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Transitioning to a New Generation

92ND ANNUAL MEETING

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CSWEA: The Water Environment Machine

By David Arnott

As President, I have seen the many inner workings of our Association. Before my time as President, I had a vague idea of the many parts of our organization. However, in this position, I am exposed to all that goes on in the Association from the state section level work, to the Association work, to coordination with the Water Environment Federation (WEF). The type of work in our Association includes: committee work and reports, technology research and dissemination, equipment and product application, budget creation and tracking, treasurer activities and account reconciliation, strategic plan formation, training, teaching, administration, and many others. This is all in addition to our 'day jobs' as we volunteer our time to further the cause of clean water. In the last year as President, I have a new appreciation of all the aspects of our Association working together toward the goal of promoting the clean water environment.

I think of our Association as a mature organization that keeps producing great things year after year, like a machine. These include many state and Association-level seminars and webinars, a top notch publication in *Central States Water*, an annual meeting packed full of innovative technical content, opportunities for service projects in the US or Costa Rica (Global Water Stewardship), access to committees, programs and scholarships at the Water Environment and Research Federation (e.g. Leaders Innovation Forum for Technology and Go See It), a new Operators Training Program, and many other benefits. CSWEA offers many 'deliverables' to our members. In 2018, CSWEA was part of 80 different water environment events ranging from full or partial sponsorships to event registration, e-blast promotion, technical paper content creation, and many other areas of involvement.

"The engine of our machine is our people. We all play a different part."

The engine of our machine is our people. We all play a different part. Academia provides research and information dissemination; manufacturers and representatives provide the applied technology to practical situations and problems, contractors build our infrastructure, consultants provide the planning, design, construction and operational assistance, and utilities and municipalities are the end user. They tell the rest of us what works and what needs improvement. They are on the front lines of the water environment for wastewater treatment and storm water. We are fortunate to have great people on all levels each doing our own part to keep the machine running year after year!

I am especially excited about the new volunteers we coordinated with to get involved with CSWEA in the last year. There have been numerous times in

"New members bring fresh perspectives and ideas that are healthy for any organization."

the last 11 months where the Executive Committee, working with the Membership Committees in each state, have helped to place new members of CSWEA on committees that are in-line with their interests. These new volunteers will be the leaders of our Association in the future. I feel we should always be very intentional about reaching out to new people and getting them involved in our organization in a way that is right for them. New members bring fresh perspectives and ideas that are healthy for any organization.

Another aspect of our machine is strong governance in the form of state and Association level policies and procedures and seminar memoranda of understandings. I feel we have strong governing documents that provide the framework for our inner workings. Activities such as committee make-up and responsibilities, election of officers, and planning for our numerous seminars are helped with strong organizational documents. Although these activities take hard work, the framework is there to provide continuity year after year.

Perhaps the crowning example of our machine turning out high quality products is our Annual Meeting. Our theme this year is *Transitioning to a New Generation*. The emphasis is getting Young Professionals even more engaged in our Association. The Local Arrangements Committee has been hard at work to provide a great experience at the Annual Meeting. Please see the Annual Meeting preview in later pages of this issue.

I want to thank everyone in the Association for the opportunity to serve as your President. I enjoyed getting to know more of you better and leading the organization. I believe we have made progress on two goals of mine, which were becoming closer with WEF and engaging Young Professionals to a greater degree. The Association's newer Innovation and Technology Committee is taking off and leveraging the expertise of WEF to accelerate the rate at which new technology can be showcased and utilized by utilities. I see Young Professionals stepping into larger roles in the state sections and the Association. These are exciting developments for our organization.

Let's continue to work together to keep the water environment machine operating at peak efficiency. I look forward to seeing you at the Annual Meeting in Madison in May. CS

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Objectives, Initiatives, and Goals

By Eric Lynne and Derek Wold

Eric Lynne

Derek Wold

The House of Delegates (HOD) is gearing up for WEFMAXs, which will showcase the initiatives being pushed forward by the Delegates and WEF staff. These initiatives help support WEF's mission to 1) connect water professionals, 2) enrich the expertise of water professionals, 3) increase the awareness of the impact and value of water, and 4) provide a platform for water sector innovation.

Last October, WEF announced the following objectives for 2019:

- To partner with the National Green Infrastructure Certification program. Any member who is interested in this should contact a Delegate and we'll get you in on the ground floor.
- To relaunch the *Water's Worth It* Campaign. Pull up the WEF website and you'll find the old and new versions of this. A major change was to freshen the logos, and change the terms from 'Our (i.e. Effort)' to 'Your (i.e. Effort)', to make the value of water feel more personal. These new marketing materials are available for bill stuffers and social media.
- To promote Utility of the Future and LIFT. CSWEA has already taken great strides towards getting this out to our members, so be sure to jump on it! This is not something that all MAs are providing, thus the initiative by WEF to continue to promote it.
- To provide support to grassroots innovation and change through the Member Association Grant Program. CSWEA has submitted one application thus far and can submit additional as ideas are brought forward.
- To develop a new AMS member database, which has long needed updating to enable better information sharing for memberships so we can better reach and interact with our members.
- To focus on sustainability in all activities, down to the hotel partnerships made for events. CSWEA agrees with this concept, but in order to uphold our budget, we do not foresee major changes from this.
- To continue the MA: WEF Reciprocal Membership program. CSWEA was (and may again be) given WEF memberships for each non-member WEFTEC attendee that we allow to be CSWEA members.

WEFTEC RECAP

A *Table Talk* with delegates from similar sized MAs from around the country discussed the following topics:

- What are your MA's greatest needs?
- What do you think your MA does really well?
- In a dream world, what will your MA accomplish in the next five years?

This was a great opportunity to hear ideas from other MAs and share some of the things that CSWEA does really well. Our utility pricing for the annual conference and GWS initiative were two areas that caught interest from other MAs. The common themes and biggest needs are membership/engagement, operators, and diversity; though areas WEF does really well include training and conferences. In addition to addressing our needs, the goals for the next five years include self-promotion, operator training, and partnerships.

