Ohio Water Environment Association
Volume 93:1 | Issue 1 2021

Buckeye Bulletin

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pg. 14-16

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Photos in this issue provided by:

Cover Photo - Photo courtesy of City of Fremont

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

Contact Hour Information:

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

Article Deadlines:

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

Publication Dates:

Spring, Summer, Fall, and Winter

Photo Requirements:

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

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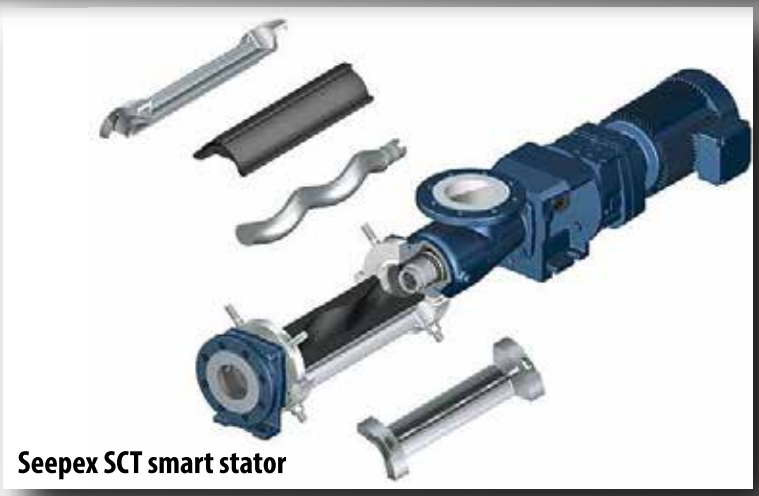
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President's Message

Michael Welke
OWEA President

The new year normally brings excitement and 2021 is no exception. Almost everyone is ready to say GOODBYE to 2020. As OWEA President, 2020 brought challenges I could have never imagined. Enough about the past though, I am ready to look to the future!

Our four sections are the backbone of our association and provide many educational opportunities for our members. While those opportunities have looked different for much of 2020 and this will continue into 2021, I am excited that each of our sections have been able to work together with the state office to bring great information to our members, close to where they live and work. All four sections are making plans to resume in-person events as soon as they can and until then, they are committed to offering online education to their members.

In addition to online section events, we are also offering a set schedule for monthly state webinars and package pricing was available for the first time ever. Even when we are all able to get back together, we know online learning is here to stay. We are confident that offering both a set schedule and flexible package options will help with our goal of being one of the strongest Member Associations in WEF.

What I am most excited about in 2021 is the getting back together with all of you. I can't wait to see and talk with you IN-PERSON. I know things will probably still look different for much of 2021, but the thought of being surrounded by my lifelong friends and colleagues gives me hope. While I didn't get to come into my presidency with all of you, I am confident I will get to pass the gavel at One Water in Cincinnati which is happening July 26-29, 2021. We might not be able to hug but I will settle for an elbow bump, even if I am wearing a mask.

While I am very much embracing 2021, I do need to pause and thank you for sticking with us through 2020. You handled the challenges of plans changing, events being cancelled, and education going mostly online. Our members and sponsors supporting us through everything helped make up for the many disappointments 2020 brought. While my presidency didn't start as planned, I couldn't have asked for a better group to be with. We are resilient and we will persevere. We are wastewater professionals and we know that the key to getting through the pandemic is to just keep going.

Upcoming Executive Committee Meeting Dates

March 9th, 2021 | May 11th, 2021 | July 25th, 2021

Mike is the Superintendent of the City of Warren Wastewater Treatment Plant, where he has worked for the past 32 years. He lives in Warren with his wife Kelly, with whom he has two children and one grandchild. Mike has served in various capacities for OWEA — from volunteer to Section Committee Chair. He worked his way through the Section Chairs and now serves as the state Safety Co-Chair as well as the OWEA 2020-2021 President.

Thank you to water professionals and all essential workers fighting on the front lines for public health.

We stand behind you.

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Water Environment Federation
the water quality people

Welcome New Members

October 2020 - December 2020

Luke Baker	Craig Campbell	Jordan Munoz	Greg Squire
Lindsay Baker	Dashielle Edwards	Drew O'Connor	Justin Telep
Dan Barr	Ronald Frazier	Warren Ollis	Jon van Dommelen
Mark Belcik	Ann Grimm	John Parrotta	Michael Verbus
Glenn Binder	Teri Jack	Joseph Schiel	Mark Verzella
Hannah Boesinger	Morgan Koelliker	Craig See	Alex Vieira
Catherine Bogan	Richard Kroeger	Dave Siegert	Joseph Weisgerber
Kathleen Bollmer	Jason Mullen	Myron Spears	Katelin Weitzel

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.

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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 will protect the community and environment from combined sewer overflows to the Ottawa River. With construction nearly complete, 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 the plan to pay for them. Stantec has a "high-tech" financial planning model that is easy to use, 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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- OWEA EC / President
- Multiple state section committees

>1,100 national staff

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

Cleveland Office

Akron Office

North Olmsted WWTP and Collection System

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

Columbus Office

Integrated Plan / Blueprint Columbus

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

Cincinnati Office

Miamisburg East Side PS and WWTP

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

Wastewater | Drinking Water | Stormwater | Reuse

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One Water

July 26-29, 2021
Cincinnati, OH

Exhibitor Registration Now Open

Attendee Registration Opens March 5, 2021

More information at onewaterohio.org

Sick of being stuck inside? Thinking about all you missed out on in 2020? Give yourself something to look forward to with One Water! Plan now to attend one of the largest gatherings of water and wastewater professionals in the Midwest!

We can't wait to see you again, safely, and IN-PERSON. We know that this year's One Water might look a bit different and we are planning for that. While we anticipate there will still be some social distancing in place, along with possible other safety precautions, we KNOW that bringing together water and wastewater professionals will be a great time. There will be informative technical sessions, exciting new products and services in the Expo Hall along with plenty of networking. This is your chance to reconnect with everyone you missed seeing in 2020.

It's been way too long since we have been together, so you won't want to miss out on all that One Water will be.

Package	Early (by 5/5/21)	Late (5/6/21 - 7/9/21)	Onsite
Full Conference			
Member	$395	$445	$495
Nonmember	$520	$570	$620
Retired[1]	$270	$320	$370
Student[2]	$100		$150
Single Day Registration			
Member	$215	$275	$305
Nonmember	$275	$335	$395
Monday Plant Tour			
Member	$50		Not Available
Nonmember	$75		
Monday Research Workshop			
Member	$125		Not Available
Nonmember	$150		
Extra Tickets			
Tuesday Meet & Greet	$100		
Reception/Gala	$50		
Guest Package[3]	$325		
Golf			
Foursome	$500		Not Available
Individual Golfer	$125		
Golf Hole Sponsor	$250		
Exhibition			
Member 10x10 Standard[4] Booth	$995	$1,145	Not Available
Nonmember 10x10 Standard[4] Booth	$1,295	$1,445	
Member 20x10 Heavy Equipment Booth	$1,695	$1,945	
Nonmember 20x10 Heavy Equipment Booth	$2,195	$2,445	
Each Additional Booth Attendee (max of 2 per 10x10 space)	$245		$325
Listing in Exhibitor Passport	$250		Not Available

[1] must not be currently employed and have retired membership status

[2] must have valid university ID

[3] cannot be in the industry

[4] premium booth space available for additional $150

Fremont Water Reclamation Center

Laboratory Profile

by Tony Hintze

Facility Name and Location:

Fremont Water Reclamation Center, Fremont, Ohio

Plant Description:

Fremont's Water Reclamation Center was completed in April 2017. The facility has an average flow of 7.6 MGD and can handle a peak flow of 24 MGD. Flow runs through an Anaerobic, Aerobic, Oxic (A2O) Biological Nutrient Removal (BNR) system, with three 856,000 gallon secondary clarifiers. From there, flow is filtered through three cloth disc filters before reaching the UV system and is finally discharged into the Sandusky River.

How many analysts/technicians work in the laboratory?

We have three. A Compliance Control Chemist, Laboratory Technician II, and when available an operator helps with the dishes, TSS and Settling.

Do you accept samples from outside sources?

We will assist the county and other municipalities when requested, but we do not accept any contract samples.

Fremont Water Reclamation Center Lab

What analysis do you perform?

CBOD/BOD, TSS, TDS, Ammonia, E.coli, Settling, SVI, TS, VTSS, VTS, Alkalinity, Volatile Acids, ORP, COD, and pH.

Other duties your laboratory is responsible for?

We collect and analyze the plant, industrial and river samples, maintain/repair the plant and industrial samplers, maintain all laboratory equipment, maintain the probes and analyzers within the process, and train plant operators and industrial personnel on proper sampling technique.

Do you use a contract laboratory?

Yes, we utilize three different contract laboratories for a variety of analyses.

Do you have any permitted industries?

We currently have 10 permitted industries that we routinely sample.

Have you assisted with any pilot studies or uncommon testing?

- IFAS pilot study 2006
- Plant Characterization Study 2013
- Influent monitoring for gene fragments of SARS-CoV-2 October 2020 - Present

Tony Hintze during a microscope demonstration

Is there anything else we should know about your Laboratory?

Our team has developed programs for area students covering topics such as; microorganisms and using a microscope, macroinvertebrates to determine stream quality, the water cycle, and water conservation and the protection of surface water from storm water runoff. To support these efforts, our facility was built with a large conference room and laboratory in order to provide a location for educational training. We have routinely given tours to local high school and college students. Our goal is to develop a program that provides hands-on activities for students. We have recently added a native fish aquarium that is filled with our effluent. Currently we just have bluegills, and this spring we hope to add some native plants and a bit more variety to the tank.

Editors Note: Please note photos included in this article were taken prior to the COVID-19 outbreak or followed all local safety guidelines in place at the time.

TOP: Educational tours given to the local community. BOTTOM: Fish aquarium filled with Fremont's effluent

Earl Bargerstock providing a laboratory tour

OHIO WATER ENVIRONMENT ASSOCIATION

2021 Collection Systems Workshop

This exciting in-person workshop will feature 6 hours of continuing education while remaining safe & socially distant. The technical program will be posted soon to *ohiowea.org*.

Register by April 30, 2021 at *ohiowea.org*. Walk-in registrations will also be available.

May 4, 2021
Embassy Suites Dublin

Sustainability

by Paul Fletcher, P.E. and Project Engineer, Jones & Henry Engineers
and Gary Fedak, P.E. and Director of Operations, Lake County Department of Utilities

What is it?

Ask most people about sustainability and chances are they'll either tell you they're not sure or mumble something about the environment. There are a number of acronyms for sustainability, including triple bottom line, the "3R"s – Reduce, Reuse, Recycle", and "the 3 P's – People, Planet and Profit".

The classic definition of sustainability has three main pillars – environmental, social and economic:

Environmental sustainability is responsibly interacting with the planet to maintain natural resources and avoid jeopardizing the ability for future generations to meet their needs.

Social sustainability is the ability of a community to develop a proactive way of managing and identifying processes and structures which not only meet its current needs but also support the ability of future generations to maintain a healthy community.

Economic sustainability is the ability of an economy to support a defined level of economic production indefinitely without negatively impacting social, environmental, and cultural aspects of a community.

This article is an introduction to how the pillars of sustainability can be applied to different areas of the water and wastewater industry.

Environmental Sustainability

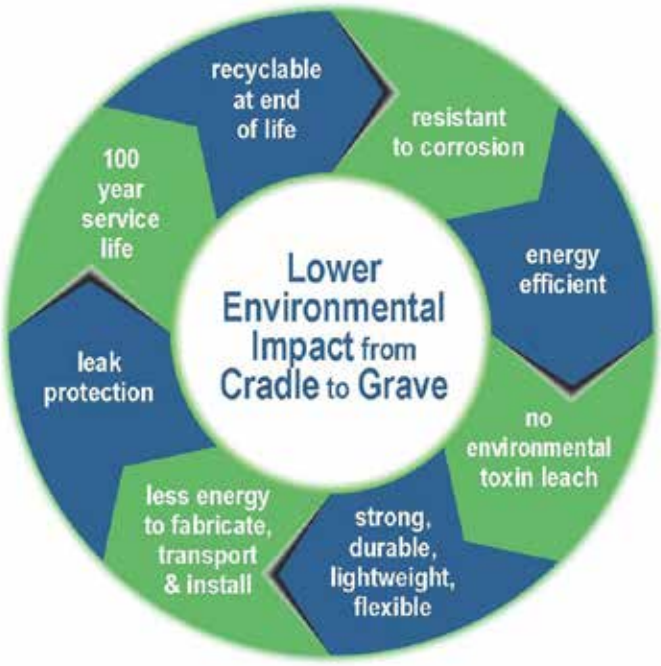
Water Resource Recovery

In resource recovery, sustainability has been part of what we've been doing for decades, often without realizing. Wastewater separation, energy reduction and water reuse are all sustainable concepts. From the inception of our business, treatment of wastewater to remove pollutants and make the effluent more reusable at Water Resource Reclamation Facilities (WRRF) has been considered a sustainable concept. As the decades have passed and permits have tightened, so the water and wastewater industries have looked for new ways to approach treatment to achieve these goals.

