific to that unit. This option is super helpful to ensure we are all taking the same safety classes. Each year we add ten different safety topics to the list and a calendar for completion through the year. Not only can folks get some contact hours for this (safety and OM modules) it serves well as program documentation and it's an easy way to make friends with your HR department. Working with 360Water is money well spent to ensure a focus on safety and operator training options if the world is shut down and in person contact hour accumulation is at a halt. For more information on this program please visit *https://www.360water.com/*

If the process of building your safety program has hit a wall, please feel free to contact me. I am more than willing to help you and share any and all documents and templates I have created. Don't waste time reinventing the wheel for a vehicle inspection form or HazCom form when someone else took the time to make the document.

Give me a shout anytime if you want to talk safety, operations, and this thing called life. It's always great to have some friends to count on, to share life's ups and downs, along with folks to laugh at you while in a simulator.

Until next time safety, peace, and Godspeed Water Warriors!

Nathan W. Coey
City of Wooster
Utilities Manager
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Say hello to Wooster WRRF Operator Blake Judson harnessed up!

Delegates Out and About...

Akron's New BioCEPT Facility

by Mary Ann Driscoll, Northeast Delegate

Mary Ann Driscoll, Northeast Section Delegate, attended the Press Conference at the Akron Water Reclamation Facility (WRF) on January 13, 2022 where Akron Mayor Dan Horrigan and City officials announced the completion of the Biologically Chemically Enhanced Primary Treatment (BioCEPT) facility located within the WRF at 2460 Akron Peninsula Rd. This project is one of the 26 major projects in the City's consent decree under the Akron Waterways Renewed! (AWR!) program.

The BioCEPT facility achieved full operation, officially, on December 27, 2021 ahead of the mandated completion date. This facility has the ability to treat an additional 60 million gallons of wastewater per day and allows the plant to provide full biological secondary treatment of wastewater for up to 280 million gallons per day. With the completion of the BioCEPT project, Akron is one of the few combined sewer wastewater treatment facilities in Ohio that provides biological treatment of 100% of the flow it receives.

Through the Integrated Planning process and two amendments to the Consent Decree, Akron was able to revise the project schedule and change to a more suitable technology. With these revisions, the BioCEPT project meets the required performance standard with less complicated operation, lower maintenance and capital cost, and involves less chemical use. Financial savings were made possible through a combined effort of Ohio EPA and the City working together to use innovative financial measures.

"I'm incredibly pleased that we were able to work with Ohio EPA to complete this project for less than the original planning cost, in a timely manner, and with no reduction to the ecological benefits in the process," Mayor Dan Horrigan said.

Akron's BioCEPT Facility

BioCEPT is a high rate, wet weather treatment process where biological microorganisms are used to stabilize untreated wet-weather wastewater. After biological treatment, chemicals are added to provide enhanced settling of the wastewater. The excess flows treated by the BioCEPT process are combined with the conventionally treated wastewater prior to disinfection and released to the Cuyahoga River to meet EPA requirements.

As part of the project, the City of Akron will conduct an extensive demonstration study as required by the U.S. EPA. That study is set to begin in May. Results from this study may be used to expand treatment capacities at other wastewater treatment plants nationwide.

"The mission of Akron Waterways Renewed is to invest in Akron's environmental future by building infrastructure for the next century that will protect public health and maintain water of the highest quality. We aim to do this in the most cost-effective manner, while creating local jobs," Mayor Horrigan continued. "The completion of this facility helps us to continue to further that mission for the citizens of Akron and the surrounding communities."

For more information about BioCEPT, please visit: *https://www.akronwaterwaysrenewed.com/*

Steve Baytos, Akron WRF Superintendent and current Secretary for the Northeast Section Executive Committee, led a tour of the new facility following the press conference.

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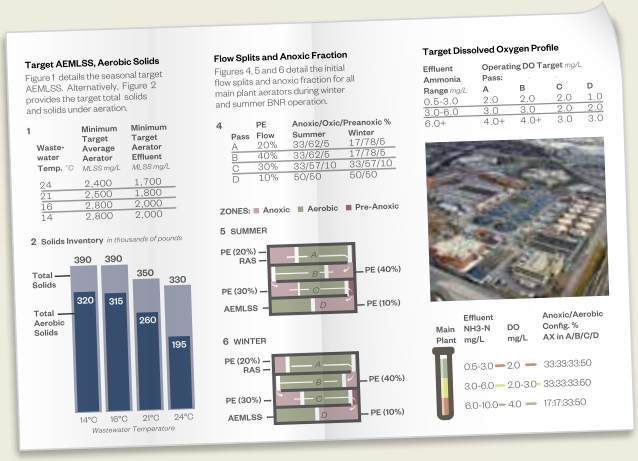