HOD UPDATE

The House of Delegates has five standing committees: nominating, steering, budget, outreach and WEFMAX. Derek (Steering) and Eric (Outreach) will provide updates for these committees over the course of year. In addition, there are also several HOD workgroups that tackle key action items throughout the year to better our organization. Key work products include:

- **The Identification of priority topics for WEFMAX presentations.** Derek, Eric, and Mohammed submitted a list of focus areas that we've deemed most critical to our Central States' needs. Main focus areas include operators, YPs, and membership growth
- **The Operator Initiatives Workgroup.** Derek is our representative on this workgroup, which will seek to assist the WEF Operator Advisory Panel (OAP). The mission of the OAP is promoting and supporting the professional operator through the development of promotional materials to support and encourage participation in WEF operator-oriented programs and services, including the Operator Ingenuity Contest. The workgroup will also assist in the OAP's current efforts to survey MA's on operator workforce development, assist in the review of existing operator training materials (both WEF and MA developed) to provide a gap analysis for content. The workgroup will also assist in other WEF operator initiatives as the need arises. This includes but is not limited to the following:

- Promoting the role of the professional operator in the community, WEF Operations Challenge, and WEF OWWLs. WEF recently released a series of OWWLs operator fact sheets, please check them out.
- Promoting and endorsing ABC Professional Operator Designation.
- Passing along information for utility managers on how to support operators in the workplace.
- Inform MAs of available operator training materials.
- Distributing operator-oriented articles for MA magazines.
- Defining long-term MA operator training strategy working with OAP.
- Investigate workforce development for future operators and living wage material to provide deliverables to MAs for distribution.

- **The Member Association Resources Workgroup.** This workgroup is actively assembling a database of MA Resources with particular emphasis on staffing, technical training/events, financial, and awards. WEF Staff will host the compendium as a toolkit on the MA Resources Center of the website.
- The Membership Relations Workgroup's new focus on increasing WEF's diversity towards all members. Specific focus will be to develop materials that tailor towards women and non-english speaking minorities.

WEFMAX 2019

All association leaders are encouraged to attend a WEFMAX to network, learn, and share experiences with other MAs. The locations for 2019 WEFMAXs have been identified as follows:

- British Colombia (Vancouver) March 13-15.
- Arizona (Scottsdale) March 27-29 (Derek is attending).
- Alabama (Orange Beach/Floribama) May 15-17.
- Kentucky-Tennessee (Nashville) May 29-31 (Eric is attending).

DELEGATE TRANSITIONAL NOTE

Eric Lynne is currently serving as our first Delegate, with a term ending WEFTEC 2019. During the upcoming May Annual Meeting a new Delegate will be elected for a three-year term ending in 2021. CS

Teach them young – Teach them well

By Mohammed Haque

Recently, I was honored to attend the LatinoSan conference in San Jose, Costa Rica. The conference featured 1,400 high-level attendees of government organizations from the countries that make up South and Central America. Representatives were present from Mexico to Chile and there to share their progress on assisting the 2.4 billion people that don't have access to sanitation. The conference takes place every three years and this was the first time it was hosted by Costa Rica. The country has made significant efforts in the last several years to advance wastewater treatment throughout the country, with numerous projects planned and under construction.

Over the last five years, the work of Global Water Stewardship (GWS) has been noticed by the Costa Rican government entities. It was exceptional for our GWS team to be mentioned during the keynote panel featuring the President of Costa Rica, Carlos Alvarado Quesada and the CEO of AyA, the national water and wastewater agency, Yamileth Astorga. Hearing Aura Sandi, President of the ASADA – Santa Elena/Monteverde talk about the CSWEA/GWS student design competition on the international stage was a proud moment of all the great work that our volunteers do to move wastewater treatment forward.

During the conference, we were featured for our work in Costa Rica during a presentation that included Water for People – Bolivia. To see GWS make an impact worthy of recognition in five years relative to WFP in 28 years was amazing. We also attended a young professional (YP) workshop and we linked up with several of them for future efforts. It was great to see that YPs are valued throughout the industry, even in Latin America. Their passion shone the same way our YPs shine in the US.

The same day, many of our numerous volunteers were putting on the 24th Annual Education Seminar featuring one of the most prominent names in the industry, Dr. James Barnard. It's amazing how exceptionally talented our industry is and our passion shows. We are the catalyst for progress in our water environment both in the Midwest and abroad. If you are part of this industry, you too should be proud of our collective work.

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Later in the week, Eider Alvarez, Mike Pepin, and I got the chance to visit Monteverde – the site of this year's GWS student design project – La Fortuna (Arenal Volcano location). The highlight of the trip was a visit to bilingual elementary school in La Fortuna. The school displayed the best murals and we got to take pictures of the amazing young kids at the school with some of them. What a heartwarming day that was – we could have spent all day there. We are super-excited to visit the school in August to build them a biogarden and to make presentations for them on sanitation and the need to protect the water environment. The message that rang true to me was *Teach them young; Teach then well*. The young professionals are our future and as we transition to a new generation, we had to do everything we can to focus on education so that we leave our water environment in the best of hands.

A big thank you to Mike Pepin and Eider Alvarez-Puras for being part of this journey and for sharing some great moments at the school. I could not have asked for better company. CS

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A Most Sincere Thank You

By Troy Larson

As I write this, I am snowed in – partially due to the inclement weather, but also because it was an option for me today. Many of us have obligations that force us into difficult weather conditions, but our situations might vary from day to day. For others, not going out into the elements is not really an option at all. Many in our industry are not only expected to get to work regardless of weather, but also have the difficulty of the work increase due to poor weather. A large number of our communities cross train their employees, meaning that their wastewater treatment plant operators are in a snow plow right now. This extra effort will take their time and energy, while their core responsibilities go unattended until the storm is over and all the work is still there, waiting. This storm is going to be followed with a polar vortex and these same men and women are going to be thawing frozen pipes and hoping that the frozen scum doesn't damage an aerator or worse. As fate would have it, I heard from a client fighting a frozen digester cover while I was working on this article. Through effort and ingenuity, they were able to get it un-frozen before conditions went from bad to worse.

The prospect of being on-call and having to leave your family, the comfort of your own bed, and the safety of your home is a burden that many in our industry live with every day. Noting that this is the nature of the business, whether it is snow, severe cold, excessive rain, failed equipment, or any other multitude of reasons, please accept my most sincere *thank you*.

Thank you for answering the call when you would rather be doing anything else. Thank you for staying within your response time radius just in case something is needed. Thank you for making our water resources better every day regardless of the conditions.