The main aim of WRRF sustainability is to design and operate new and existing facilities to achieve lower life cycle costs, to improve resource recovery, and lower environmental impacts such as carbon and nutrient footprints. Lower energy usage, automated equipment requiring less manpower, process optimization, and more marketable products through nutrient and biosolids recovery can all improve WRRF sustainability.

This is the first in a series of articles on sustainability in our industry. It serves as an introduction to the subject and to a Sustainability Committee formed by OWEA. Subsequent articles in the series will cover each of the individual topics in more detail.

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



One of the biggest transformations in recent years has been the shift from viewing wastewater treatment as a removal process to a resource recovery, or reclamation operation. Recovery, instead of removal, changes the emphasis of our industry, by recognizing the value of water and the residuals produced in the treatment process. Recovery can be applied to a number of resources available from treatment including nutrients, biosolids and energy.

Nutrients

Traditionally, treatment methods have focused on removal (not recovery) and therefore, WRRF have not typically taken advantage of the valuable nutrient content that could have been captured and reused. A number of treatment options for nutrient removal are currently employed in the wastewater treatment industry, both chemical and biological.

The most common nutrients recovered are phosphorus (P) and nitrogen (N). There are several technologies available for recovering phosphorus and nitrogen which can be implemented at WRRFs. Chemical precipitation and biological uptake are the predominant extraction mechanisms.

Biosolids

Biosolids are an area where both removal and disposal, and recovery and reuse have historically both been used. Land application of biosolids has been used for decades in Ohio, but due to low landfilling costs in Ohio and increasing regulations on land application an increasing amount of biosolids are being landfilled.

Traditionally making residuals treatment more sustainable can be approached in one of two ways: either make treatment less energy intensive or increase the mass of biosolids and reduce the volume of water disposed with it thus reducing transport and disposal costs. Typically, the more energy a solids reduction process uses, the higher the concentration of solids in the product.

Energy

Energy conservation has become one of the low-hanging fruits in terms of the move towards making WRRF sustainable. Obvious targets are aeration, which can account for 40-60% of the energy use, and pumping, which can be 10-15% of energy use at WRRFs.

Often energy savings can be attained by replacement of fixed speed drives with variable frequency drives and changing blower operation from fixed output to operations based on process requirements.

A step up from energy conservation is energy recovery. An example of energy recovery is using digested sludge to heat incoming sludge or using methane from anaerobic digestion to run combined heat and power equipment. A number of larger treatment plants also use methane gas generated as an energy resource; larger municipalities are considering

using methane as a fuel source for their vehicle fleets and as a heat source for drying biosolids.

Reuse of existing resources such as final effluent to replace potable water for site requirements has been common in our industry for many years. Installing solar cells to power external equipment and street lighting can also be implemented. These systems are relatively simple to implement and reduce the facility's dependency on outside services.

Legislation

Whereas many private companies have adopted sustainability either as a founding principle or a top critical success factor in decision-making, public agencies, often from an insistence on selecting lowest cost options, have had a more difficult time incorporating and justifying sustainability factors into decision-making for public improvements. However, processes such as 'life-cycle analysis' and 'triple bottom line' allow public agents to incorporate sustainability factors into decision-making.

Regulatory agencies can also play a role in guiding us towards sustainable solutions. Regulatory actions sometimes seem to counter sustainability goals; increasing biosolids regulations may have had the unintended consequence of making land application of biosolids less attractive for example. At times there are roadblocks to adopting new sustainable technologies, including scaling up a treatment process from pilot scale to plant scale, a process being new to market, and regulatory resistance owing to a process not being a part of, or not complying with, the 10 States Standards. Overcoming these roadblocks requires communication and cooperation with the Regulatory Agencies.

All this being said, Regulatory Agencies' primary mission is to protect the environment as a whole, balancing impacts to surface water, land, and air. Regulators have done an admirable job through the Clean Water Act and other applicable laws, of balancing impacts to these natural resources. As an example of a common-sense regulatory sustainable approach, the Ohio EPA recently participated alongside four southwest Ohio counties, to perform a feasibility assessment for a regional biosolids collaboration, focused on sustainability, resiliency, and cost-effective practices.

Social Sustainability

Personnel

Sustainability can be viewed from a completely different perspective, that of maintaining a workforce and hiring and preparing the next group of employees. With various utilities facing high employee retirement, a replacement plan needs to be implemented.

A utility is comprised of talented staff members ranging from operators, technicians, maintenance workers, engineers, inspectors and technical specialists. With various staff eligible for retirement, employers are utilizing a variety of strategies related to workforce development and employee orientation.

Workforce development focuses on the growth of employees within the utility. Key aspects include positioning them as mentors to other employees to prepare them for additional responsibilities. Workforce development programs can be implemented in a multitude of ways, including customized professional development plans, cross training within the organization, skill gap analysis and leadership training.

The second part of workplace sustainability targets new employees. This encompasses the orientation and integration of new staff into the organization and

focuses on the near-term and long-term success of the new employee. New hire orientation is evolving into planning the first six months of employment and communicating company objectives and expectations. Connection opportunities are created between new employees and current staff by using group networking sessions that highlight the internal nuances of the utility.

Regulatory agencies must also play a part here. Licensing requirements for water and wastewater personnel are designed to help ensure that competent personnel are in charge at vital utilities. However, licensing requirements which have been put in place to help municipalities recruit, develop, and maintain the next generation of staff may in fact be driving away otherwise good candidates due to additional education and manhour requirements. With the looming shortage of personnel in this industry, licensing requirements may need to be overhauled so we are still ensuring competent personnel are in place while making the path to obtain licensure and subsequent operational requirements less daunting.

Economic Sustainability

Capital Assets

Asset Management Plans have become a new regulatory tool that municipalities must complete to stay in compliance with many State Regulatory Agencies. While the specific requirements and formats for these plans differ slightly between Agencies, they generally include a list of the municipality's assets, a condition rating of these assets and a prioritized list of projects for improvements. These Asset Management Plans assist municipalities in planning and maintaining their assets by encouraging them to look at the current state of their infrastructure, and plan for the future on how to replace at-risk assets.

This process of taking an inventory of existing assets, evaluating their condition, and planning for their replacement is an inherently sustainable process because it assists municipalities in a number of ways. The assessment helps lower operating costs by decreasing the number of emergency issues and can help maintain a constant level of service throughout the system.

While the development of an Asset Management Plan can take a long time, the end product can assist municipalities in understanding their system, in planning for the future, and ultimately in becoming more sustainable.

Infrastructure

The act of balancing best performance with lowest maintenance, at the most practical cost for pipe and pumping networks, has led to innovation and development in both materials and construction methods. New methods that use trenchless technologies avoid the project's collateral damage to above-grade facilities. Rehabilitation methods can now make use of existing pipes to serve as the host for the new pipe. These innovations in construction technologies are innately sustainable because by reducing costs, the utility may now carry out more projects on their already limited budget.

Improvements to the traditional steel and concrete materials, along with the development of new thermoplastic materials, has offered utilities an array of options to meet construction and operating needs. The range of choices now permit the engineer to select appurtenances and pipes tailored to the specific needs of that project. By being able to hone the materials to the project the overall cost of projects is further reduced.

These improvements in the construction and rehabilitation methods and materials have allowed utilities to realize the performance, maintenance, and cost goals all the while meeting increasingly stricter environmental and regulatory requirements.

Other Applications

Laboratories

There are many ways laboratories can employ sustainability. Cutting the chemical waste stream by reducing the amount of material purchased and finding alternatives to disposal, and by reduction in, or substitution of, hazardous materials with of less- or non-hazardous alternatives can help reduce the environmental impact of the laboratory.

Water consumption can be reduced by installing systems to conserve water or by choosing water-efficient equipment such as dishwashers when upgrading. Similarly, use of electrically efficient lighting, optimized placement of ventilation and HVAC systems, and updating or correct sizing of equipment are all ways to save energy and cut costs in the laboratory.

Where possible, glass should be used for laboratory equipment. Using glass is inherently sustainable because the use, washing and reuse of glass will reduce the waste of throw-away items made of plastics. If plastic items have to be used, or when sterile equipment arrives sealed in plastic, the plastic should be recycled.

In other States, centralized systems have been set up to recycle equipment for laboratories needing to shed some or all of their equipment, whether they are upgrading to newer instruments or shutting down altogether. The equipment can either be put into consignment or up for auction through a third party website.

Construction

The way materials are used and the construction process itself can have significant environmental impact. Construction materials are usually thrown out when they have reached the end of their useful life, in part because they are not designed to be reused or recycled efficiently. The construction industry produces three times more waste than all households. Approximately one third of this waste annually goes straight to landfill.

Instead of designing for a single purpose, the challenge is to design a new building or to reconfigure an existing building to meet changing needs. When buildings are designed to be reused rather than demolished, the amount of waste going to landfill, or the overall consumption of raw materials, can be reduced.

An EPD includes the entire life-cycle of construction materials.

We would like to acknowledge the contributions of Melodi Clark, Surveillance Lab Manager, Columbus, Ohio; Brian Wellman and Ted Bennett, PE. Jones & Henry Engineers; Jason Tincu, Greene County Director of Sanitary Engineering, Xenia, Ohio

Ohio EPA's Multi-watershed Bacteria TMDL

Ohio EPA's Division of Surface Water is working on a new project to increase the number of water bodies throughout the state that are safe for recreation activities. Ohio is a water-rich state, providing many opportunities for recreation in and on its waters. Water quality standards for recreation use set under the Clean Water Act are designed to protect the health of those using surface waters for swimming, boating, wading, and other types of water-related activities.

Ohio EPA uses the bacterium Escherichia coli (E. coli) as an indicator for the presence of pathogenic bacteria and viruses in a water body as a result of fecal contamination. Ohio EPA collects E. coli samples around the State every year during water quality surveys. Common sources of E. coli include wastewater treatment plants, failing home sewage treatment systems/unsewered communities, combined sewer overflows/sanitary sewer overflows, illicit discharges, livestock waste, and improper application of biosolids.

When watersheds do not meet their Clean Water Act goals for recreation use, Ohio EPA prepares a Total Maximum Daily Load (TMDL) for E. coli. A TMDL is a plan to restore good health to streams or other water bodies that are not meeting water quality goals. It serves as a roadmap for measures that can be taken to improve water quality. It defines how much pollution exists and identifies sources; specifies the amount of pollution reduction needed to meet water quality goals; and recommends actions that will improve water quality in the streams.

Ohio EPA has learned from previous recreation TMDLs that the same few sources of indicator bacteria are present in nearly every project area. Being able to see these patterns of sources on a broader scale will allow us to put them into perspective and recommend reduction strategies. Covering multiple watersheds across the state will allow us to take a more wholistic approach to TMDL development and implementation as opposed to addressing just one watershed basin at a time in a piecemeal fashion.

Ohio EPA's multi-watershed TMDL project will include watersheds throughout the state that are impaired for recreation and do not already have an existing TMDL. The watersheds included in the project are depicted in Figure 1.

Ohio EPA is using the same method to establish TMDLs for recreation use impairment as in the past. The only thing changing is the packaging. Taking this multi-watershed approach to address bacteria impairment will

Figure 1. Map showing scope of the multi-watershed bacteria TMDL project. The dark grey areas indicate the WAUs for which a recreation use TMDL will be developed.

allow for more efficient use of staff time and streamlines the TMDL development for these watersheds. As stated above, the grouping of the multiple watersheds together in one report will lend itself to a more wholistic, statewide implementation.

In general, point sources regulated under the National Pollutant Discharge Elimination System (NPDES) permit program that treat sanitary sewage (wastewater treatment plants) are regulated to meet recreation water quality standards for bacteria at the end of pipe; therefore, the dischargers will not be impacted by the bacteria TMDL. Other point sources, such as municipal separate storm sewer systems (MS4s), may be required under the NPDES permit to tailor selected best management practices (BMPs) to practices that reduce or minimize bacteria contamination. Communities with combined sewer overflows (CSOs) will be required to implement controls through their permits and Long-Term Control Plans (LTCPs).

More information on this project, including fact sheets and the final Loading Analysis Plan, is available on Ohio EPA's webpage at: *https://epa.ohio.gov/dsw/tmdl/Multi-Watershed#188795370-bacteria*. Ohio EPA is currently working on the water quality modeling for this TMDL project. The results of this modeling will be available for stakeholder input as part of the Preliminary Modeling Results, step 4 in the TMDL development process.