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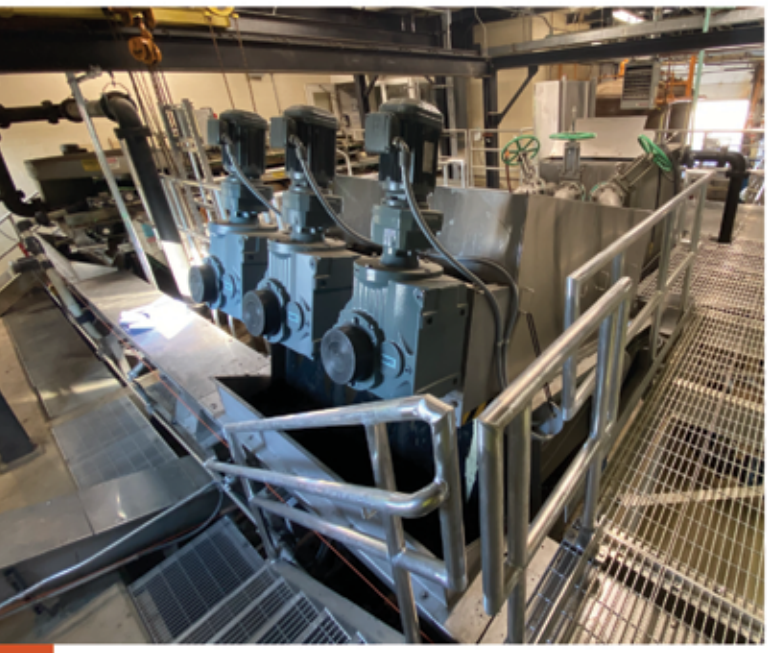

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WEF Utility Partnership Program

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 33 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

Allen County Sanitary Department
Avon Lake Regional Water
Butler County Water and Sewer
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 London
City of Marietta
City of Mason
City of Newark
City of Oberlin
City of Painesville
City of Solon
City of Steubenville
City of Toledo
City of Troy Ohio
City of Twinsburg
City of Urbana
City of Warren
Clermont County Sewer District
Delaware County Regional Sewer District
Fairfield County
Fremont Water Reclamation Center
Greene County Sanitary Engineering Dept
Lake County Dept. of Utilities
Metropolitan Sewer District of Greater Cincinnati
Montgomery County Environmental Services
Northeast Ohio Regional Sewer District

Office Offerings

When I wrote this column a year ago, I was sure we would be on the tail end of the pandemic. As most everyone can agree, that simply isn't the case. We are in a much better position than a year ago, with readily available vaccines and treatments, but we are still in the thick of COVID-19.

So what's next? Next, in my opinion, is we learn to live with the virus - as safely as possible. What does that mean? Personally, it means I will live my life, vaccinated, boosted, and masked as needed. For OWEA, it means back to in person learning – safely. We will continue to meet our members where they are – whether that is being ready and able to learn in person, or continuing to learn online, or for many – a mixture of both.

It also means we are continuing to move forward as an organization. I am proud to announce the OWEA office has relocated to 1505 Bethel Rd., Ste. 200, Columbus, Ohio 43220.

This is a HUGE step for OWEA as our new space will allow for smaller in house trainings and meetings. This move is a testament to how much your Executive Committee believes in the future of OWEA. They were willing to make this move during a pandemic. As a governing body they are looking to the future of YOUR association. In the coming year, OWEA will be working through the details of offering operator training to prepare those wanting to become licensed operators. There are many moving pieces and parts to this endeavor but your governing board knew we would need to have a facility were we could have small trainings and felt this new space could provide that. OWEA recognizes the need for workforce development and the future of our industry depends on training and certifying new operators.

Not only have we physically moved, but we are also moving forward with many elements of OWEA in 2022. We continue to build on our relationship with the Ohio EPA and will resume regular meetings to work together on regulatory solutions.

We have also moved our committees forward. Your President, Jason Tincu, made a commitment to really examine our committees and determine if they are still meeting organizational needs or if we needed to make some adjustments. One such change is the new Finance Committee. This committee will be chaired by former OWEA President Jamie Gellner. Members will include several key members of the Executive Committee along with Tom Fishbaugh, an OWEA Past President.

Membership is another area we are closely examining and determining how we can best retain our current members and recruit new ones. We want wastewater professionals to think of OWEA as a must for their career. We will be working towards fine tuning our membership plans this year.