I would also like to thank those who work on the committees that are the engine that run the Wisconsin Section. They earn us our operating funds, implement our initiatives, and provide value to our members. Committee participation is vital to the organization, but it is also the greatest opportunity within the Wisconsin Section. Go to the CSWEA website to determine if there are any committees on which you would like to serve and be sure to reach out to the Chair. Better yet, look for one of the committees that does not have a Vice-Chair listed and reach out to them with the intent of leading it someday. My participation on committees has provided me networking, education, and leadership opportunities that have been invaluable. Thank you to the committee members who drive this organization and especially, thank you to the committee members who have made my experience a special one.

Thank you, Mohammed and Amy Haque, who filled-in for registration roles, necessitated by changes in one of our partner organizations. Those that attend the seminars that we co-sponsor would not otherwise know that you stepped up to fill our needs because you did it so capably.

With the annual conference being in Wisconsin, thank you to the local arrangements committee for all that they do, as they are primarily comprised of Wisconsin Section members this year. If you prescribe to the theory that throwing a dinner party is one of the most stressful things in life, then you can appreciate the work that this committee does. If you eat it, drink it, or tour it, someone from the planning committees has invested their personal time working through details such as 'can we afford it?'; 'will it take too long?'; and 'will enough people like it?'. Again, thank you.

Thank you to Jon Butt (Wisconsin Section Treasurer) and Sam Austin (Wisconsin Section Secretary) for the behind-the-scenes work that each of you do. Thank you, Jay Kemp and Alan Grooms, for sharing your experiences as Chair to help me with my year. Thank you, Rachel Lee and Veronica Loete, for succeeding me and keeping this great organization moving forward.

Finally, thank you to the Wisconsin Section members of CSWEA – serving as the Chair this year was one of the greatest honors of my professional life! *Thank you all*.

"Thank you to the Wisconsin Section members of CSWEA – serving as the Chair this year was one of the greatest honors of my professional life! *Thank you all.*"

At the Finish Line

By Peter Daniels

In a week (from when I write this), I'll be skiing the American Birkebeiner cross-country ski race in Wisconsin along with 6,000 other people. I'd bet a few other CSWEA folks will be skiing or spectating as well. The Birkie is 30+ miles of beautiful skiing through the forests of northwest Wisconsin, is full of challenging hills, has aid stations supported by wonderful volunteers, and after a lot of work you end at a spectacular finish in downtown Hayward. In a sense, I can't help but think of how my year as the Minnesota Section Chair compares to the experience of the race.

The start of my tenure as Section Chair reminds me of the start of the Birkie in 2014. That year the Cable/Hayward area received about a foot of snow just a couple days before the race, which made roads in the area treacherous and caused me to miss my scheduled start time by about an hour. I also missed the CSWEA Annual Meeting this past May, although thankfully for better reasons, as my wife and I were enjoying being with our newborn son. Not surprisingly, the other great people in the MN Section took care of whatever duties I would have had to make sure the State Section business meeting went smoothly and the goals from the event were accomplished.

After the start, the Birkie course very quickly splits into two different trails – one for the 'classic' skiers, and one for the 'skate' skiers (the two different cross-country skiing techniques). The trails come back together for each aid station, then split apart again until the next one. This year the Minnesota Section held our annual State Section Exchange (called MNX) in June in St. Cloud. This could be compared to one of those early aid stations – the participants get back together to reenergize and focus for the rest of the year. MNX is a great event where anyone from the Section is invited to come participate in an exchange of ideas and to discuss goals and initiatives for the year. We had awesome turnout – 18 people made it to the event! Thanks again to the City of St. Cloud for continuing to host this important event. Our next is scheduled for June 18, 2019.

I'd compare the 2018 Conference on the Environment to crossing County Road OO (Double-O) during the race. This is about the halfway point, and a great place for spectators to access the course. It is also the point during the race when the classic and skate skiers connect and stay together until the finish. It is a very festive location. At that point, the skiers just finished a big climb up to the road crossing and are happy to see friends, families, and aid station volunteers. The COE has a lot of those characteristics. We connect with our AWMA and CSWEA colleagues and listen to some wonderful technical presentations. I mentioned the climb up to Double-O – getting there doesn't come without a lot of work. The COE planning committee did another awesome job pulling this event off.

Another well-known series of hills on the course are the ones after the Mosquito Brook aid station. These come at about the 40-kilometer mark of the course. Skiers have worked very hard up to this point, then have a couple of the steepest and longest climbs on the course. It is incredibly rewarding to get to the top knowing there are just a couple hills left. I felt that way about the Innovative Conference held in early February. This year the Minnesota Section and our counterparts at the MN Wastewater Operators Association (MWOA) chose to move the venue of this event to the River's Edge Convention Center in St. Cloud. Moving venues requires a lot of effort. There are a lot of new things to learn about logistics, flow, catering, signage, etc. – but wow did it turn out great. We had great participant attendance, and the new Exhibitor forum was a success. Everyone who helped with the planning should be proud. The business meeting held in the morning before the conference also had a packed agenda – we nominated a new Vice Chair, selected dates of upcoming events, selected applicants to attend the National Water Policy Fly-In in Washington, DC, and took care of other business items.

Finally, the race concludes on Main Street in downtown Hayward. Main Street is filled with snow to get skiers to the end. The sidewalks are packed with spectators. Skiers cross the finish line and celebrate with each other for a bit before heading to the High School to get changed into some dry clothes. Then they get back out to join friends on the sidewalk and cheer on fellow skiers still coming in. I am excited to continue to help and support CSWEA and the Minnesota Section as Past-Chair. We are just getting started on the 2019 Conference on the Environment Planning, and I anticipate being involved in the MN Section's new Awards Committee. Thanks to everyone who has been involved in any capacity with the Minnesota Section the past year, we accomplished a lot. CS

"MNX is a great event where anyone from the Section is invited to come participate in an exchange of ideas and to discuss goals and initiatives for the year."

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36th Innovative Approaches to Wastewater Operations Conference

A new venue, new program elements, and new award category were well received by the nearly 175 participants at the Minnesota Section 36th Innovative Approaches to Wastewater Operations Conference held on February 5 at the St. Cloud Rivers Edge Conference Center, which overlooked the mighty Mississippi River. The St. Cloud Rivers Edge Conference Center offered a well-lit, open environment for hosting this year's conference. The additional space allowed the program to include an exhibitor event. With room for 20 exhibitors and a platform with a microphone, vendors took advantage of the opportunity to inform the participants of advances in technology in the wastewater treatment industry.

> "The Minnesota Section created the R2E award to recognize and honor an individual, facility, or organization for outstanding contributions in advancing resource recovery and energy efficiency initiatives, including biosolids and water reuse. This year's recipient is the City of Mankato for their focus on water reuse."