Additional multi-watershed TMDL projects are underway. Draft Loading Analysis Plans for sediment and habitat will be available for review and comment in early 2021.

To stay involved in Ohio EPA's TMDL projects, subscribe to updates at: *https://ohioepa.custhelp.com/app/utils/login_form/redirect/account%252Fprofile.*

Southerly Wastewater Treatment Plant
Chemically Enhanced Primary Treatment (CEPT)
Columbus, Ohio

Summary of Rulemaking Petition to Set Numeric Nutrient Criteria and Establish a TMDL for the Ohio River

by Elizabeth Toot-Levy, Chair Government and Regulatory Affairs, etootlevy@geosyntec.com
and Adrienne Nemura, Principal, Geosyntec Consultants, anemura@geosyntec.com

On December 16, 2020, environmental groups filed a petition for rulemaking to set water quality criteria for both nitrogen and phosphorus for the Ohio River and to subsequently develop total maximum daily loads (TMDLs). Ohio environmental groups signing on to the petition include the Sierra Club Ohio, Concerned Ohio River Residents, Ohio Environmental Council, Ohio River Foundation, Ohio Valley Environmental Coalition, and the Ohio River Waterkeeper. [1]

The petition claims that eutrophication in the Ohio River and many of its tributaries is worsening due to increasing nutrient pollution because states are not adequately controlling nutrient discharges. It provides numerous reasons why EPA should establish numeric nutrient criteria for nitrogen (N) and phosphorus (P). The petitioners complain that the states have not set limits on nutrient discharges from point sources, confined animal feeding operations, and agriculture. They assert that these uncontrolled discharges are causing repeated and sustained toxic algae blooms that affect hundreds of river miles in the Ohio River and contribute to nutrient-related impairments in the Gulf of Mexico. The petitioners also request that EPA establish TMDLs for N and P. The petitioners are requesting that this be done for all waters in the Ohio River Basin, but at a minimum, the mainstem Ohio River.

In addition to articulating concerns about the aquatic life and human health impacts of toxic algae, the petition discusses the economic impacts associated with tourism and recreation; commercial fishing; property values; human health; drinking water treatment costs; mitigation; and restoration.

This petition is substantially similar to a 2008 petition by several of the same groups to promulgate numeric nutrient criteria where such criteria did not already exist, in all 50 states or to at least promulgate such criteria for the

The Ohio River Basin

[1] *The three lead environmental groups are the Mississippi River Collaborative (including Healthy Gulf, Prairie Rivers Network, and Tennessee Clean Water Network); Sierra Club, Mississippi River Issue Team, Kentucky Water Team; and Ohio River Waterkeeper. Other groups include the Pennsylvania, West Virginia, Indiana, Illinois, Tennessee, and Iowa Chapters of the Sierra Club; Hoosier Environmental Council; Valley Watch; and West Virginia Rivers Coalition.*

Mississippi River Basin and develop TMDLs. That petition was denied by USEPA based on the agency's position (supported by numerous amicus briefs) that the most effective and sustainable way to address the widespread nutrient issues in the Mississippi Atchafalaya River Basin is to work collaboratively with states to strengthen nutrient management programs. The agency also took the position that the USEPA's rulemaking authority is more appropriately used in cases when the agency disapproves a water quality standard or determines that a new standard is needed.

In the response, USEPA further stressed that the development of TMDLs is a state responsibility and the best course of action for the agency was to provide technical and policy guidance to the states and stakeholders for the reduction of nutrient loadings. In 2011, USEPA issued the "Stoner Memo" that provides eight elements for a state framework to manage nutrient pollution. This memo served as much of the basis for the District Court's decision to uphold USEPA's denial of the petition.

This new petition acknowledges the denial, but emphasizes the District Court's ruling that, "Presumably, there is a point in time at which the agency will have abused its great discretion by refusing to concede that the current approach – albeit the one of first choice under the CWA – is simply not going to work." The petition also acknowledges the "Stoner Memo" but claims that the states in the Ohio River Basin have failed to implement the actions laid out in the memo.

The petition further stresses that states in the Ohio River Basin (Pennsylvania, West Virginia, Ohio, Kentucky, Indiana, and Illinois) have not adopted numeric nutrient criteria. For example, the petition describes Ohio's lack of adopting numeric nutrient criteria using a regulatory timeline since the state's 2011 Nutrient Reduction Strategy. Part of this timeline includes the state's 18-month process with a Technical Advisory Group to develop a rulemaking for nutrient criteria for streams and small rivers, which Ohio EPA has not acted on. This timeline ends with the 2018 Early Stakeholder Outreach, where Ohio EPA introduced a proposal for the development of nutrient related water quality standards for Ohio's large rivers. Both of these rulemakings have not publicly moved forward since that time.

The petition also asserts that states are not using their narrative standards to impose N and P permit limits to protect local and downstream receiving waters. Again, the petition provides a discussion for each state in the Ohio River Basin. The petition states that Ohio EPA and USEPA have recognized that narrative standards are "ineffective in controlling nutrients and both have recognized and supported implementation of numeric nutrient standards." The petition further states that "[w]ork by OEPA has failed to achieve water quality standards through permits or TMDLs." This statement ignores Ohio EPA's development of numerous phosphorus TMDLs, implementation of the TMDLs in NPDES permits for dischargers, incorporation of phosphorus reduction optimization requirements into NPDES permits, and the agency's continued efforts to work with point source dischargers to address nutrient issues. The petition disregards efforts such as the Ohio Nutrient Mass Balance Study for Ohio's Major Rivers, the Ohio Domestic Action Plan, and the new H2Ohio Initiative. The petition also ignores the certification of fertilizer applicators required by Senate Bill 150 and managed by the Ohio Department of Agriculture, the restrictions on fertilizer and manure application in Senate Bill 1, and efforts by Ohio's agriculture community to develop and adhere to nutrient management plans.

While the petition to develop a TMDL for the Mississippi River did not move forward; we should not assume that this one will be met with the same fate. While USEPA's argument that the best approach is to work collaboratively with the states still holds true, there is no guarantee that changes in leadership or a perceived lack of progress might cause the agency or a District Court to look at this petition differently.

For more information please do not hesitate to me at *etootlevy@goesyntec.com* or 440-227-9181.

OWEA Member Terry Gellner Passed Away

This year (2020) will forever be the year that everybody will want to forget. We all suffered losses, we had friends or family sick or worse, and on December 12th the state lost a dedicated engineer and servant in Mr. Terry Gellner.

Terry was born in Akron, Ohio, he was an Eagle Scout, he loved to fish and to play golf (if you could call it that). He was a father and a grandfather. He graduated from The University of Akron with a Civil Engineering degree in 1979 and then dedicated his life's work for the next 41 years to the water quality industry. He started his career with Burgess & Niple before moving on to CT Consultants and eventually started his own firm TNT Engineering in 2013.

Terry volunteered his time to many causes but in Ohio he worked his way through the executive committee of the NE Section of the Ohio Water Environment Association. He co-chaired our state conference and volunteered on the committee of several others. He served on the POMC committee at the WEF level, serving as the chair from 2016-2018.

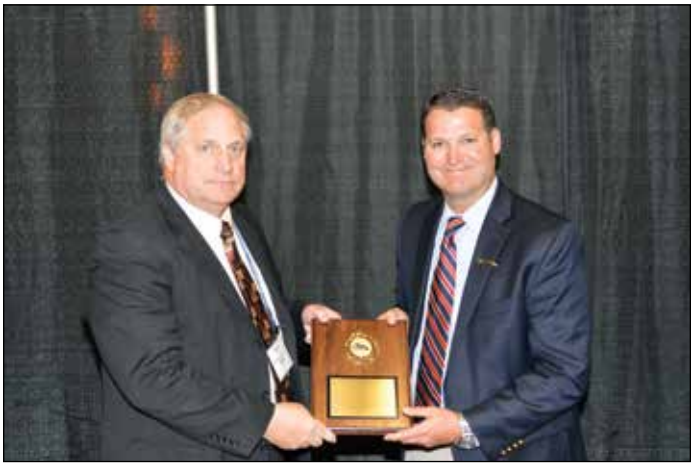
He was a recipient of the NESOWEA Past Presidents award in 2002

He was part of the 5-S class in 2003

He received the OWEA Engineering Excellence award in 2010

He received the Keith Riley award in 2011

He received the OWEA Lifetime Engineering award in 2015



Terry receiving the 2015 Lifetime Engineering Award from 2014-2015 OWEA President Mike Frommer

It is impossible to list all the papers that Terry authored or presentations he gave. They spanned from NE section meetings, to OWEA state conferences, to at least seven other state conferences that I know of, to WEFTEC and WEF publications. And he was regarded by many of his peers as one of the foremost experts on Membrane Technology in the U.S. But he wasn't just a volunteer or an engineer, he was part of our OWEA and WEF family and he will be missed by many.

To everybody who has suffered a loss during the last year I offer my most sincere condolences.

To my friend Mr. Terry Gellner may you Rest In Peace until we see each other again someday.

—Ted Baker

A Chat with City of Wooster Utilities Manager, Nathan Coey

Interview by Megan Borror

STAFF: How did you get started in this industry?

COEY: Well, I always tell people my first interaction in the wastewater business was back when I worked at a church camp, one of the things we would do is we would help with maintenance. One day my boss said, 'Hey, you're going to go pull the weeds at the beach.' And I thought, man, I know this place like the back of my hand, we don't have a beach. But then when I got there, it was the package wastewater plant and I was pulling weeds out of the sand bed. So that was one of my first experiences.

Prior to getting into the field in 2001 I was a contractor in Columbus. I went through the electrical apprenticeship program and worked for a contractor in Columbus but shortly after 9/11 I got laid off. The economy and everything kind of slowed up. So going into December, I was actively looking for work. One of the jobs that I had found was a Maintenance Operator for the Village of Sunbury. So given my maintenance background and understanding, I applied for that job. Got the job, and then quickly learned there's some other options within this field. I fell in love with the operation side of things so I quickly became a Plant Operator. By 2005 I was a Class III Wastewater Operator, Plant Manager, and went through a huge upgrade project so I got some early experience that most folks take a lot of time in their career to get to. So, tongue in cheek, I say I kind of fell into it. I wasn't going out looking for this field. It kind of found me. Early on it spoke to me. I think one of the things that anybody in this field knows is you first have to care about people. That's why we do what we do. We are civil servants. I found some early comfort in serving that community that I lived in and just got the bug rolling with it.

STAFF: What do you do now for City of Wooster?

COEY: I am the Utilities Manager so I oversee all of our water treatment operations, wastewater operations, and our systems operations. There are 35 individuals in this department. I have a handful of supervisors and staff below them that make this dream work over here. We have what I would call a state-of-the-art wastewater plant. I think if there was such thing as a Class V this would be a

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 betwaaeen. Please nominate your boss, coworker, or someone you admire for a future article by emailing Megan Borror at: megan@ohiowea.org.

Class V facility, but it's a Class IV, our water plant is equally advanced with a Class III, and we have over 350 miles of water and sewer main. 90% of my job now is related to the people side of things. Whether it's working with our staff, regulators, or stakeholders. The remainder, 10%, really has to do with getting down and dirty with water, either end of the pipe. I've been here over two years now. I recently bought a house up here and I'm planting some roots.

STAFF: How has COVID-19 impacted your plant?

COEY: It's an interesting question. Well, we have all walked through the challenges of COVID-19 so I won't minimize the impacts that we've walked through as humanity in general. We've all walked through some things together, learning, adapting. I'd almost say nothing that has surprised me with this because I find the group of folks that work in this business to be the most committed and resilient people. When you have people that join this type of workforce, their first motivation, I believe, is to serve people so regardless of contagion or unrest, these folks are able to show up and do their job and provide service to the community. I stand impressed to see how everybody has coped with this.

"I find the group of folks that work in this business to be the most committed and resilient people."

Other than a few hiccups that I think everyone else has experienced, it hasn't been a detriment to our operations. We still show up, do our job. People show up willing to do whatever it takes to get it done. I can't take credit for that attitude. It's the people that work here that have bought into serving the community. So not trying to dodge the question [LAUGH] but it hasn't impacted us really, because we still show up. They always say the Postal Service works 'rain, snow, or shine' but that's what we do. We've been doing this for years. We've been essential for years. We put our head down or head up and go get our job done regardless of what's going on. I think in this time period, I'm thankful that it magnifies what we do for our communities.

STAFF: What has been your proudest moment so far in your career?