While I firmly believe I won't be mentioning COVID this time next year (fingers crossed), I do believe YOUR association has weathered the pandemic very well. Your leadership has their eyes on the future while honoring your history. It's an exciting time to be part of the Ohio Water Environment Association – we are on the move!

Dawn Larsen, CAE,
Executive Administrator

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How We Mark Time

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

Introduction

We can all agree that last two years has been anything but normal. We find ourselves again at the beginning of a New Year (2022) and the promise of a fresh start.

Unfortunately, the pandemic remains with us. The good news is seeing how that society has learned to cope, adapt, and move on from here. The ability to adapt and move forward without fear is the story that is worth telling.

Marking Time

Marking time is the way we organize our lives, set goals, and define and memorial events in our lives. Every event includes a time component. We have daily schedules, projects schedules, maintenance schedules, consent decrees, NPDES permits, and construction schedules. We measure time with clocks, calendars, and the change of seasons. Time is an invisible fabric that connects us to the past and carries us into the future. It is like a caravan of passing generations described in the poem Thanatopisis by William Cullen Bryant (1794-1878). Physical manifestations of age include growing children, trees, and our own aging faces in the mirror and photos.

Comparison of the Two Calendars

Since the year 1752 we have been following the Gregorian Calendar system, which was a minor improvement or tweak over the original Julian Calendar used between 46 BC and 1752.

According to Wikipedia, the differences between the two calendars is minimal. The Julian calendar was fundamentally excellent in accuracy in describing the mathematical movement around our planet around the sun. It was issued by Roman Emperor Julius Caesar in 46 BC and was developed by several Greek mathematicians and astronomers. The change to the Gregorian system was promulgated by Pope Gregory XIII in in 1582 to correct against the calendar's minor drifts in the solar year cumulative over sixteen centuries. The Gregorian calendar was implemented in Europe in 1582 but not Great Britain. The British Empire adopted the change in 1750 through the New Style Act of 1750, which included the future United States.

The implementation of the Act was not straightforward. The Act determined that the next year 1751 was a short year with only 282 days from March 25th (New Year's in the Julian calendar) to Decembers 31st. Then, the year 1752 began on January 1st as it does now.

To correct a final problem of aligning the calendar in use in England with that in use in Europe eleven days was deleted from the year in the month of September 1752. That year, the progression was Wednesday, September 2nd, 1752, to Thursday September 14th, 1752. So, in summary, these eleven days in September 1752 never existed.

This change was met with public outcry. Many people at the time complained that they were playing

God and being cheated out of eleven days of their lives. After a while, people forgot about it and live went on as normal. Some people continued to use the Old System as it was called and abbreviated as O. S. For example, the gravesite for Thomas Jefferson stated that he was born on April 2, 1743, O. S. When referenced in modern document, his birthdate is shown as April 13, 1743.

A New Year: A New Challenge

New Years resolutions get a bad rap. Many times, they are unrealistic and broken in the first week of January. The best resolutions are realistic and flexible and small steps in one's journey in life. Small and simple spells success.

A good resolution for 2022 is to take a course or to obtain an operator's license to position oneself for career progression. Test, certifications, licenses, and continuing education are part of our present business culture and will play a dividend in the future. Do not let fear of test taking or past scholastic performance frighten you. OWEA is there to help you achieve this goal for yourself. With the foreseeable end of the pandemic, I hope that our sections will resume operator training sessions for those seeking to take one of the operator tests.

Another good resolution for the New Year is to say "yes" to opportunity. While any decision requires careful consideration, the practice of saying "yes" more than "no" is something that has served me well. In my current position or with OWEA or WEF, I was always quick to raise my hand. New opportunities can be small or large. It does not matter. Positive changes help create new adventures and be a bridge to others. One of the things I enjoyed the most in this organization is talking to colleagues about their careers and listening to their journeys. They are all different.

If you have already done so, please consider joining a committee or section with OWEA. I joined the Southeast Section Board at age 39 in 1996, and I am still on the OWEA Board today. Please note that I was not a very young man or Young Professional (YP). I was past the cut off age for YPs of 35. My journey started off as a request by the Director of our Water Division to ask if I was interested. Saying "yes" to OWEA was one of the best decisions of my life, and I never regretted it!

Another Year, A New OWEA Office!

I am excited that OWEA moved into a new office, in Columbus on Bethel Road. This is part of our continued evolution to provide a more efficient work setting for our staff, and more efficient meeting arrangements for Board Meetings, and meet challenges of the future. It also has the potential to offer room for small classes. Dawn Larsen speaks more about this in her column.

I remember OWEA being run primarily from the late Larry Moon's and the Mergel's house and a few other places along the way to where we are now. Make no mistake; the previous office, which had been our headquarters since 2009 had served our needs well. But things evolve based on our style of working, and it is no longer efficient for us based on the direction we wish to evolve into.