Along with the new venue and exhibitor hall, a new Resource Recovery & Energy (R2E) Award was presented. The Minnesota Section created the R2E award to recognize and honor an individual, facility, or organization for outstanding contributions in advancing resource recovery and energy efficiency initiatives, including biosolids and water reuse. This year's recipient is the City of Mankato for their focus on water reuse. The award was accepted by Josh Gad in recognition of the substantial reuse of wastewater effluent (500 million gallons annually) for cooling at a local power plant, irrigation, contractor use for hydro-seeding and pipe testing, as well as use within their own facility.

Brian Schoendecker from the City of St. Cloud was recognized as the Minnesota Section Operator of the Year for his dedication, leadership and strong customer services skills on varied plant improvement projects leading to exemplary project results with cost savings.

Minnesota Section Chair Peter Daniels presents the R2E award to Josh Gad of the City of Mankato.

This conference is planned and sponsored by CSWEA and the Minnesota Wastewater Operators Association (MWOA) to create an exchange that has valued learning opportunities for utility leaders, engineers and operators, as well as consultants, regulators, and vendors with student participation as a cornerstone. With innovation in mind, the topic areas that were covered included biofuel recovery, new pipeline inspection technology, trenchless piping rehabilitation options, industrial stormwater capture, treatment and reuse, lift station odor control, characterizing nitrifying bacteria, and wastewater energy savings. CS

Education as Service

By Chris Marschinke

Spring has sprung – or we may have just gotten a foot of snow, both equally likely at the time you're reading this. But I'll defer to optimism and assume we've entered into the season of rebirth. With our New Year's resolutions long in the rearview mirror it's time to reflect on past goals and set some (attainable) new ones. This past summer I wrote about engaging new members and encouraging those to join committees to provide some fresh perspectives. Since then we've had strong additions to our state section – including Joe Lapastora at the Northern Moraine WRD, Tom Romza with the Glenbard Wastewater Authority, and Stephanie Cioni with the Wheaton Sanitary District, among others. These volunteers have wasted no time jumping into the Collections, Operations, and Public Education committees.

One that I'm particularly excited about is the reinvigoration of our Public Education committee. While the Central States' Public Education committee has remained strong over the years, our section's initiative in this regard has waned a bit. New member Stephanie Cioni has taken the reins and agreed (with only a small amount of persuasion) to act as our new section Public Education Chair. With the support of venerated public-education pros Danette Stout and Sue Baert at the Wheaton Sanitary District, Stephanie is perfectly suited to succeed in this position. A whole two weeks into the role and Stephanie has already begun working to increase the organization's presence in our communities. This will begin with hands-on demonstrations of the importance of water treatment in area classrooms. Stephanie has applied for 'Classroom Kit' grants through the EarthEcho Challenge (formerly the World Water Monitoring Challenge). Each of these kits includes hardware and reagents to conduct 50 common water tests – dissolved oxygen, pH, temperature, turbidity and more. This will allow our volunteers to educate students (and potential future YPs) about our water environment and how our operators and professionals help to protect it every day. The initiative already has a number of volunteers from our section as well as schools interested in inviting our groups in. I look forward to the new energy on the committee and seeing how we can continue to give back to our communities.

In addition to the new membership in our section, we've also reorganized several of the committee structures to reflect how we operate and provide the resources to plan and execute our events. The Laboratory and Industrial Pretreatment committees have been operating in parallel for several years, and coordinate seminars and events effectively. The section discussed alternating-year seminars for these committees, but ultimately elected to join the two and focus on reaching an audience that often shares many of the same issues and interests. Similarly, the Safety Committee and the Operations Committee were joined to ensure the important topics of both committees are discussed on a regular basis, and covered during annual seminars. Our Operations Chair, Jason Neighbors, has an excellent background in safety systems and procedures. He brings a wealth of ideas to the newly combined committee and I know we'll see interesting discussions and programs from the well-supported Operations & Safety Committee.

While we've achieved many of the goals we set out over the past year, there is always room to grow. The CSWEA Certified Operator Training Program is a major initiative that will continue to take shape throughout the coming year. By the time you read this, the inaugural course at the Kishwaukee WRD will have been held. At the time of this writing the interest and registrations for the course have been outstanding. This program is an excellent opportunity to continue to develop your knowledge as an operator, engineer, manufacturer or anything in between. For operators, the CSWEA Certification that comes with completing the minimum of eight courses will also distinguish you from others in the industry and recognize your commitment to continual professional growth. This is a program that I know we're all excited to see take off and has the full support of the section and association.

I hope everyone is just as optimistic about what spring will bring, both personally and for our organization. I'm proud of the work we've accomplished over the past year, and look forward to 2019. As I transition out of my role as Chair of the section, I'm happy to welcome James Kerrigan with the Fox River WRD into the position. James has been an excellent section Vice-Chair as well as YP Chair and Operations Committee member for a number of years. I know James will continue to bring new ideas and energy to our section this coming year. CS

"I hope everyone is just as optimistic about what spring will bring, both personally and for our organization. I'm proud of the work we've accomplished over the past year, and look forward to 2019."

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NEW PROGRAM

CENTRAL STATES WATER ENVIRONMENT ASSOCIATION

OPERATOR TRAINING PROGRAM

ILLINOIS PROGRAM

PURPOSE

The CSWEA Operator Training Program is intended to recognize a person's commitment to professionalism, continual improvement and ability to finish a long-term task. This will help Operators prepare for Wastewater Certification Exams with IEPA. It is also a separate acknowledgment of the completion of a training program consisting of top-notch materials and instructors. Individuals benefit by having the ability to differentiate themselves from other candidates when seeking promotions and/or new jobs, and to be able to take pride in an important professional accomplishment.

Employers also benefit by being able to identify employees and potential employees who are serious about a career in the wastewater treatment profession, and are willing to invest in themselves and their future.

CSWEA CERTIFIED OPERATOR REQUIREMENTS

To become a CSWEA Certified Operator, you will need to attend a minimum of eight (8) CSWEA Courses from the prescribed list in a period of no more than three (3) years. In addition, you will need to attend one (1) Seminar from the list of seminars (to the right). Once you are a CSWEA Certified Operator, refresher courses are at no cost to you.

The Courses will include a multiple-choice test (approximately 20 questions) that must be passed by the participant with a score of 70% before the course will be counted towards fulfilling the CSWEA Certified Operator requirements.