COEY: The older we get, every trip around this planet we're faced with terms like legacy. 'What's the legacy that you will leave?' or 'What's the legacy you will live?' and for me in my career, I'm going to say the highlight has been everything but me. While I've made some career goals and attained some of those goals, my highlight is being able to be a mentor to folks and encourage them in the field, whether it's certification, higher education, working towards leadership roles, honing in their skills, or being people of excellence. That's what makes me feel alive, that's what makes me tick.

I'm excited even now to look back through my career, just to see how the people that I have mentored and worked with are doing now. That gives me a great deal of joy. I like getting to know people and understand who they really are outside of the facade 'How are you doing today?' 'I'm doing okay.' Really, what's going on?

I like to think that whether I landed in the water field or a manager of a home improvement store, these skills would correlate between trying to help others seek their potential. I just continue to encourage people because in some aspects I didn't have that easy of a pathway. I started out in the field where knowledge was power and knowledge was withheld. I remember going through that process myself saying, I'm never going to be this type. If I've learned something, I'm going to share and provide information to folks. I love the teaching opportunities I've had over the years and to see people go to the next level. To see people that have been in the field for 20 years and finally get a level one certification is just as beautiful as a person that stepped off into a leadership role.

I'll say that the highlight of my career has been the people, people I've worked for, the people I've worked with, people I've met at conferences, the people that are more than just colleagues. I've met a tremendous amount of friends over this journey and frankly, I can't wait to see what the next 10 to 15 years bring.

STAFF: What qualities would you say make a good leader or mentor?

COEY: It goes back to caring for people. I think to be a good leader, you have to care about people and really the idea of servant leadership. 1950s style of management was the people at the top viewed the people under them, 'You have to support me,' 'Make me look good,' 'Do as I say, not as I do,' etc, etc. One of the things that the newer generation of leaders, myself included in that category, we are here to equip the people. We're here to serve them, we're here to provide them resources to get their job done, to chase down their career. So a good leader cares about people and has to be humble. Humble about your beginnings and where you're at, and I think that keeps us honest. Our job hinges on honesty and integrity, that we will do what we say, we will honor our commitments, and one of our commitments is taking care of our resources and that includes our equipment and our people so that focus has to be on people. It has to be outside of me.

"A good leader cares about people and has to be humble."

Folks in leadership, we have goals and direction that we want to go, but it's less about strong arming and willing our agenda onto things, the real trick is to take people, share a vision, and let them excel. Give them opportunities within their realm of control or their position to own it and most of the time people will jump on that, people will own that, people will walk through it, and people will be grateful. You do have people that it's sometimes difficult to bring them along, but those are the folks that we're trying to coach through life and work in general, and try and help them see opportunities differently.

Mentorship too, it's one of the things that in our field, we see it within OWEA. It's one of the great things about the organization to get people around other professionals, to encourage their growth and development. That goes back to being humble. You have got to be willing to put others before yourself and I think that's where the best teams operate.

It's important to be able to have meaningful conversation with people during the good, bad and the ugly because naturally we want to celebrate our successes but the challenging part is when we're not being successful or maybe we're dealing with past hurts or things that might manifest in the workplace or even in our social circles. That's where we need to engage in communication even more. I mean, equipment will fail and breakdown but usually that's easy to fix, right? You walk in, you troubleshoot the situation and you correct it. People are a little different because we have all these emotions that play into everything. The real goal is to figure out what sensor is out of whack right now because we all have it, we all experience those days. If we come in grumpy it's not because we hate our job, it's because we spilled our coffee on the way out the door.

STAFF: How did you first get involved with OWEA?

COEY: I attended workshops over the years and I quickly found out that OWEA was a very professional organization. For lack of better words, as I started to work my way through OWEA stuff, it almost felt like a throwback to my camp friend days because you would make a connection with people. You wouldn't see them for six months or a year but then you pick right up where you left at the last workshop. There was this camaraderie. As a turd-herder we're often kind of put out of sight, out of mind, then you walk into a room with hundreds of other professionals throughout the spectrum of the field. There are people that care and boy, there is actually some science behind a lot of the things that we can do to communicate our mission.

I got asked to participate on the Southeast Section Executive Committee in 2015 and served on that for several years before I took the job up in Wooster. One of the things that I got to help with was the science fair judging where we would get professionals from our section to go out and review these projects. I love going out and meeting these kids that were doing science fair projects. When I was their age I never put a thought to where my water comes from or what happens when I flush, so it was invigorating to see these young people that could make a career out of this.

There was always like five or six water related science fair projects. I could take my time and have conversations with these young people and see what they've learned and then I would encourage them. With some of these high schoolers, the young high schoolers too, I was encouraging and doing some recruiting. It was also satisfying that OWEA would support these young people with a check. It was nice to participate on that level.

"We're using resources and knowledge and people and ability to try and make this all into a beautiful clean glass of drinking water or beautiful effluent."

I've served on the safety committee and always enjoyed encouraging folks to do their best as it relates to safety, helping folks with safety programs. Safety has always been a focus of mine. When I was a contractor, one of the avenues that I was pursuing was a career in firefighting and I've always had this attitude towards safety that's transferred well into the business now.

I've made so many friends throughout OWEA. It's just been just such a treat because, again, you run into some of these folks at random places or you haven't seen him in a year and it's like you picked up where you left off. Big fair warning now, when they give us the all clear, when we can go back to having conferences, and we don't have the social distance, y'all going to get some big hugs.

STAFF: What would you say to someone considering getting involved with OWEA?

COEY: I would say 'Just do it.' Simply, we all work for municipalities that are going to support us in these ventures of ongoing education and being involved in groups like this. So most of us don't have a financial issue as it relates to getting involved. Get involved because you're going to have opportunities to network with people that you otherwise may not have an easy way to network with. You get a group of folks that maybe have a facility or system similar to yours, that's how you get to know people at the conferences. What always helps, as you're going through maybe an upgrade or a design phase or troubleshooting, is there's always some people you can rely on or at least reach out to say, 'Hey, what have you seen in this situation?' It removes us from being on islands. We're not meant to live alone, we're not meant to live in seclusion, and we're not meant to only focus on our world and our neighborhood. There's a bigger world outside of this.

There's always maintenance considerations, maintenance headaches, infrastructure issues, financial considerations. Dealing with rates, dealing with stakeholders, whether it's trying to build up our reputation with the folks that use our services to make sure we're communicating with them on a decent basis, so they know that we're the pros in this. There are so many avenues where we can glean information and experiences off of others and then look and say, 'Boy, that's successful. I want to go that route.' I think that's the beauty of it. I think it just eliminates barriers and borders. We don't care who you work for. We might be miles and miles away, but we're all doing the same thing. We're all trying to use the forces of nature, whether it's biological or mechanical forces to treat this water. We're using resources and knowledge and people and ability to try and make this all into a beautiful clean glass of drinking water or beautiful effluent.

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

COEY: We have to be intentional. This has been my theme for a while and I think it's going to continue to be one of my themes. We have to be intentional and what I call intentional progress. That's kind of our motto here in 2021 going into this year, being intentional about what we're doing and why. There are certain things that have been tested and true and I guess has its place and process but why are we doing that? Is this the best we could be doing? Is there more that we could do? That relates to like the treatment end of things. Everybody's been in an organization where 'Well we've done it this way for 30 years because…' and no one can tell you why, because we just have been. Let's make sure that if somebody calls tomorrow and says, 'Hey, why are you doing XYZ?', that every member of the staff

can explain, 'This is why we do XYZ…' instead of just saying, 'I don't know we've always done it that way.'

Then I flip it back to people, we have to be intentional with people. We have to remind people, including ourselves, that what we do matters. What we experience matters. What we're walking through matters. It's all a part of the journey. I think if I would go back in time 20 years ago to the young Nathan, I really believed that once I got to a certain point, I would just be brilliant at everything I did, I would know everything, everyone would love me, etc. It's not one and done. We are never done growing, learning, meeting people, or working with people. Whether it's related to the business or people we just need to continue to strive to encourage excellence, whatever that means. Whether it's meeting quotas as it relates to our business or whether it means just taking that extra five minutes a day just to converse with someone and see how they're doing.

"If serving people is our focus and motivation, you can never go wrong."

I continue to encourage my folks and staff. We are in this industry regardless of where we go and where things shake out, we're the strings section on the Titanic, we're hanging out here until the ship goes down. Not saying that it will or does, but there is never an end to what we do. There is never a loss of hope, there is never an end to what we do as long as we're focused on people and focused on serving those people. Communities thrive on the services that treatment facilities and systems provide. Without us there would be no community, there would be no fire departments, police departments, schools, hospitals, education centers, so once we recognize that and appreciate the service that we're here to provide, every day is new, every day will be an exciting opportunity to get up and make it count. It's never boring. It's never the same. If serving people is our focus and motivation, you can never go wrong.

Webinar Dates

3/10/2021	10 AM
4/14/2021	3 PM
5/12/2021	10 AM
6/9/2021	3 PM
7/14/2021	10 AM
8/11/2021	3 PM
9/8/2021	10 AM
10/13/2021	3 PM
11/10/2021	10 AM
12/8/2021	3 PM

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Using Deep Learning Model in ArcGIS Pro

by Asnika Bajracharya, Arcadis

When I started my job as a Hydraulic Modeler my first assignment was to digitize civil infrastructures such as buildings, parking lots, and garages using ArcMap, which is a Geographic Information System (GIS) software by ESRI. Digitizing civil infrastructures is one of the first steps in creating a hydraulic and hydrology sewer model. Creating these layers is a labor-intensive task that is tedious and time consuming. During the first couple of months in my new job, I spent 8 hours a day, 5 days a week, clicking and creating thousands of polygons to represent houses, garages, and parking lots. After performing this task for 3 years, I have discovered a method utilizing deep learning models in ArcGIS Pro that can generate these polygons automatically. In this article I summarize how the tool works and my experience using it.

First, let me define what deep learning is. Deep learning is a subset of machine learning consisting of algorithms, which mimics neural networks of the human brain, that learn from large sets of data. The process of deep learning resembles how humans learn from experience. Deep learning algorithms perform tasks repetitively and with each iteration it modifies the process slightly so that the accuracy of the output is higher. It is called "deep learning" because the artificial neural networks have several (deep) layers that enables learning (Marr, 2018).

ArcGIS API for Python allows users to use ArcGIS Pro, an upgraded version of ArcMap, interface to train deep learning models for object detection, object classification, and image classification. Among many free courses that ESRI provides, it has a couple of introductory courses on using machine learning for data science. In November 2020, I enrolled in Spatial Data Science: New Frontier in Analytics, one of these introductory ESRI courses. The course covered many new analysis techniques including deep learning model for object detection.

One of the exercise scenarios in the course was to detect swimming pools in residential areas to estimate property value and calculate property taxes. For this task, the steps were as follows:

1. **Download a false color arial image.** A false color image uses infrared spectrum band to visualize vegetation in red (Figure 1). In a false color image water appears vibrant blue making it easier to identify compared to in a true color image.

2. **Create a training sample for the deep learning model.** For this task, a Single Shot Detector objection detection model type was used. A polygon layer representing typical swimming pools was generated to be used as training samples. The more diverse the training samples are, the better the performance of the deep learning model is.

3. **Export the training samples as image**

Figure 1: An example of a false color image chip that will be used to train the deep learning model. The swimming pool is the bright blue object at the center.

chips that will then be used as an input to train the deep learning model (Figure 1).

4. **Download the Deep Learning Libraries Installer for ArcGIS Pro 2.6.** This installer package installs all the necessary Python packages needed to perform machine learning tasks in ArcGIS Pro 2.6.

5. **Train the deep learning model using the image chips generated in Step 3.** ArcGIS Pro has a geoprocessing tool that allows the user to specify the number of times the images will be processed by the artificial convolutional neural network for training.

6. **Review the trained model.** Reviewing the model allows users to access the accuracy of the model and make any modifications to the training sample. Below is an example of the ground truth versus prediction metrics, generated as an output from the Step 5, that shows the accuracy of the model (Figure 2).

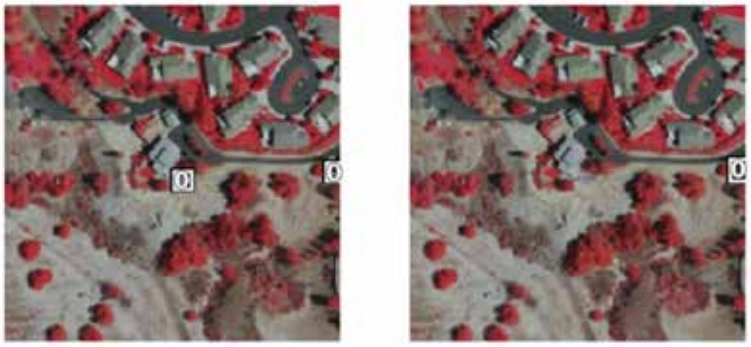

Figure 2: Example of ground truth (left) versus model prediction (right) for detecting swimming pools in the training sample. The rectangular white box with a 0 are the swimming pool locations detected in the images.