I wish for you to have a happy healthy, safe and prosperous new year!

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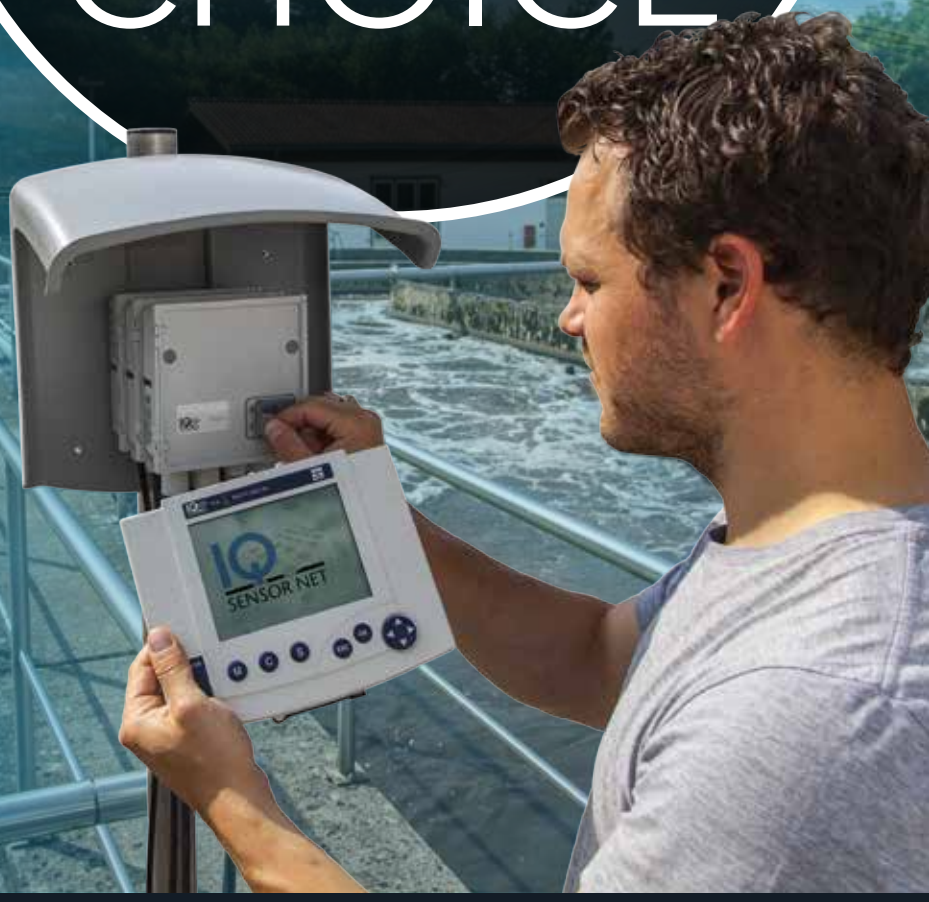

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SEOWEA

Tiffany Maag, President

First and foremost we at the Southeast Section hope everyone had a wonderful holiday season spent with friends and family and are ready to embrace the New Year. I for one am certainly looking forward to what is to come in 2022 and hopeful that we can soon have the worst of the pandemic in our rearview mirror. Although 2021 was a trying year, our Section Executive Committee made the best of it and tried to hold as many in-person events as possible while keeping health and safety at the forefront. Overall we felt that our efforts were successful and we plan to continue with the same goal for this year.

Upcoming Events

Our Section EC has been busy over the past several months planning multiple in-person events to be held throughout 2022. The first is our Industrial Pretreatment Meeting which was held at State Industrial in Hebron, Ohio. The meeting included morning tours of State Industrial's full pretreatment process as well as several presentations after the lunch business meeting to maximize contact hours. The business meeting and presentations were held at the Hebron American Legion.

Additionally, we plan to hold our April Plant Operations Meeting in the Chillicothe/Ross County area. This meeting will focus on plant tours, with up to four treatment plants in the area scheduled for a full day of tours. This has always been a popular meeting for our section members so we wanted to continue with this format to maximize interest in attending.

Finally, we will be holding our annual May Awards Meeting in Delaware County. This meeting will include multiple plant tours and several presentations. The business meeting and lunch will be held at the Willis Building in Delaware, Ohio. Look for more information and dates to be coming in the near future. We hope to see many of you there!