IEPA WASTEWATER OPERATOR CERTIFICATION EXAMS

The CSWEA Courses are an excellent way to prepare for the IEPA Wastewater Operator Certification Exams. The table to the right outlines the recommended courses for preparation of the Operator Exams.

	IEPA CLASS			
COURSE	3&4	2	1	Collec-tions
Purpose and Fundamentals of WW Treatment	X			
Health and Safety in Water Treatment Plants	X			
Wastewater Math I	X			
Wastewater Math II		X		
Activated Sludge I		X		
Activated Sludge II			X	
Preliminary and Primary Treatment		X		
Secondary Treatment			X	
Disinfection		X		
Solids Handling		X		
Anaerobic Digesters			X	
Collection Systems				X
Maintenance I	X			
Maintenance II		X		

SEMINARS

- CSWEA Annual Conference
- Education Seminar
- IL Section Operations Seminar
- IL Section Collections Seminar
- IL Section Energy Seminar
- IL Section Resource Recovery Seminar

GETTING STARTED

There is a $50 enrollment fee to be in the program. Please use the attached form to enroll, or do it online at ***www.cswea.org.***

Individual class registrations will need to done separately. Once you have registered for the program, you have 3 years to meet the certification requirements

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CENTRAL STATES WATER ENVIRONMENT ASSOCIATION

OPERATOR TRAINING PROGRAM

ILLINOIS PROGRAM

PROGRAM REGISTRATION FORM

Name	
Company	
Address	
City, State, Zip Code	
Phone Number	Email
Operator ID	

PAYMENT INFORMATION

(AMOUNT ENCLOSED $50.00)

☐ CREDIT CARD	
Credit Card Number	
Expiration Date	CCV
Signature	

☐ CHECK
Check Number

Mail to CSWEA, 1021 Alexandra Blvd, Crystal Lake, IL 60014

Payment and registration can also be done online at www.cswea.org.

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CSWEA Officer Nominations

JANE CARLSON

2nd Vice President

Jane Carlson has been a member of CSWEA since 1990. She has been active in Wisconsin Section since then, serving on several committees and as Section Chair. Most recently, she was Co-Chair of the 2019 Wisconsin Government Affairs Seminar. Jane graduated from Michigan Technological University and the University of Iowa with BS and MS degrees in Civil and Environmental Engineering. She is a Senior Associate with Strand Associates, Inc., where she has worked for 31 years. She is also an adjunct faculty member at UW-Madison and directs the online Master of Engineering-Environmental Engineering program.

KATHY CROWSON

PWO Representative

Kathy Crowson has been an active member of WEF since 1995. She currently serves as the Chair of the Minnesota Section Operations Committee of CSWEA, and has actively participated in the Committee for the last three years. During this period, Kathy led the team nominating the Minnesota Section Operator of the Year. Kathy received the Operator of the Year for Minnesota in 2014, and represented CSWEA on the 2014 Operations Challenge Team in New Orleans. Kathy is currently a Senior Wastewater Operations Specialist for SEH, a consulting engineering firm. Prior to joining SEH, she provided leadership as an Operations and Maintenance Supervisor for Western Lake Superior Sanitary District in Duluth, Minnesota from 1996 to 2016. Kathy is a licensed Professional Engineer in Minnesota, a Minnesota Class A Certified Operator, and a Minnesota Type IV Certified Land Application Operator. She is looking forward to serving as the Regional Professional Wastewater Operators Representative for CSWEA.

TRACY L. EKOLA

WEF Delegate

Tracy Ekola has participated in CSWEA and WEF since 1996. She has presented at CSWEA Annual Conference, WEFTEC, WEF Biosolids Conference, has served as the MN Section Chair, on the MN Section Membership Committee, Government Relations Committee, and as the Innovative Conference Chair. Tracy also served as WEF Delegate-at-Large and chair of the WEF House of Delegates (HOD) Budget Committee, WEF HOD Strategic Planning Committee, and WEF HOD Student Chapter Committee. She enjoys participating in WEF Fly-In and Water Week events and is actively involved in working with MN state agencies and MN Governor appointed committees on water/wastewater regulations. Tracy is Vice President and Regional Leader for SEH's Midwest operations. SEH is an engineering and environmental consulting firm with offices across the US and headquarters in St. Paul, MN. Tracy graduated in 1992 with a Bachelors of Civil Engineering from the University of Minnesota. She is a licensed professional engineer in Minnesota, South Dakota, North Dakota, Wisconsin, Minnesota, Iowa, and Nebraska. As an ardent proponent of the planet's greatest resource, she works toward a better world by providing clean water solutions.

BETH VOGT

Treasurer

Beth Vogt has been an active member of CSWEA since 1996, when she served as Secretary-Treasurer of the Illinois Section and on the Annual Meeting Local Arrangements Committee. She has also served as Illinois Section Chair, Illinois Section Trustee, Local Arrangements Chair, Annual Meeting Technical Program Committee Chair, Education Seminar Chair, and finally served as 2nd Vice-President, 1st Vice-President, President, and Past President of CSWEA. Beth is a licensed professional engineer in the state of Illinois. She received a bachelor's degree in Civil/Environmental Engineering from the University of Wisconsin-Madison and a master's degree in Civil/Environmental Engineering from Purdue University. She worked as a consulting engineer serving municipal clients for over 19 years before accepting the position of Technical Services Director for the Fox River Water Reclamation District in Elgin, IL. CS

Racing Toward Phosphorus Compliance?

Photo Credit: Mercedes AMG North America

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- Aluminum Chlorohydrate (DelPAC XG)
- DelPAC 6

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Welcome to the **92nd Annual Meeting**
of the Central States Water Environment Association
WISCONSIN | MINNESOTA | ILLINOIS

92ND ANNUAL MEETING

MAY 14-16, 2019 | MONONA TERRACE, MADISON, WISCONSIN

Transitioning to a New Generation

Earn up to 12 CEUs/ 14 PDHs

PROGRAM AND REGISTRATION INFORMATION

MONONA TERRACE

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Welcome to the 92nd Annual Meeting

David Arnott,
CSWEA President

The Local Planning Committee is excited about CSWEA's 92nd Annual Meeting at the Monona Terrace in beautiful Madison, WI. Our theme this year is *Transitioning to a New Generation*, which focuses on getting Young Professionals even more engaged in our industry. We have been working hard to provide a great annual meeting to build technical knowledge, provide networking opportunities, conduct Section and Association business and provide time for our members to reconnect with friends.