7. **Use the model to infer data.** A new area of interest image is input into the model using a AcrGIS Pro geoprocessing tool. The output of the model is a polygon shapefile (Figure 3). The accuracy of the model is about 70%. At this point, depending on the requirement, further modifications can be made to the model to increase accuracy.

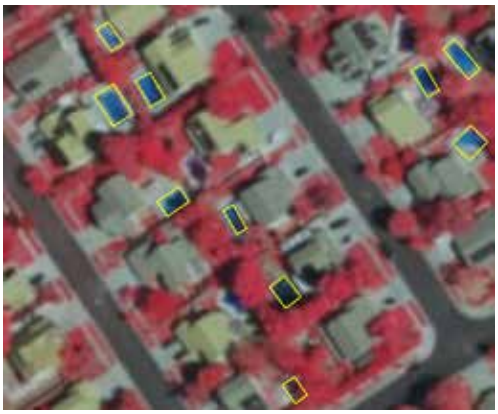

Figure 3: The yellow outlined rectangle boxes are swimming pools identified by the deep learning model.

Excited by the outcome of this exercise, I used the same image to identify building footprints. I followed the steps outlined above, except for the training samples were of building footprints instead of swimming pools. Below is the ground truth versus model prediction for the new model. As you can see, in Figure 4 the model accuracy is low. The model is falsely identifying buildings with roads and driveways because in a false color image these objects look very similar. After doing some online research I found out that to successfully identify building footprints using a deep learning model the training image needs to be converted into a thematic raster and a specific type of image classification deep learning model needs to be used. In short, simply copying the steps to identify swimming pools and using it to identify building footprints does not work. There are different types of deep learning models that are used for each specific type of object detection and image classification. ArcGIS Living Atlas of the World website has some ready to use deep learning model for tasks like land cover classification, extracting building footprints, tree point classification, and many more.

Figure 4: Example of ground truth (top) versus model prediction (bottom) for detecting building footprint in the training sample.

From this experience, I found using deep learning model in ArcGIS Pro for object detection like swimming pools much easier than expected. To use the deep learning functionalities in ArcGIS Pro, Image Analyst is required, which is an advance license extension costing about $600/yr for an individual subscription. A basic understanding of machine learning and a few hours of training on how to use the tools in AcrGIS Pro will be helpful. Free online training courses are periodically made available by ESRI. The key to successfully training a deep learning model is to have a good training sample set and to know the type of deep learning model one should use for the task. One should expect to go through multiple iterations of training the model to achieve the desired accuracy and processing speed.

Machine learning and AI are no longer the future of data science. It is already here. It is a part of data science. As an engineer, if there is a task that one must do repetitively, then one needs to find a way to automate it. If not, then someone else will eventually do it. To stay relevant, we need to constantly learn and adapt efficient techniques and skills.

My next step is to take another course on image analysis and be comfortable using machine learning in my day-to-day work. What is your next step?

Reference

Marr, B. (2018, December 12). What Is Deep Learning AI? A Simple Guide With 8 Practical Examples. Retrieved December 20, 2020, from *https://www.forbes.com/sites/bernardmarr/2018/10/01/what-is-deep-learning-ai-a-simple-guide-with-8-practical-examples/?sh=1e296d188d4b*

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Sewer Rehabilitation:
Using CCTV Inspections to Target Defects with the Right Rehab Method

by Ted Bennett, P.E.

Sewer Rehabilitation Design Decision Making

When it came to scoping sewer rehabilitation projects, the conversation in design meetings used to go something like this:

Owner: "These sewers are overwhelmed by wet weather. What should we do?"

Engineer: "Can you afford to replace the sewer?"

Owner: "No, we have to spread our budget over the whole system. What are my other options?"

Engineer: "You could rehab the sewer instead."

Owner: "What are my options for rehab?"

Engineer: "Well, you could line the sewer, but…"

In those days, sewer rehabilitation was a fallback plan with limited options and less certain results when compared with conventional sewer replacement. Often sewer mains were addressed only to find the leaks resurfacing in manholes. Once the manholes were repaired, the laterals started to leak. Thus, the leaks were chased upward away from the sewer mains using a different contractor for each project.

Today, however, there are many choices for sewer rehab. Engineers and owners alike should be aware that it is unlikely that a big-hitting inflow or infiltration source will be found in the collection system. More commonly, it is the collection of small leaks from public and private sources perhaps equally. A thorough inspection of the entire subject collection system provides information critical to the effective and economical scoping of a sewer rehabilitation project.

The District Battles I&I in Millbury

By 2015, having fought inflow and infiltration (I&I) in Millbury for 20-years, the Northwestern Water & Sewer District (District) was ready to try another approach. The Village of Millbury sewer collection system is greater than 15-feet deep constructed through heavy clay soils with a high ground water table, keeping sewer pipes under water. When heavy rains were predicted, bypass pumps automatically went to the Hille Drive and Cherry Street Pump Stations to protect against basement flooding.

Over the previous two decades, the District had completed numerous small sewer rehabilitation projects using a variety of methods. While these rehabilitation projects that included spot repairs, installation of connection liners at lateral sewers, joint grouting, manhole grouting, internal manhole chimney seals and casting replacements were successful at reducing infiltration, the efforts never found that elusive big-hitting inflow source.

A Systematic Inspection of the Millbury Collection System

In the early part of 2015, the District and Jones & Henry Engineers set out to develop a project that would find and eliminate I&I into the Millbury sanitary sewers. Preliminary costs for sewer replacement were estimated at more than $15 million. Sewer relining was estimated at $3 million to $4 million.

Since the District and Jones & Henry Engineers wanted to find the source of the clean water, we decided the best method was to start looking. In May through June of 2015, the District hired Adkins Sanitation of Fremont, Ohio to inspect the oldest and deepest sections of sewer which totaled to 40,000-feet of 8-inch through 15-inch sanitary

sewer. It was decided that the sewer main lines would be inspected in this initial investigation as a measure to permit the District to "get their house in order," correcting issues in the pipes owned by the District. Sewer manholes were also inspected. The inspection of lateral sewers was deferred at this point.

The initial cleaning and closed-circuit television (CCTV) inspection of the main sewers provided a current snapshot of the entire collection system. This information was key to the District and Jones & Henry's understanding of the sewer defects. Knowing the specific defects allowed the District and Jones & Henry to select the sewer rehabilitation method appropriate for each.

Defects Targeted in Millbury Collection System Rehab

While reviewing the video records, Jones & Henry determined that the defects were at leaking joints in the sewer main. A test and grout approach for the sewer mains was selected. Manhole grouting and adjustments to raise castings located in depressed areas was recommended.

To evaluate the condition of the laterals, it was decided that the project would include cctv inspection of 670 lateral connections (up to the buildings).

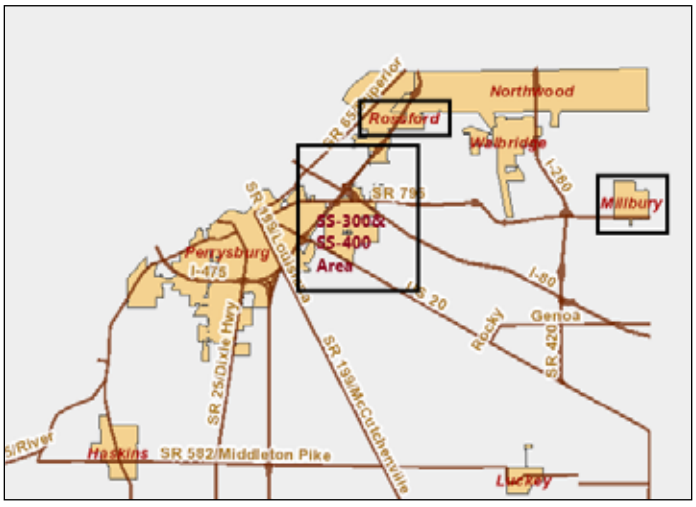
The project was awarded to Visu-Sewer of Pewaukee, Wisconsin for a total value of $904,000. The work commenced in April of 2017 and was completed one year later.

One Project Builds the Scope for the Next

During the inspection of lateral sewers by Visu-Sewer, a total of 115 laterals were observed with defects. Jones & Henry and the District reviewed the lateral sewer defects and determined that 43 of the laterals required conventional open-cut construction to repair defects such as cracked pipes and damaged wye connections. These repairs were completed in the Spring of 2018.

The remaining 72 lateral sewers identified by Visu-Sewer contained defects that required a variety of repair or rehabilitation methods. With many technologies available, this project was bid in a way that permitted the Bidder / Contractor to select the repair method for each lateral using video records provided in the Bid documents. This approach leveraged the Contracting Community's creativity, knowledge and experience to achieve the best quality and cost-effective solution. The project was awarded to Performance Pipelining (PPI) of Ottawa, Illinois for a total cost of $843,000. PPI selected lining using both t-liners, cleanout shots (installed from Vac-a-Tees) and point repairs. The total cost for this project was $810,000. While the unit price per lateral repaired is relatively high, this project involved challenging lateral defects that in many cases could not be excavated due to above grade restrictions.

Leaking Joint in 15-inch Sewer in Millbury



Project Locations

Quantifying Success in Millbury – I&I Reduced

Following the completion of the work in 2018, the District commissioned a flow study of the Millbury Collection System to evaluate the effectiveness of the work as compared with flow monitoring performed before the project. The following Table illustrates the results of the reduced inflow and infiltration.

Comparison of Flow Data Before and After 2017 Project – Millbury Area

	2016	2017	2018	Reduction
Average 24-Hour Flow (gpm)	134	Millbury Main Grouting	64	52%
Peak Flow Weather Flow (gpm)	857		822	5%

As shown, the average 24-hour flow has been reduced by the rehabilitation work. The peak flow in the collection system is a function of the Hille Drive Pump Station located downstream of the monitoring location, with the peak flow closely matching the pumping capacity. However, the true indicator of success is the District not having to deploy bypass pumping equipment to the Hille Drive Pump Station in the Village of Millbury.

The Targeted Method Recycled

Using the targeted method developed in Millbury, the District and Jones & Henry have completed two sewer rehabilitation projects in Perrysburg Township employing cured in place sectional lining (4-feet length), point repairs, and over 150,000-feet of 8-inch through 42-inch sanitary sewer testing and grouting for a total cost estimated at $2,845,000. Also included in the current project are grouting repairs to 50-laterals.

Leak Prior to Grouting

Leak following Grouting (Camera Footage from Reverse Direction)

Comparison of Flow Data Before and After 2018 Project – Perrysburg Area

	2015	2018	2019	Reduction
Average 24-Hour Flow (gpm)	590	Perrysburg Area I&I Reduction Project	450	24%
Peak Wet Weather Flow (gpm)	4275		2580	40%

It's Not Always Just One Rehab Method

The District performed cctv inspections of 17,300-feet of 8-inch through 12-inch sanitary sewers in Rossford that were constructed in the 1930s. From the inspection results, it was evident the structural condition of these

sewers warranted comprehensive repair work, and two separate projects were developed based on the type of work required.

The first project covered the sewer rehabilitation work including 10,000-feet of 8-inch sewer grouting, point repairs, open-cut replacement of 300-feet of 8-inch sewer, abandonment of over 2,000-feet of sewer main, 4,000-feet of cured in place pipe repairs, manhole replacement and pipe point repairs. The total cost of this project completed by Lake County Sewer Company of Willowick, Ohio was $765,000.

It's Not Always Rehab

The second project addressed a 3,000-foot stretch of concrete and vitrified clay pipe on Eagle Point Road. Inspection of the sewers revealed the pipe was in poor condition with major structural issues. Due to the pipe being crushed and out of round along with the inability of camera equipment to access significant portions of the pipe, lining was deemed unfeasible. Open-cut construction was predicted to be costly due to the poor condition of the overlying roadway and other utilities directly above and adjacent to the sewer. Pipe bursting was selected to replace the 3,000-feet of 8-inch through 12-inch sewer. This project was completed by Edward Kelly and Sons of Northwood, Ohio for a cost of $1,070,000.

Pipe Bursting Access Pit – Eagle Point Road

Pipe Bursting Pulling Frame – Eagle Point Road

Final Thoughts

There were never any headline making, big-hitting inflow or infiltration sources on the projects discussed. Instead, it was a death of one-thousand leaks all adding up. This is why a careful inspection and a thoughtfully planned project that looked at the entire collection system to be addressed was needed. There is certainly no single sewer rehabilitation method that will address all issues in a collection system. All the projects presented had slightly different defects requiring different approaches for rehabilitation or even replacement, but the end goal of reducing inflow and infiltration into the sewer has been achieved on each these projects.