Awards Nominations

We are looking for nominations for our 2022 Section Awards! There are so many wastewater professionals in our section who are worthy of an award and we encourage all of you to please nominate those folks who deserve to be recognized for their efforts. Several emails will be coming out with instructions on how to provide a nomination or feel free to contact myself or Amy Eberhardt with your nominations (*amy.eberhardt@arcadis-us.com*).

Opportunities

We are in need of a couple volunteers to step up and judge for this year's Science Fair for the Southeast Section. This is a great way to get involved in the section and provide excellent opportunities for our area youth at the same time.

We are also looking for a Watershed Article for the next issue of the Buckeye Bulletin so feel free to reach out if you have a project that would be a good fit. There are many other areas where you can get involved so if there is any interest in helping lead our organization feel free to reach out to me at any time and we can see where the best fit may be that aligns with your interests.

In closing, I would like to thank everyone that has helped further our section over the past year and I wish you all a great start to 2022!

Tiffany Maag
tmaag@co.delaware.oh.us

SWOWEA

Dave Reinker, President

Happy New Year! Welcome to the first update for 2022 from the Southwest Section. The Christmas decorations are all put away, and hopefully all New Year's Resolutions are still being kept! As 2022 is started, it is hard not to look back at where 2021 took us, including a vaccination that gave us the opportunity to meet in person again. OWEA and AWWA forged ahead in uncertainty planning One Water, and not to disappoint, water and wastewater professionals met up in Cincinnati for a successful One Water conference. The plant operations committee provided our section's first in person event in August, and we have kept it going. September provided the first in person Section meeting, and then in December, the SWOWEA Executive Committee hosted the Past Presidents Luncheon at the Manor House in Mason, Ohio with 16 past presidents attending. It was a great time and I look forward to joining all of them at the end of 2022 when I am past president. The Industrial Waste Committee just finished up their wonderful seminar on January 27, providing six contact hours for our members. And we are off and running into 2022.

Happenings

Looking forward and hopefully the pesky groundhog did not see his shadow, spring will be here before we know it. I am sure everyone has noticed how the days are getting longer since the passing of the winter solstice, and even though the sun shines longer each day we still are waiting for the true warmth. For our section it means a meeting in March hosted by our Collections Committee. Plans are still being finalized but it will be a tour of Lick Run Facility hosted by MSDGC. Watch for updates sent out via email and the WAVE. Please be sure to also check the website at *https://southwestowea.org/* .

Future Events

The SWOWEA committees are planning their events for 2022 and updates will be provided on the website as they are confirmed.

Help Needed

We are in need of a Chair for the Young Professionals (YP) Committee. If you know of someone that would be interested, or you are interested in the position (under 35 is a requirement), please contact me, *dave.reinker@cityofmiamisburg.com*. Finally, get involved. We are always looking members to join our different committees in our organization, Collections, Plant Operations, Lab Analysts, Education, etc. You will make new friends, learn, grow, and help the Southwest remain the best!

Think Spring!

David Reinker
SWOWEA President

NWOWEA

Tony Hintze, President

Happy New Year from the Northwest Section!! Much like last New Year, I think it's safe to say that the majority of us are happy to leave 2021 behind. With the New Year finally here, two things seem to always stand out; New Year's resolutions and New Year's quotes.

As for myself, I've never been a big fan of New Year's resolutions. I believe that if you are ready to make a change in your life, you will do it no matter what time of year it is.

However, over the years I have heard a few great, motivational New Year's quotes that have always stuck with me. In my opinion they have big meaning and they can apply to all aspects of your life.

Here are three of my favorites: "We all get the exact same 365 days. The only difference is what we do with them." And "Never doubt that a small group of people can change the world." Then finally "Attitude is a choice. Happiness is a choice. Optimism is a choice. Kindness is a choice. Giving is a choice. Respect is a choice. Whatever choice you make, makes you. Choose wisely." I think, especially in today's world, that last one speaks the loudest and has the most impact.

As some of you may have heard, in early December Gary Bauer accepted a position with a new company. Unfortunately, Gary has decided to take a step back from OWEA and resign as the Northwest Delegate. Over the years Gary has become a valuable and well respected member of our team. On behalf of everyone here in the Northwest Section, I'd like to thank him for all the time and knowledge that he's shared during his involvement with OWEA and wish him good luck!

At our last Executive Committee (EC) Meeting, the EC unanimously voted for Doug Borkosky, with Baker and Associates, to fill the vacant Northwest Delegate position for the remainder of the term. Many of you know Doug and will agree with me when I say that Doug will do an amazing job representing the Northwest Section as delegate.