The Annual Meeting starts on the Tuesday with golf; a service project with Yahara WINs; and concurrent tours of storm water features at the UW-Madison Arboretum, Lake Wingra, and the Nine Springs Wastewater Treatment Plant. New this year, the stormwater tour will be done on bicycles (weather permitting). In the late afternoon, there are meetings for the 7S Society, Young Professionals, Golden Manhole Society, and Global Water Stewardship groups. Finally, the day concludes with our social event at the Madison Children's Museum.

Wednesday starts with a 5k fun run and yoga, before transitioning into technical sessions and the exhibition. This year, we have a couple time periods reserved for 'exhibition only'. The technical sessions include a segment on soft skills and leadership, which will be valuable to young and seasoned professionals alike. During this time, a cross-generational panel discussion will take place where members can share how their careers have evolved and developed. We will recognize outstanding members who do great things every day to support the water environment and our Association on Wednesday evening during the awards reception.

The State Section breakfast kicks off activities on Thursday, followed by technical sessions and the exhibition. There are four hands-on operator focused technical sessions planned for Thursday morning. The Association Meeting and Luncheon will take place at mid-day. The Annual Meeting concludes with technical session in the afternoon including ethics presentations.

Thanks to all who have worked for this Annual Meeting focused on *Transitioning to a New Generation*. We look forward to seeing you in May!

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Conference at a Glance

TUESDAY MAY 14		LOCATION	ROOM
10:00 - 4:00	Golf Outing	Yahara Hills Golf Course	---
12:30 - 3:45	YP Service Project	Capital Springs State Recreation Area	---
12:30 - 3:45	Stormwater Tour	UW-Madison Arboretum and Lake Wingra	---
2:00 - 4:00	Plant Tour	Madison MSD – Nine Springs WWTP	---
4:00 - 5:30	Tours Meet-up at Brewery	Great Dane (Downtown)	---
4:30 - 5:00	7S Meeting	Monona Terrace	Meeting Room K
4:30 - 5:00	YP Meeting	Monona Terrace	Meeting Room L
5:00 - 5:30	Golden Manhole Society	Monona Terrace	Meeting Room O
5:15 - 6:00	Global Water Stewardship Annual Meeting	Monona Terrace	Meeting Room P
6:30 - 11:00	Social/Meet & Greet	Madison Children's Museum	---

WEDNESDAY MAY 15		LOCATION	ROOM
6:30 - 8:00	5k Run/Walk	Lake Monona Bike Path	---
7:00 - 8:00	Sunrise Yoga	Hilton Madison Monona Terrace	LaFollette
8:30 - 9:30	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
9:00 - 6:00	Exhibits	Monona Terrace	Ballroom ABCD
9:30 - 10:00	Morning Break	Monona Terrace	---
10:00 - 11:00	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
11:00 - 12:00	Exhibits Only Hour	Monona Terrace	Ballroom ABCD
12:00 - 1:30	Exhibitor Lunch	Monona Terrace	Ballroom ABCD
1:30 - 2:30	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
2:30 - 3:30	Poster Session I, Afternoon Break	Monona Terrace	Ballroom ABCD
3:30 - 4:30	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
4:30 - 6:00	Exhibitor Reception	Monona Terrace	Ballroom ABCD
5:00 - 6:00	Annual Business Meeting	Monona Terrace	Hall of Ideas EFGHIJ
6:30 - 7:00	Awards Reception	Monona Terrace	Grand Terrace
7:00 - 9:00	Annual CSWEA Awards Event	Monona Terrace	Grand Terrace

THURSDAY MAY 16		LOCATION	ROOM
7:00 - 8:30	State Section Business Meetings	Monona Terrace	Meeting Rooms K-R
8:30 - 9:30	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
9:00 - 12:00	Exhibits	Monona Terrace	Ballroom ABCD
9:30 - 10:00	Poster Session II, Morning Break	Monona Terrace	Ballroom ABCD
10:00 - 11:00	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
11:00 - 12:00	Exhibits Only Hour	Monona Terrace	Ballroom ABCD
11:30	Silent Auction Bids Due	Monona Terrace	Ballroom ABCD
12:00 - 1:30	Annual CSWEA Association Meeting	Monona Terrace	Grand Terrace
1:30 - 2:30	Technical Sessions/Ethics	Monona Terrace	Hall of Ideas EFGHIJ
2:30 - 3:00	Afternoon Break	Monona Terrace	---
3:00 - 4:00	Technical Sessions/Ethics	Monona Terrace	Hall of Ideas EFGHIJ

REGISTRATION HOURS		
10:00 - 4:00	Tuesday May 14	Hilton Madison Monona Terrace
8:00 - 5:00	Wednesday May 15	Monona Terrace
9:00 - 4:00	Wednesday May 16	Monona Terrace

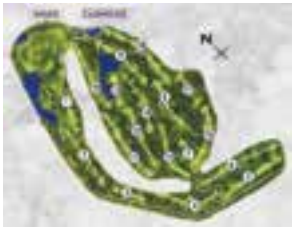
EXHIBIT HALL HOURS		
2:00 - 6:00	Tuesday May 14	Exhibitor Set-Up
8:00 - 6:00	Wednesday May 15	Exhibit Hall Open
8:00 - 12:00	Thursday May 16	Exhibit Hall Open
12:00 - 3:00	Thursday May 16	Exhibitor Move Out

Conference Highlights

Tuesday, May 14, 2019

GOLF OUTING

Yahara Hills Golf Course
6701 Hwy 12 & 18 East Madison, WI 53718
10:00 am to 3:00 pm



Yahara Hills offers a 36-hole regulation golf course spread over 400 acres of rolling hillside. Both 18-hole courses feature large bunkered greens, well-placed hazards and beautiful water features. The 2019 golf event fee includes greens fee, cart, lunch, courtesy gift, along with a chance at many skill prizes. Registration begins at 9:00 am with a shotgun start at 10:00 am.

For corporate sponsorship opportunities or for outing details, contact Marc Zimmerman, Golf Outing Coordinator, by phone (608-373-3461) or by e-mail at *zimmermanm@ci.janesville.wi.us*.