Letters from the Front Lines

Ohio plants wrote the OWEA Plant Ops Committee about how they're surviving the COVID-19 Pandemic

by Walter Ariss, Ohio EPA; Jason Tincu, Greene County Sanitary Engineering; Kristi Babcock, Wadswroth WWTP; Nathan Coey, City of Wooster

This pandemic has forced a lot of utilities to rethink their daily routines and activities. Operators and Superintendents have had to be creative and come up with new ways to complete the simplest of maintenance projects. We have been forced to think outside the box and use new tools and methods to communicate with each other and make sure at the end of the day the pumps, blowers, and presses still run and we still have high quality effluent going out the door. The Plant Ops Committee appreciates all the work everyone does on a daily basis and wanted to provide a few insights into what our committee members have utilized to deal with our new reality.

Surviving the Covid-19 Pandemic at Greene County Sanitary Engineering

Like many organizations, Greene County Sanitary Engineering Department (GCSED) started preparing for the pandemic in early March 2020. The first notice to employees by the Greene County Administration was issued on March 5th. It provided recommendations on specific precautionary health measures in regards to isolating the virus. This is when the educational period began with safety meetings, managers meetings, staff meetings, specific correspondence of virus awareness, etc. One of the biggest challenges we faced at the beginning were the misconceptions about the virus as well as personal beliefs that the pandemic was not real and didn't have the potential to spread rapidly and cause a nationwide health concern. By mid-March, the Sanitary Engineering Department had requested that divisions' managers provide a continuity of operations plan (COOP) to the Director that would include current essential duties and challenges we might face if the plan was activated due to the pandemic in our county. It was obvious that the COOP could ultimately impact compliance and /or customer service in some way, but in drastic times we were forced to drastic measures. After a collaborative effort on part of all managers, the COOP was developed and provided to the Director. The plan included all divisions of the GCSED and included two plans, A & B. Plan A was designed to provide precautionary levels and staff distancing by setting minimal staffing levels and following a split rotating schedule while Plan B, titled the "Doomsday Scenario," was designed to minimize staffing levels as well as recognizing the increased challenges of potential regulatory compliance issues and decline in customer service.

GCSED oversees eight public water systems and four wastewater treatment systems which services 18,000 and 24,000 water and sewer customers respectively. Some of the operational challenges we considered as a result of minimizing the staff or in an extreme case no staff, in regards to wastewater treatment was how long can we hold solids, not waste, no sludge disposal, and how long can we go without process control measures. With respect to our drinking water systems, we were concerned how long can we provide disinfected water if chemical delivery is interrupted, maintain water production to equal demand, and maintain proper testing to ensure water is safe. At the

Central Lab, the main question was which tests do we sacrifice first, and could we maintain compliance by using contract labs. Central Maintenance and Vehicle Maintenance were focused on durability of our equipment and vehicles, making sure everything operates without failure, and lastly, we had to consider the process of performing maintenance and repairs to the water distribution assets and collection system with our Utility Maintenance staff.

In addition to the operational divisions, we evaluated Customer Billing, Customer Service, Engineering, Finance, Program Management, and Inspections. Each of the divisions presented specific challenges respective to their scope of work. Common concerns were management of daily tasks including meter reading, customer billing, finance processing of purchase orders and expenditures, engineering and inspections, allowing developers progress, and keeping the staff safe while letting the public inside the buildings with no knowledge of their health condition. On March 18th the Greene County Administration announced measures to mitigate the exposure of COVID-19 to our employees and customers by closing all Board of Commissioners offices for an initial period of 30 days as a safeguard while providing the essential services to the public. Through a diligent effort by employees, the public was informed through each division of how to contact County personnel remotely via phone or email. In addition, the County set up drop off boxes for payments and service windows where the employee and customer could interact while staying safe.

Due to the emerging pandemic and the high risk of virus exposure, the GCSED enacted Plan B starting on March 19, 2020. The plan was carried out by operational staff at treatment facilities and central lab by minimizing staff and using a split rotation, most all other divisions were placed on-call as needed while the other divisions were deemed non-essential and remained closed. Most managers and supervisors worked from home during this period in order to maintain progress and customer service as needed.

During the period of March 18th to June 1st the GCSED successfully operated on Plan B. The success of the COOP that was developed in a time of crisis withstood the 2-month shut down period and was largely due to the ability of GCSED's management team to quickly collaborate and execute the plan. Since June 1, 2020, all divisions are back to full time and adapted to the new normal settings. We continue to follow COVID-19 workplace regulations such as performing daily self-health assessments before reporting to work, wearing required face coverings, maintaining social distancing, proper hygiene, and surface sanitation. All meetings are now scheduled via Zoom or conference calls. We are committed to maintain the best possible service to our customers regardless of the circumstances. Over the past several months we have dealt with continual positive cases and quarantines amongst the employees but not enough cases at once that effects our service.

Wadsworth WWTP

COVID – where do I begin…..

One of the biggest success stories out of all of this is how the employees pulled together to help one another out. I must say I have some of the best Wastewater Treatment Plant employees in the state (ok, so I may be a little biased). During the last year we have experienced a loader blowing up, a tornado hitting the plant, change in personnel, budget restraints and just having to get the daily stuff done. Everyone has pulled together! We are now working in teams (three operators and one lab chemist come in at 8:00 am and two operators and one maintenance mechanic come in at 7:00 am) to ensure the entire

staff does not become infected. These teams have responsibilities for the day and understand that they cannot be around each other as much as possible. They have adapted well.

I think another success story was the recognition that Wastewater Treatment Plant employees received when being labeled as "Essential Personnel". We are not able to perform our jobs from home and are still required to cover the plant with minimal personnel at times. In our community, it brought some recognition to the tasks we do on a daily basis. It felt good. Then we were removed from the 1b phase on the vaccine list. What? We were required to continue working through this pandemic with all of the unknowns, but yet we are not important enough to be one of the first to receive the vaccine. So maybe this was a success story at first, but has now become a challenge.

One of the biggest challenges for me is communication with all the employees (operators, lab chemist and maintenance mechanic). We were used to having morning meetings all together in one room to ensure we were all on the same page. Then we had to rely on emails, texts and zoom meetings. My technical abilities were put to the test. But as we always do, we made it through those initial days and having those awkward moments on Zoom. To say it has become second nature, not so much for me. I continue to struggle with communication. Having to say the same thing over and over again becomes old. It takes twice as long. But I feel it is important and worth my time. I can't wait till we can all be together in one room again and continue those insightful meetings.

City of Wooster

We have all had challenges with the new reality of an invisible enemy. I am thankful for the support and help with the Administration and Human Resources to ensure staff safety and protocol. There has been nothing easy about this but I will say I am more than thrilled with how Wooster has handled the information through the process.

I cannot say enough about the resiliency of the public water sector. Through unrest and contagion these individuals (Water Warriors) stand strong, proud and committed to public safety and health. I have been so impressed with everyone working with daily changes, providing uninterupted service, project completion, and coordination with regulators and even digital conferences. Frankly, after seeing this I am reminded that we, as a unified body, can accomplish anything. A highlight, the incredible confidence and support from our citizens and customers.

At Christmas time every year it is always my goal to read "A Christmas Carol" by Charles Dickens. It helps get me into the season spirit. This year a line from that book was so fitting and timely. "It is a fair, even handed, noble adjustment of things, that while there is infection in disease and sorrow, there is nothing in the world so irresistibly contagious as laughter and good humor."

I am so very impressed and happy to serve with all of you. I will not minimize the challenges this year has provided our group and folks we know; however, I refuse to let those challenges be the end of the story but instead, the testing point moving forward with confidence. I am thankful for the observed growth in me and encouraged by others. This time provided a focus of priorities. Indisputably the challenges have revealed attitude towards others (the individual) were poorly framed. My world and culture revolved around my demands prior to COVID19. In my desire of self, I was blissfully inattentive to the needs of others while satisfied in the desire for materialistic means to bring temporary false joy. I take note to grieve; it should not

have taken a global pandemic for me to see this. Long before 2020, I should have found more joy in nature, my 'makers and keepers', a brilliant book, moving music and service above self. Even I fell prey to the expectations and so called "success" of the fast paced world.

The reflection of 2020 has encouraged the daily reminder that people matter! All the toys, trappings and baubles previously sold to me with the espousal of happiness greatly lost its luster in light of suffering. So the reckoning in my own heart has empowered me to do more. Make every day count. Positive attitude is the difference maker. I am a difference maker. I will choose "laughter and good humor "as a steady guide. My heartiest wish for you is that you experience free gifts as laughter and may it abound in you as we anxiously walk to 2021. May your heart be filled with gratitude and love for one another as these are the best medicine for the human race and our souls.

The gospel of James shares "Consider it a sheer gift, friends, when tests and challenges come at you from all sides (hello 2020). You know that under pressure, your faith-life is forced into the open and shows its true colors." I have witnessed your true colors and I am grateful for the fortitude you have all displayed. Let's keep this momentum going into 2021 with a focus on "Intentional Progress".

If you have any questions, please feel free to contact me at 330-263-5284 or *ncoey@woosteroh.com*.

Sincerely,
Nathan W. Coey

Bouncing Back from a Global Pandemic… How Will You Tackle It?

by Jason Tincu, OWEA President-Elect, Director at GCSED

It's January 2021. Our nation is at a critical transition point: attempting to climb out of a devastating pandemic and economic slump, facing a political transition with expected fallout, questioning how much longer we will have to do the COVID19 dance as a society, forcing organizations-big and small-to figure how if / how they can succeed in the post-COVID19 world. All these things are significant and will/can impact your daily life. However, most of them are out of your control. So from the personal perspective, how do you plan to tackle your COVID19 recovery?

COVID19 has upended many of our norms, traditions, and standards from the personal and professional perspectives. We will focus on the professional perspective for the sake of this piece. The current situation has likely changed every role in our industry to some extent, some more than others. As I type this, I am working out of a construction trailer from which I do not physically see many, if any, of my customers, stakeholders, and staff unless absolutely necessary. Learning how to do all the work with a different delivery method is very challenging. It has forced me, even more so, to be brave, be bold, and squelch any doubts while trying to figure things out.

So this brings us to you. Some of you have fallen victim to the economic contraction and are looking for your next shot. Some of you are just holding on to see what the future brings. Some of you are realizing that you are not happy in your current role and need to look elsewhere (but need some convincing). Some of you may just be going through the motions of life-not really worrying about the professional piece. And some of you are a stumble away from complete burnout! If anyone would like to confidentially talk or walk through any of these personal scenarios, feel free to email me and we can set up a time: *jtincu20@gmail.com*.

If there's one thing that COVID19 has taught us is that

The People Place

This Buckeye Bulletin series focuses on the people side of our industry, hence the title: The People Place. Traditionally, the Buckeye Bulletin comes loaded with mountains of technical pieces: plant profiles, industry trends, regulatory insight, project overviews, etc., which, without proper 'people-care' would not be possible! After all, your organization can only be as successful as the health, wellness, and productivity of your people and culture. Focus areas of this series are topics such as leadership, management, health and wellness, succession planning, work/life balance, recruiting/retaining, change management, knowledge transfer, career laddering/branding, etc. We hope you enjoy this series as much as we are excited to bring it to you! If you are interested in submitting an article or specific focus area, please contact Jason Tincu. (jtincu20@gmail.com) Thank you!

nothing should be taken for granted: not professional satisfaction, not job security, not compensation/ benefits, nothing! So, what are some things that professionals can do to better prepare themselves for the post-COVID19 world?

- **Take time to *Think*.** Don't get caught in the 'do trap'. Build time in your day to think. We all know how to do the 'do' piece. That's how most of us got where we are. But do you know how to and take the time to think? The secrets are in the thought, not the action.

- **Learn to squelch the *Lizard Brain*.** The Lizard Brain protects our existence and is responsible for fear, rage and reproductive drive. In the professional/career setting, it can minimize us and hold us and our organizations back. Work to quiet it. Be bold, take chances, and put yourself out there.

- **Study and practice *Emotional Intelligence (EQ)*.** EQ is the ability to understand, use, and manage your own emotions in positive ways to relieve stress, communicate effectively, empathize with others, overcome challenges and defuse conflict.

- **Pick up a *new Skill* or study a *new Discipline*.** Nothing fuels the fire like something new, something exciting. Look for an opportunity to learn more about a related process, skill or discipline. Look to pick up some new or different duties.