Recent Events

In November, we met up in the City of Tiffin for our section meeting. A big Thank You to all the staff at the Tiffin Water Pollution Control Center (WPCC) for hosting a great meeting. In the morning we had the opportunity to tour the recently upgraded Tiffin WPCC and also tour Heidelberg's

National Center for Water Quality Research. At Heidelberg, students were able to ask water professionals about what we do and job opportunities in our field. Between tours, attendees had a chance to dust off their networking skills and catch up with friends. After a delicious lunch, we had two excellent presentations about The Heidelberg Tributary Loading Program and Current Trends in Non-Point Source Nutrient Loading and Tiffin WPCC Upgrades Project: Planning, Design, & Construction.

Upcoming Events

Section Meetings for March and May are currently being organized. We are excited to announce that we are in the planning stages of the Northwest Section Past President Luncheon. This yearly event has not taken place for some time due to COVID. We hope to get information out soon, so keep an eye out. As always, anyone who is interested in hosting a Section Meeting or speaking on a topic please feel free to reach out.

I would like to leave you with one final quote: "Life begins at the end of your comfort zone." If you'd like to get out of your comfort zone, then you should get involved with OWEA. If you are interested in getting involved, be sure to reach out to any of us on the EC. OWEA is an amazing group of water professionals, making a difference in our world, one drop at a time.

Tony Hintze, *thintze@fremontohio.org*

Photos from November 17, 2021 Section Meeting

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

CONTACT

OHIO WATER ENVIRONMENT ASSOCIATION

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Certification Committee

by Kathy Beckett, Certification Chair

Computer based testing for Wastewater Laboratory Analyst and Industrial Waste Inspector (Pretreatment) certification examinations are available by applying online at OWEA *https://www.ohiowea.org/certification.php*. Once approved you will receive an email from PSI testing centers to schedule your exam at a PSI testing center located near you. The new program has already proved successful and allows those who meet the eligibility requirements to expedite testing at their convenience.

Some of the most common questions I receive are about eligibility to test and study resources. Many of these questions are answered on the OWEA Certification page (link listed above). Please read over the information and FAQs on the page. If you still have questions, feel free to reach out to me and I will be happy to assist you.

OWEA Wastewater Laboratory Analyst Certification renewals for the 2022-2023 renewal cycle were due by January 31, 2022. You can still renew after this date but will pay $95 for members and $105 for non-members. Please be sure OWEA has your most current email address. You can update your contact information at the link provided above.

I would like to congratulate the following individuals for passing the OWEA Wastewater Laboratory Analyst examinations 4th quarter 2021.

October 2021

Ralph Rabish

Wastewater Laboratory Analyst Class I

December 2021

Matthew Turosky

Wastewater Laboratory Analyst Class I

Ralph Rabish

Wastewater Laboratory Analyst Class II

Please feel free to reach out to me if you have any questions.

kmrish@columbus.gov

Laboratory Analysis Update

by Melodi Clark and Tony Hintze,

Laboratory Analyst Committee Co-Chairs

Happy New Year from your state lab co-chairs Tony and Melodi.

We hope your new year has started off great! We are looking at holding in person trainings this year. We are still trying to complete the training program for our lab analyst trainings we have offered in the past.

We are also looking for lab profiles that will be featured in our Buckeye Bulletin, so if you would like to see your lab featured, please reach out to Tony or myself.

We are always looking for speakers for different events throughout the year, so again, please reach out if you have a topic or paper you would like to present. We hope to see everyone really soon.

Laboratory Analysis Committee

Co-State Chair & SE Chair
Melodi Clark
MLClark@columbus.gov

Co-State Chair & NW Co-Chair
Anthony Hintze
tjhintze@gmail.com

SW Co-Chair
Jim Davis
DavisJi@mcohio.org

NE Co-Chair
Nicole Erkkila
nerkkila@lakecountyohio.gov

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

NE Co-Chair
Tom Zocolo
tzocolo@akronohio.gov

NW Co-Chair
Terri Brenner
tbrenner@ci.perrysburg.oh.us

Committee Mission Statement

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

Utility Enhancement Committee

by Jeffrey Duke and Doug Baldessari, Utility Enhancement Co-Chairs

Greetings to all from the Utility Enhancement Committee! We hope your 2022 will be a safe, healthy and successful as you continue to provide the great services needed to protect our valuable water resources. To provide all a brief update – in 2021, the OWEA Utility Enhancement Committee was reformed, and we have been doing some planning for 2022 and would like to share the results with all of you.

Committee Mission Statement

We have drafted our mission statement to help guide us in our efforts. Our current mission statement is:

> To advance continuous improvement in utility management activities by providing engagement and learning opportunities to enhance the skills and knowledge of utility staff, leaders and stakeholders.

2022 Goals

With this mission in mind, we have identified three primary goals for 2022 which are listed below.