COMMUNITY SERVICE PROJECT

Capital Springs State Recreation Area
1:00 to 4:00 pm

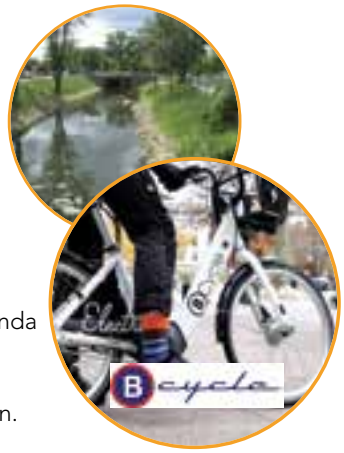
Volunteer to work with other CSWEA volunteers at Madison Metropolitan Sewerage District's restored wetlands and lagoons, which is part of the Yahara WINs program. The lagoons and wetlands are part of the Capital Springs State Recreation Area.

For more information about this year's project, contact Jillian Kiss by phone at 630-587-0470 or by e-mail at *j.kiss@trotter-inc.com*.

CITY OF MADISON STORMWATER TOUR

Stormwater Facilities Protecting the UW-Madison Arboretum and Lake Wingra
12:30 to 3:45 pm

Please join us as the Wisconsin Section Watershed and Stormwater Committee will be hosting a bike tour around Lake Wingra to visit eight stormwater treatment facilities providing stormwater treatment to protect Lake Wingra and the UW-Madison Arboretum. Lake Wingra is a 339-acre lake in the City of Madison with a 5.68 square mile highly urbanized watershed surrounded by the UW-Madison Arboretum, Vilas Park, and Edgewood College lands. The story of rehabilitation, restoration and stormwater treatment will unfold as you participate in a gentle 9.2-mile bike ride (with some modest hills), looping around the lake.



This tour will include:

- Lake Wingra Dam with viewing deck (Might see a Muskie jump).
- Wingra Park Coanda Screen Stormwater Treatment Device.
- Monroe Street Wet Pond Rehabilitation and Alum Pilot Project.
- Manitou Pond Wet Pond and Natural Channel Restoration.
- Nakoma Park Stream Restoration.
- Pond 3 Wet Pond and Upstream Coanda Screen Stormwater Treatment device.
- Pond 4 Wet Pond Rehabilitation.
- Wingra Creek Streambank Restoration.

The bikes (3-speed) will be rented through Madison B-Cycle (*www.madison.bcycle.com*) or attendees can bring their own bikes. Please indicate on registration form if you are bringing your own bike. After the tour, attendees are invited to visit a local brewpub for a beverage before returning to their lodging accommodations.

Tour Logistics: Attendees will drive vehicles from the conference site to the Strand Associates, Inc. parking lot located just east of 901 Plaenert Drive, Madison, WI 53713. Bicycles will be available at the Strand parking lot where the tour will start and end. Afterwards, attendees will gather at the downtown Great Dane Pub & Brewing Company. Carpooling is encouraged. In the event of inclement weather, the tour will either consist of a vehicle tour of the sites or a presentation at the conference site.

Please contact Jon Lindert by phone at 608-251-4843 x1191 or by email at *jon.lindert@strand.com* with questions or for more tour details.

PLANT TOUR

Nine Springs Treatment Facility
3398, 1610 Moorland Rd,
Madison, WI 53713
1:00 to 3:00 pm

The Nine Springs Treatment Facility is a 42 MGD activated sludge treatment facility serving the City of Madison and the surrounding suburbs. The tour will consist of seeing the new state-of-the-art nutrient recovery system; its Platinum LEED certified plant additions; the siloxane scrubbing and mesophilic digestion systems; and include a progress update on their new interpretive public relations/museum building. The facility is a five-minute drive from the Monona Terrace Conference Center.

After the tour, attendees will gather at the downtown Great Dane Pub & Brewing Company. Carpooling is encouraged.

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TUESDAY NIGHT SOCIAL

Madison Children's Museum (100 N Hamilton St)
6:30 pm to 10:30 pm

By day, Madison Children's Museum offers creative play and discovery-learning for children and families. By night, they host many grown-up events, including ours! Join us for the annual social event where, if you'd like, you get to tap your inner child. Start on the rooftop garden and visit the museum's animal friends, with gorgeous views of the Capitol and Lake Mendota. Then move inside for appetizers, drinking, socializing, games and fun – whatever your playful heart desires. There's something for every kid and kid at heart! Join us from 6:30 to 10:30 pm. The Madison Children's Museum is just a short walk from the Hilton.

Wednesday, May 15, 2019

5K RUN/WALK

Lake Monona Bike Path
6:30 to 8:00 am

Participants are asked to meet at the starting line for 6:30 am start. Directions will be provided at registration and via e-mail.

SUNRISE YOGA

Hilton Madison, LaFollette Room
7:00 to 8:00 am

Attendees are welcome to join a Sunrise yoga session. Whether you are an absolute beginner or an experienced yogi, you will benefit physically and mentally from an hour of yoga focused on preparing you for the day ahead. An instructor from Dragonfly Hot Yoga will lead the session. Note that this will not be a 'hot' yoga class. Bring your own mat or borrow one.

TECHNICAL SESSIONS

Monona Terrace Hall of Ideas EFGHIJ
8:30 to 9:30, 10:00 to 11:00 am, 1:30 to 2:30 pm, and 3:30 to 4:30 pm

There will be four concurrent half-hour sessions A, B, C, and D are from 8:30 to 9:30 and 10:00 to 11:00 am. There will be four afternoon concurrent half-hour sessions E, F, G, and H from 1:30 to 2:30 and 3:30 to 4:30 pm. For more information, please see the Technical Program.

EXHIBITS

Monona Terrace Ballroom
9:00 am to 6:00 pm

Exhibits showcasing the latest technology in wastewater, collection systems, treatment and many related items will be on display. Be sure to visit our fine exhibitors and thank them for their support of our Association.

EXHIBITOR LUNCH

Monona Terrace Ballroom
12:00 to 1:30 pm

The Exhibitor Lunch offers exhibitors and conference attendees to meet in a relaxing and social environment. Please visit the Exhibit Hall where the Exhibitor Lunch will be held.

POSTER SESSION I

Monona Terrace Ballroom
2:30 to 3:30 pm

Posters will be on display in the Exhibit Hall. Presenters will be available at their posters at this time to discuss their posters and answer questions. Please stop and visit.

EXHIBITOR RECEPTION

Monona Terrace Ballroom
4:30 to 6:00 pm

Light snacks and refreshments will be provided in the Exhibit Hall. Share some refreshments and visit with our exhibitors, and thank them for attending this year's Annual Meeting.