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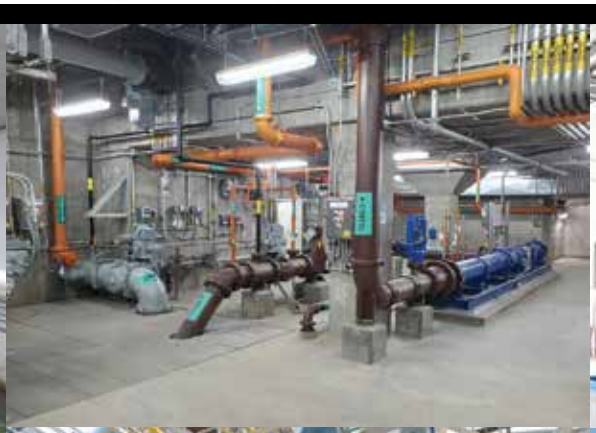



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COVID-19 Workshop Precautions

We have heard from many of you who are excited to meet again in person and we are also looking forward to seeing you, safely. Our workshops will look different. While it is impossible to eliminate all risk associated with COVID-19, we are working hard to ensure as safe an experience as possible. Here is some of what we do in conjunction with our hotel partners:

- OWEA staff and hotel staff will be wearing masks and in some cases face shields during the event.
- Due to the executive order signed by Governor Mike DeWine, all attendees who are physically able to will be required to wear a mask when not eating, drinking or speaking to the audience. While we encourage you to bring a mask you are comfortable with, OWEA will also provide masks during events. Masks are the best way to keep everyone safe when we are around each other.
- Hand sanitizer will be provided by both the venue and OWEA.
- OWEA staff practices social distancing in the office and takes their temperatures daily including before workshops.
- We ask that you take your temperature before heading out to the workshop and that you stay at home if they don't feel well or have a temperature.
- We will have signage and explanations of correct social distancing measures.
- We will have seats at least 6 ft apart. Speakers will remain at least 6 ft from attendees.
- Communal meals will look different, with seating more spread out and fewer seats at tables. Social distance will be maintained.
- Food service will look different. Buffets will be served, and with very limited contact with service staff. Most items will be individually packaged.
- There will be markings on the floor to help maintain safe distances between attendees.
- We will be dismissing attendees by row to eliminate a large group during breaks.
- Podiums, microphones and laptops will all be sanitized between speakers.
- We will maintain recommended distances between all attendees, between staff and attendees, and between speakers and attendees.
- We will be communicating with registered attendees multiple times prior to the event to ensure everyone is comfortable and aware of these changes.

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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

Well, 2020 is behind us and by the time you will read this, we will be about two months into 2021. For most of us, 2020 made us stretch in ways we couldn't even imagine. It also left many of us more grateful, hopefully a little wiser and maybe even a few pounds heavier (pandemic weight gain is a THING!). It changed us…fundamentally.

2020 also changed YOUR association. We had to pivot and scramble. We had to rethink and retool. We are still working through how the rest of 2021 will look and how the changes made to deal with COVID-19 will impact YOUR association in the future.

So, what happened in 2020 and what will 2021 and beyond look like?

- **In-Person Events – just like in 2020, 2021 is a GO for in-person events – SAFELY.** The most important part of our in-person events is YOU and your safety. This means that the look and feel of our in person events will continue to change based on where we are with CDC and government guidelines concerning the coronavirus.

  Many of you have been asking about One Water and if it will be happening in person. The answer is YES! While we fully anticipate there might still be SOME social distancing in place and masks might be necessary to keep everyone safe, we also know that we can work within these parameters to make One Water a success. Things will look much different in July. We all know concerning COVID-19 that the only constant is change. We have been having safe in person events throughout the pandemic and One Water is no different. We will prioritize safety, just like we have been, and the show will go on. We can't wait to see you IN PERSON for the largest gathering of water professionals in the Mid-West.

- **Online Webinars – are still happening!** We began having a variety of online offerings in 2020 when gathering in person wasn't a viable option. We have examined our offerings and made a few changes but are continuing to bring relevant, timely professional development to you.

  We are doing one hour webinars once a month in addition to section offerings. Typically, these events are live webinars, which means they are at a set date and time. In addition, we are also planning on offering a few on demand options for the ultimate in flexibility.

  We know online education is here to stay and we are committed to serving our members in whatever way they prefer, be it in person or virtually.

- **Our Sections – are and always will be the backbone of our association.** As you know, our sections make it possible to deliver high quality, affordable education close to you. Due to the pandemic, our sections are also having to pivot on how they offer programming and are working with the state office to ensure you still have options. They

are offering online opportunities regularly and in some cases are joining forces to bring you even more options. All our sections are looking forward to when they will be able to meet in-person and will ensure these meetings are as safe as possible.

- **Our Columbus Office – is currently and has been open.** While we are limiting visitors to keep staff as safe as possible, we are here if you need us. You can always reach us via phone or email and if an in-person visit is needed, we will work with you to arrange it.

As challenging as 2020 was, I feel YOUR association is better for it. We jumped into new offerings and re-examined how we do almost everything. I am so grateful for our members and sponsors who supported us through all COVID-19 threw our way.

2021 will continue to challenge us and I am hopeful you will continue to join us on the ride! Working together helped us all get through 2020 and will again be required for 2021. This is YOUR association, so if you have an idea or are interested in volunteering, please reach out to me. We will hold hands and cross the street that is 2021 together.

Dawn Larsen, CAE,
Executive Administrator

What A Year It Was

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

I was never so happy to see a year end. I have had some bad years in the past, but this one was exceptional in its universal impact. Not only were businesses and individuals severely impacted, but nonprofits were too. Every one of our sister organizations adopted a virtual format.

If there was a motto for 2020 it was simply to get through the day. I was reminded of the scene in the movie *It's a Wonderful Life*, when the protagonist (Jimmy Stewart) was experiencing a run on the New Bedford Savings and Loan in the late 1920s, a somewhat normal occurrence. The goal was simple: just get through the day. They closed the doors at 6 PM and acted like their problems were over.

That is where we happen to be now. We got through the year, and most of us do not want to look back. The year 2021 will be a much better year. It will start out slowly at first but then hopefully get back to a more normal stage of business.

With this said the past year resulted in some good things that will have lasting positive impact. Here are a few:

1. OWEA became more resilient and frugal in its finances, and so have our sections. We sought to keep the organization functioning, and no one panicked this past year. There was a steely resolve by the board and staff in facing this bad situation and trying to get through it the best we could. We made some money, trimmed expenses, and obtained a paycheck protection program loan. This all added up, which is another important lesson. At one time, I felt that we would be insolvent by the end of the year, but this did not happen.

2. Our budgeting process has improved a lot since 2010 when I was President. At that time, I wanted a realistic budget, and we ultimately achieved this due in large part due to the efforts of Doug Clark and Jane Winkler. But OWEA was a smaller and simpler organization than it is now, and we had only one employee. Now, due to much effort, we have a better process and use sensitivity analysis to hone into true numbers more accurately. We have a rule to not overestimate revenues and be realistic with expenses. As Secretary-Treasurer, I have faith in our process. In going through the budget several times in the fall of 2020, I realized that we would survive 2020 and the first few months of 2021.

3. Like any organization facing a potential crisis, our deployment of strategic planning was accelerated while we were already in the process of giving a facelift to the 2020 annual conference. In looking ahead, we will deploy a hybrid program of in person and virtual training that will give our members more choices and maintain our brand of in person training.

4. The unity between the sections and state improved. While we were never dis-unified, we are seeing a new cohesiveness in the way we cost share with our sections and the state in doing virtual events.

5. Fortunately, the Ohio EPA extended its deadline for operators needing license renewal by the end of 2020 by six months. This is much appreciated. Covid on top of the roll out of the new OHID system in the State of Ohio will require an extra set

of steps for an operator to renew. I speak firsthand as I had to enlist the kind and patient assistance of the Ohio EPA. They were true professionals and immensely helpful in helping me navigate this process.

6. With the approval and distribution of the vaccine, I envision we will be able to hold in person training events sometime after March 1st. I am not sure when, but when this happens, the combination of vaccine and sanitized conditions should help make our members and their employers more comfortable attending these events. I am confident that by July 2021, we will be able to hold an in person One Water Conference. Of course, the details need to be worked out.

7. Throughout the pandemic, I was pleased to see our wastewater operators obtain a deserved status of essential employee in the eyes of the public. I worked on a publication for WEF as my last assignment on the WEF House of Delegates Work Group, on the benefits of wastewater operations as a career of choice, which will be published in the Buckeye Bulletin soon.

8. To allay public fear and, in a strange way, it was good to have the 1918 pandemic as a point of reference. Few are left alive who remember this firsthand, but it was well documented. While not perfect as a teaching tool, it provided high-level do's and don'ts.

9. Covid is just one example of a crisis that requires high level strategic planning on a national and regional level that crosses state lines. There are many other potential crises including climate related crisis that need long term master planning with a commitment for federal and state funding. We have witnessed that a decentralized patch work system in dealing with Covid has not been particularly efficient.

10. There was much sadness and tragedy this year, but for those of us who survived, we can be proud of this accomplishment. Being healthy required both good physical and mental stamina and most people hopefully have achieved a better understanding of how good health is holistic. I would have no problem wearing a face mask for routine colds as a matter of course. This is already done widely in nations such as Japan.

11. Due to the need to work from home, the rapid deployment of technology impressed me. I have gradually become more comfortable and adept at Zoom and Microsoft Teams. I am always entertained when I see dogs and cats wander past one's screen and take center stage for a moment in time. It creates a moment of levity.

As OWEA's Secretary Treasurer and a long-time member of the OWEA Board, I can attest to the efforts that our board has gone through to allow us to survive and continue its programs. As I said, I am pleased to see 2020 behind us and a fresh new year ahead. But we must not place undo expectation on the new year to minimize creating false expectations. In moving forward with hope and optimism, we have the promise of vaccine and good health practices learned in 2020. This is testimony to the can-do spirit of our members as we journey together into the great unknown.

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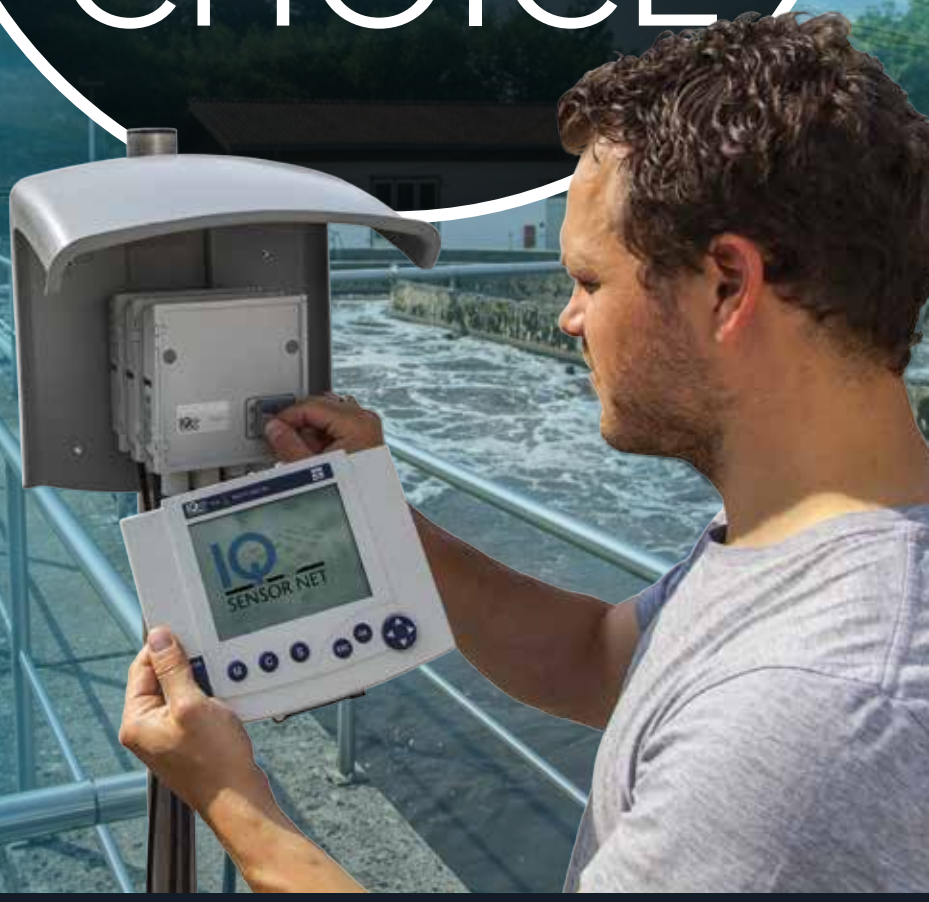

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Let's Solve Water

WEF Delegate Report


Kathy Richards


Fred Smith


Elizabeth Wick

This will be a very brief update regarding the ongoing efforts of your Ohio WEF Delegates. Each workgroup meets virtually on a regular basis.