1. Increase Membership/Participation – increase the membership of the OWEA Utility Enhancement Committee to help develop and deliver quality programming and support ongoing committee activities.

2. Deliver Programming – develop and deliver learning opportunities to support knowledge enhancement on a variety of utility management topics.

3. Perform Outreach – perform outreach activities to increase awareness of the OWEA, the OWEA Utility Enhancement Committee, and the programming provided.

Get Involved

The committee is planning learning activities – hopefully on a quarterly basis and we will be communicating our plans and activities throughout the year via the various OWEA mechanisms (Buckeye Bulletin, Emails, Website, etc.). If you are interested in becoming involved with the committee – please do not hesitate to contact us at Doug Baldessari (*Doug.Baldessary@bakertilly.com*) or Jeffrey Duke (*dukej@neorsd.org*). All assistance is appreciated!

Collections Committee

by Afaf Musa and Dan Martin,

Collections Committee Co-Chairs

The Collections Committee is excited to roll into 2022. We are underway with our planning for the Collection Systems Seminar at Embassy Suites in Dublin on May 19th. Please join us!

We are always looking for new members, especially folks with a municipal/public background. Please reach out to our co-chairs to get involved with our dynamic, informative (and fun!) committee:

Afaf Musa
CDM Smith
MusaAB@cdmsmith.com
614.847.6858

Dan Martin
RA Consultants
dmartin@raconsultantsllc.com
513.469.6600

Top 10 Well-Known, but Misunderstood Characters

Public Education Committee Update

by Sarah Helbig, Public Education Committee Chair

There are few things worse than being misjudged. Let's talk about some well-known misunderstood characters. I was thinking recently about the most misunderstood characters in all of fiction.

Here are some suggestions from a combination of my favorites (I'll let you guess which are mine) — and inspired by a few favorites from the internet's top 10:

1. Jeanie Bueller

Listen, if your brother was the coolest kid in school (SAVE FERRIS) but nobody cared about you, you might be a little angry. Plus, I mean, the principal broke into her house when she was home alone. Can you imagine? They really should have worked together to take "Bueller" out.

2. Boo Radley

Boo is your classic, misunderstood character recluse. Most think he's a monster, but we learn he does want to reach out to people and connect. If you have no idea what I am referencing – go read "To Kill A Mockingbird." It's a classic.

3. The Hunter in Bambi

He just wanted to feed his kids, goshdarnit! And this is what bothers me: Bambi is obviously a fawn at that part of the movie but by that stage of winter he would be able to survive on his own, for the most part. He wouldn't be that small and with spots either. We were set up to hate on that hunter!

4. Jennaayyy!

Poor Jenny, she just never had a chance. Love for Forrest Gump does not come with a requirement to hate on Jenny. She's complicated but she does really love him.

5. Lotso Bear

Talk about abandonment issues. For a strawberry-scented teddy bear, Lotso from Toy Story 3 has Lotso trauma. After being accidentally left behind on a family vacation, Lotso makes the perilous journey back to his owner Daisy's home only to find he's been replaced. Ouch. While there may be no redemption for his character, at least we see where his evil streak came from.

6. The Wicked Witch of the West

She just wanted her dead sister's shoes back. I know if someone accidentally killed my sister and when I got to the scene, they were wearing her shoes, I'd look scary, too! The old, mean witch was played by a 34-year-old actress (Margaret Hamilton) while Glinda the Good witch, who was young and beautiful, was played by a 54-year-old (Billie Burke). After filming, the majority of the green witch's scenes were either edited or cut due to the fact that she would no doubt haunt the dreams of onlookers. Eeek! Poor thing!

7. ICEMAN

"Maverick, it's not your flying, it's your attitude. The enemy's dangerous, but right now you're worse. Dangerous and foolish. You may not like who's flying with you, but whose side are you on?" Maverick wasn't even supposed to go to Top Gun! Ice Man was viewed as the bad guy, but when Tom Cruise shows up and steals your trophy, there's no points for second place. The whole movie is what I call a "target-rich environment" — for being misunderstood, of course.

8. Kylo Ren

As the son of Han Solo and Princess Leia in Star Wars, there were high hopes for Kylo Ren. He was receiving Jedi training from Luke Skywalker, but Luke senses the dark side of the Force within him. In a moment of instinct, he attempts to end Kylo's life, leading him to kill Luke's remaining students and destroy his temple. His reaction may have been over the top, but Luke WAS trying to kill him. And who typically puts us in our place in life when we throw tantrums like "Crylo" Ren? Our parents! That all leaves a lot of grey area for being misunderstood.

9. Johnny Lawrence

One of the ultimate misunderstood bad guys has to be Johnny Lawrence from Karate Kid. I mean, you hate his Cobra Kai guts, but at the end of the day, Daniel came into town and stole his girlfriend. That escalated quickly. While looking back on it from that vantage point, I understand, "Strike First. Strike Hard. No Mercy," – I will never understand that red leather jacket.

10.

Now those are all well and good, but to round out the top 10 – I'd say right that at the next spot on the list of misunderstood characters I know are, quite frankly — you. As much as I hate to admit it, what is done in the wastewater industry and the outside perceptions of who "we" are – is misunderstood at best. And the tough part of this one, is that it's not even fiction. This isn't a movie that ends, and we move on to the next one. You matter and this industry matters. It's time for a change.

In the municipal circle, our work brings respect. From a personal standpoint, I am proud to share that our team provides engineering services at water and wastewater plants and systems across the tri-state. If you don't know me, I am a straight shooter, so I will be honest with you. I get irritated at the response at times. I've heard things like, "sexy work, huh?," and so many others which I am sure you are all familiar with. It's time to rewrite the script.

One of the things that lead me to accept my role as Executive Director of Marketing at Jones & Henry Engineers back in 2018 was learning about the work the team here does, how important the wastewater treatment plants really are to our region, and how vital they are to – our health, our environment, and the future we leave for generations to come for people we love. And as I have had the great opportunity to meet just some of our OWEA membership, Jones & Henry clients, and others at large — I am continually impressed. The work that is done by the members of this very organization (OWEA) is critical to life, and every life is important.

So, how do we get ourselves off that "misunderstood" list? It's something I have been asking myself since day one. So, when I was asked to consider being the OWEA State Chair for Public Education, I felt called to accept the position. However, I'm not here to solve this on my own.

I AM A REPRESENTATIVE TO HELP OUR MEMBERS COLLABORATE, FIND A VISION FOR THE FUTURE OF THIS ENDEAVOR, AND HELP STEER THE MEMBERS TO GET THERE SUCCESSFULLY.

Not a small feat, but I have met some exceptional people in this group to date who have big ideas and who are passionate about the benefits of the work we do.

I understand some prefer to 'fly under the radar' and have shared that they would rather not have the attention drawn to themselves or the work they do. It's an attitude that reflects the humble nature so many in this line of work have. There is a time and place for modesty, but there is an inherent risk to that approach also.

SOMETIMES WE DO SUCH A GREAT JOB AND EXPECT EXCELLENCE ON OUR OWN TEAMS, THAT WE BECOME INADVERTENTLY INVISIBLE. WE ARE THE INDUSTRY THAT DOES NOT EXIST UNTIL THERE IS A PROBLEM.

And now we have one.

Outside of our circle, not many people realize we need more people to enter this career field and that it is a reliable source of employment for many years to come. The jobs have meaning and are fulfilling. If you have the desire, you can grow into a leader in your community. You will have great job security and be able to support your family. You can have an immediate career path without college and be proud of the work that you do.

As I have always said about selling a product or a service, if you are not sharing a strong message, people will come up with something about it for you. And it is usually not what you had in mind. But if you aren't sharing what is happening at your plants, how much maintenance is required to operate successfully, and how strapped your current staff is – no one will know what you are doing, what you do to protect the community from, or what you do to help.

Even Johnny Lawrence from Karate Kid had the right idea when he said, "The Best Defense, is More Offense." We have to be vocal and make a move. We have to act, because when you are reacting, it is already too late. But lets' start now — together.

So what's next? This is where you come in:

1. Keep an eye out – we will be sending out a survey in the coming weeks to get your feedback. Start thinking about how we can support you. What do you need help with? Do you have another issue that educational outreach to your community could impact?

2. If you love what you do, volunteer to share your experience with us. We will be looking for people willing to participate. There may even be an opportunity to highlight your community in an upcoming Buckeye Bulletin.

3. Many of you are already doing things in your communities that are making an impact – school tours, career days, materials for high school kids. What if we could take what you have learned and share it with everyone? We want your stories of what works well and what needs to be improved.

4. Volunteer for a brainstorm. We will be reaching out to Section Leaders and asking for participation and input. We can't wait to see what we can do when we gather together.

If you made it this far – thanks for reading! This Committee is in its infancy on what we can do for our organization and our Ohio communities. Climb on board now and be part of making a difference.

If you have feedback, ideas, or want to jump on board and get involved — any insights, ideas, and support is welcome. Sarah Helbig is the Executive Director of Marketing for Jones & Henry Engineers, and can be reached at 419-344-1438 or shelbig@jheng.com

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