Elizabeth Wick is part of the HOD Conference Resources Workgroup. As part of that, she is involved in the Virtual Conferencing Infographic subgroup. The purpose of that group is to develop an infographic to support MA virtual conferencing that provides best practices, tips, tricks and resources. The group plans to compile the content and finalize the plan by the end of February with a draft out by March 5.

Fred Smith is working with the Diversity, Equity and Inclusion Workgroup (DE&I). The focus of this group continues to be working with Member Associations and providing resources, guidance documentation, and toolkits to aid in the development and/or enhancement of DE&I programs.

I am participating in the Federal Advocacy Workgroup. This far we have been busy submitting pertinent legislative new items for the WEF 'Smart Brief' emails and have begun creating a toolkit that Member Associations can utilize to make federal advocacy a part of their regular activities. Additionally the group facilitated a webcast entitled What to Expect in the Biden Administration and the 117th Congress that was very well attended and highly educational. That webcast will be available for viewing soon at: *https://www.wef.org/resources/online-education/webcasts/ArchivedWebcasts/*public-service-webcasts/. Other past Government Affairs webcasts are also available at that link.

The call for abstracts for WEFTEC 2021 has closed. It is anticipated that this will be a live, in-person event. Primary Authors who have submitted abstracts will receive acceptable/rejection notifications mid-April 2021. Watch for additional opportunities to submit your ideas for upcoming virtual and live events.

Also, please note this release from the nominating committee.

Nomination Period Opens for WEF Awards

ALEXANDRIA, Va. – The Water Environment Federation (WEF) is now accepting nominations for the 2021 WEF Awards. The annual awards program recognizes individuals and organizations that contribute to the sustainability of water resources and make a profound impact on the future through involvement with water professionals and education.

Recipients are nominated by their peers and recognized each year for a variety of achievements within the following categories:

- Individual Service and Contribution
- Education
- Organization and Association Recognition
- Operational and Design Excellence
- Published Papers

The 2021 recipients will be announced in late summer and recognized during a ceremony at WEFTEC 2021, WEF's 93rd annual technical exhibition and conference; Oct. 16-20 in Chicago, Ill. Nominations will be accepted through April 1, 2021. For more details about the awards program, individual award descriptions, and the nomination process, please visit *www.wef.org/awards.*

As always, take good care of yourself and each other. Remember, Human Kind – Be Both.

Kathy Richards
Senior Delegate

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SWOWEA

Kelly Kuhbander, President

Despite all the chaos and uncertainty that continues to impact our lives, the Southwest Section of OWEA is still working to bring you meaningful professional events!

Upcoming Events

We recently collaborated with the state OWEA and the Northeast Section of OWEA to bring you an on-demand virtual seminar from Feb 10 - 24. This event included six contact hours covering both plant operations and industrial wastewater topics. It is our hope that this new on-demand platform will allow more of our members the flexibility that they need at this time to view these sessions on a schedule that works best for them. Many thanks for planning this event are owed to our OWEA administrative staff as well as the members of the Southwest and Northeast OWEA Industrial Waste and Plant Operations committees.

We are also moving forward with plans for a March southwest section meeting with a collections focus on March 18th. Please register now if you would like to attend this virtual training event.

One Water Conference 2021

The Southwest section is looking forward to hosting the Joint OWEA and AWWA 2021 One Water Conference in 2021 in Cincinnati! The event is expected to have both in person and virtual options. Attendee registration will be www.*onewaterohio.org*

Encouragement

As we close in on nearly a full year of living through the COVID-19 pandemic…I feel compelled to briefly reflect on and acknowledge the indescribably painful and challenging year that we have just been through. In addition to the global pandemic, we have also been through tumultuous times politically, socially and economically on a variety of scales. The personal and professional obstacles that we have all had to face in the past year have taken an extreme toll on everyone. I encourage you all to give yourselves, your families and your colleagues grace as we are all going to be healing in one way or another for some time to come. We aren't finished with this marathon yet, but I am extremely hopeful for a brighter future! I look forward to seeing many of you in person again soon. Until then - hang in there and stay positive!

The wastewater industry is essential. You should all be very proud of the important work that you do.

Feel free to contact me with any questions or concerns related to SWOWEA: *Kelly.Kuhbander@Strand.com*

NESOWEA

Michael Cook, President

Happy New Year to all from the Northeast Section! We made it! Although we have not been able to see most of you this year, our Executive Committee continues to meet virtually every two weeks in an effort to continue our business operations and event planning for this year and the future. We are currently looking at ways to hold in-person events later this year as well as virtual options.

Winter Event – On Demand Virtual Workshop

The Northeast Section teamed up with the Southwest Section to provide content and speakers for the ON DEMAND Industrial Waste and Operations Virtual Workshop. This virtual event was held between Feb 10-24 and had great attendance.

2021 Student Design Competition

The 2021 Student Design Competition is now underway. Once again, Krishna Chelupati (Stantec) is leading up this fantastic program in which student design teams are tasked with solving and providing solutions for real-world wastewater and stormwater projects. This program provides design experience for those students interested in pursuing a career in wastewater, engineering, and environmental science. Several local universities are participating this year: the University of Akron, Baldwin Wallace University, Case Western Reserve University, and Cleveland State University. These student design teams are currently working with advisors, professors, and professionals in solving their specific projects. In April, for the second year in a row, the design competition will be held in a virtual setting (Zoom). The student design teams will present their study and conclusions virtually and be judged by a team of professionals, some from our local NESOWEA Section and OWEA. Look for one (or more) of these teams at the One Water Conference later this year!

Looking Ahead in 2021

The Northeast Section currently hopes to hold an in-person May Business Meeting (with technical sessions), in a half-day format. These plans could change as we near the date, but the planning is in place and we are hoping for good health leading up to the spring. If we are unable to hold this event, we will be able to provide online webinars and content during the spring months. Our annual Biomass-ters Golf Outing will be held once again in July at Grantwood Golf Course in Solon.

Leadership Opportunities

We have a fantastic group of leaders in the Northeast Section, and we are always looking for more participation at the committee and executive level. Participation and involvement with the various committees is an easy way to make new connections, be a part of this team, and give back to our industry. Please drop me an email at any time if you have any questions or are interested in how you can be involved at a higher level. I sincerely hope to be able to see everyone soon as the year forges ahead. A big thank you to everyone for all of your help and patience during this time! See you soon.

Michael J. Cook
NESOWEA President
michael.cook@ads-pipe.com

Section Reports

NWOWEA

Todd Saums, President

Cheers to 2021 from the Northwest Section! To no surprise 2020 was a very trying year. Events were cancelled, group interaction was nonexistent, and to those of you in need of contact hours, webinar fatigue became a common phrase. I am optimistic that normalcy is on the horizon and we will get back there soon. Unfortunately due to Covid, the Northwest Section did not have a fall section meeting. Some speakers had to cancel and most organizations did not feel comfortable hosting an event. I want to thank the state office and the other sections for their efforts. They all stepped up and provided great web based resources and events that have allowed us to continue our education and provide the contact hours that our operators need.

The Northwest Executive Committee met in January. We had some members attend in person and others join via Zoom. As usual we discussed budget and upcoming events. The Northwest Section will be hosting an in person section meeting March 24th in Carey, Ohio. We have a great lineup of speakers with very interesting topics. Be on the lookout for more information to follow via email. The section is also planning an in person meeting for May. If you would like to present on a specific topic, please do not hesitate to contact me or any of the executive committee members.

I would like to congratulate our very own Kevin Connor from Defiance as he assumes the State Young Professional chair. Kevin's position as the Northwest Section YP Chair will be replaced by Lori Komorowski from the NW Ohio EPA. Welcome Lori!

In conclusion, as we continue to navigate the unknown waters of 2021, I would like to reiterate the importance of involvement from our members. Please contact me if you would like to volunteer and/or present this year. I wish you all a great start during this first quarter!

SEOWEA

Melodi Clark, President

Hello from the Southeast Section. Happy New Year! I hate to admit it but I am not sad to see 2020 be done and move on to 2021. We had an excellent webinar given by Jon van Dommelen from Ohio EPA on Do It Yourself Modifications for Reluctant Biological Nutrient Removal Systems. We were able to secure one contact hour for this presentation and it was an O&M hour.

We are currently planning on holding more webinars in the beginning of 2021 with the hopes that in the spring we will be able to have an in person meeting with a plant tour and presentations. The first place we are hoping to have a section meeting at will be Canal Winchester. Please watch your emails for updates on these meetings and webinars that we will be hosting.

I would like to welcome and thank our two newest committee members that will be leading our Collections Committee and our Industrial Pretreatment Committee. Please help welcome Mark Strahota from Hazen and Sawyer who will head up our Industrial Pretreatment and Chad Roby from Jacobs who will head up our Collections Committee. If you are interested in either of these committees and would like to join and help please let me know.

We are always looking for volunteers for our different committees that we have. If you have any interest in getting more involved, joining one of our many committees is a great way to start. Please reach out to me and we can talk and see where the best fit will be.

I hope to see you all soon and hope everyone stays safe and healthy.

Melodi Clark, *mlclark@columbus.gov*
614-645-1239

2021 Plant Operations & Lab Workshop

June 2 & 3

Wednesday & Thursday

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This two day workshop will be an interactive experience that will allow you to learn from experts and each others' experiences.

Some Topics of Interest:

"PFAS research outcomes from OSU"

"How to interact with the media when they come knocking on the WWTP door"

"Plant profiles from across the state"

"Social media and how it can affect your plant"

"Shift transition process control communication"

"Asset Management – a consultant's and a utility's perspective"

"Resource recovery – pros and cons from a utility that has walked the path"

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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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Young Professionals Committee

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Kevin Connor
City of Defiance
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Northeast Co Chair
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Young Professionals Update

by Lori Komorowski, Ohio EPA

My name is Lori Komorowski and I am happy to accept the position for the NW Young Professional Chair. I graduated from the University of Toledo in Fall of 2012 with a bachelor's degree in Civil Engineering. I worked for six years at a Toledo based structural engineering firm before moving into the environmental field. I started at Ohio EPA in March of 2019 as an Environmental Engineer II in the Division of Surface Water. I am a registered P.E. in Michigan after passing my Professional Engineer's Exam in October 2020.

I live just over the border in Michigan with my husband and two sons. In my free time I enjoy playing games and crocheting.

WEF Announces Scholarships for Water, Wastewater Operators

The Water Environment Federation (WEF) is pleased to announce the availability of scholarships for water and wastewater operators pursuing education, and/or training and for individuals pursuing certification to enter the water sector.

The scholarship will reimburse expenses up to $5,000 and is available to WEF members seeking an entry level operator's license or experienced operators seeking professional development in the following areas:

- Municipal and industrial treatment
- Reuse
- Collection and distribution
- Stormwater

"Expanding opportunities to enter and advance in the water sector is a key part of WEF's commitment to cultivating a sustainable operator workforce," said WEF President Lynn Broaddus. "We are proud to assist water professionals seeking training and certification and look forward to seeing the impact of this new scholarship program." The scholarship application deadline is April 1. For more information and to apply: *https://www.wef.org/membership/awards-recognition/wef-awards/operator-scholarship/*

Laboratory Analysis Update

by Melodi Clark and Tony Hintze

Greeting's from your state lab co-chairs Tony and Melodi. We hope you all had a wonderful holiday season even if it was not normal and we hope you all are healthy and safe.

Looking into 2021 we are hoping at some point to get back to in person meetings. We are also tossing around ideas for some webinars that we can host that focus on lab and potentially the Lab Analyst Exam.

We want to remind everyone not to forget to look at your nominees for the Section Lab Analyst award and also the Crystal Crucible award. Even though we have not been together I am sure there are some very deserving lab analysts out there that should be recognized.

This year our annual conference will be a One Water event which is super exciting. Abstracts are currently under review and we're hoping to have a lab track.

Tony and I hope everyone has a great first quarter of 2021 and we hope to see you all really soon.

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.

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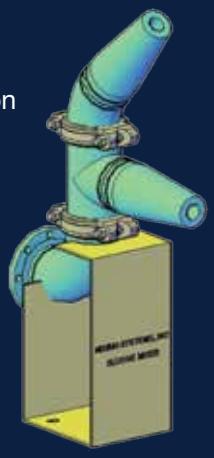

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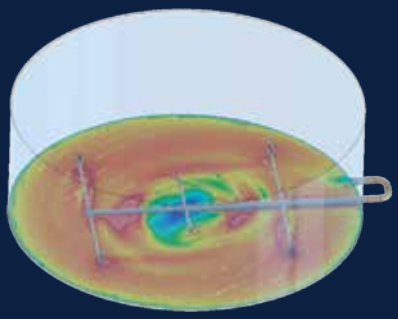
- Equalization tanks
- Anoxic Zones
- Water Storage Tanks
- ATAD digester tanks
- CSO Retention Basins
- Crude Oil Storage Tanks
- Biogas Tanks



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