CSWEA ANNUAL BUSINESS MEETING

Monona Terrace Hall of Ideas EFGHIJ
5:00 to 6:00 pm

The Association Business Meeting will include reports from the Association Committees and Sections and the annual election of officers. We encourage everyone to attend and learn about our association's activities.

CSWEA'S 92ND ANNUAL MEETING

CSWEA ANNUAL AWARDS EVENT

Monona Terrace Grand Terrace
6:30 to 9:00 pm

6:30 to 7:00 pm – Social Reception. Connect with friends and enjoy refreshments before the Awards Banquet.
7:00 to 9:00 pm – Awards Presentations. Hear updates about CSWEA activities from the outgoing president, the vision for the year ahead from our incoming president and honor this year's award winners for the many WEF and CSWEA Awards presented to the very best of our industry.

The Annual CSWEA Awards Event is a ticketed event and includes a meal. Please remember to purchase a ticket and bring the ticket to the event.

Thursday, May 16, 2019

STATE SECTION BUSINESS MEETINGS

Monona Terrace Meeting Rooms K-R
7:00 to 8:30 am

Please attend your respective State Section's business meeting to be updated on the activities of the Section and its committees. Don't miss this opportunity to get involved and find out where you can help your Section.

This is a ticketed event and includes a meal. Please remember to purchase and bring your ticket with you.

EXHIBITS

Monona Terrace Ballroom
9:00 to 12:00 pm

Exhibits showcasing the latest technology in wastewater, collection systems, treatment and many related items will be on display. Be sure to visit our fine exhibitors and thank them for their support of our Association.

TECHNICAL SESSIONS

Monona Terrace Hall of Ideas EFGHIJ
8:30 to 9:30, 10:00 to 11:00 am, 1:30 to 2:30 pm, and 3:00 to 4:00 pm

There will be four concurrent half-hour technical sessions K, L, M, and N from 8:30 to 9:30 and 10:00 to 11:00 am. There will be four afternoon concurrent half-hour technical sessions P, Q, R, and S from 1:30 to 2:30 and 3:30 to 4:30 pm. There will also be an Operations Track in the morning, and ethics topics in the afternoon (PE requirement in some states). For more information, please see the Technical Program.

POSTER SESSION II

Monona Terrace Ballroom
9:30 to 10:00 am

Posters will be on display in the Exhibit Hall. Presenters will be available at their posters at this time to discuss their posters and answer questions. Please stop and visit.

SILENT AUCTION

Exhibit Hall/Registration Area

GLOBAL WATER STEWARDSHIP

Auction items donated by exhibitors to benefit the Global Water Stewardship will be displayed in the Exhibit Hall. Support this amazing social and humanitarian effort by donating or bidding on the items. Interested in donating an item? Contact Tom Mulcahy at *tmulcahy@mulcahyshaw.com* for more information. Bids will be posted at 11:30 am in the Exhibit Hall.

ANNUAL CSWEA ASSOCIATION MEETING

Monona Terrace Grand Terrace
12:00 to 1:30 pm

Hear from our President and WEF Visitor as they present a summary of activities and initiatives of the organizations. We will recognize our Operations Challenge teams for their performance at WEFTEC 2018 and our newest inductees to the Golden Manhole Society and the 7S will be announced and honored.

This is a ticketed event and includes a meal. Please remember to purchase and bring your ticket with you.

Technical Program

Wednesday, May 15, 2019				
	8:30-11:00 AM (Break 9:30-10:00)			
	Session A:	**Session B:**	**Session C:**	**Session D:**
	Digestion & Biosolids	**Low Phosphorus Limits**	**Smorgasbord: Algae, Biogas, & Disinfection**	**Stormwater**
	Moderator: Ryan Giefer, WI YP Moderator: Nicholas Domalewski, IL	**Moderator: Andy Bradshaw, MN YP Moderator: Natalie Cook, IL**	**Moderator: Mandy Sheposh, IL YP Moderator: Elizabeth Heise, IL**	**Moderator: Mark Eddington, IL YP Moderator: Paige Peters, WI**
8:30-9:00	From Lime Stabilization to THP, what you need to know before you build **Sudhakar Viswanathan**, Veolia	Newly Developed Cloth Media for Low Phosphorus and Reuse Applications and Practical Testing Methods **Matthew Castillo,** MSA Professional Services, Inc.	The Selection of Advanced Biological Nutrient Recovery (ABNRTM) for Phosphorus Compliance at Two Wisconsin Facilities **Autumn Fisher**, CLEARAS Water Recovery	An Ounce of Prevention is Worth a Pound (at Least!) of Cure: How MMSD is Reducing Flood Risk through the Greenseams® Program and Traditional Flood Management Techniques **Mark Mittag**, Milwaukee MSD
9:00-9:30	Reduced lag time and archaeal community shift after bioaugmenting anaerobic co-digesters fed poly-hydroxybutyrate bioplastic **Nicholas Benn**, Marquette University	WWTP Effluent Phosphorus Filtration for Point-O-Seven-Five **Eric Lynne**, Donohue & Associates, Inc.	Going Green: Clearas ABNR Bench Testing **Patrick Haney**, HDR	Testing, Design and Full-Scale Operation of the First Installed Pile Cloth-Media Disk Filters for Combined Tertiary & Wet Weather Treatment **John Dyson**, Aqua-Aerobic Systems, Inc.
9:30-10:00	Morning Break			
10:00-10:30	Drying and Storing Methanogens for Standard Testing and Bioaugmentation **Dylan Friss**, Marquette University	Innovative Approaches to Phosphorus Compliance in Wisconsin **Matt Claucherty**, Wisconsin Department of Natural Resources	Quantitative statistical assessment of microalgae models to optimize model structure and promote inclusion in water resource recovery facilities (WRRFs) **Brian Shoener**	Public Partnerships, Permits, & a Parking Lot: Underground-Detention in Glenview **Matthew J. Moffitt**, Baxter & Woodman
10:30-11:00	Investigating acid phase co-digestion for medium-chain fatty acid production at a municipal wastewater treatment plant **Matt Seib**, Madison Metropolitan Sewerage District	DNA Technology to Optimize Biological Phosphorus Removal **Trevor Ghylin**, Energenecs/ Microbe Detectives	RINs – Biogas upgrading for Vehicle Fuel and Pipeline Injection **Kim Murdock-Timmerman**, Unison Solutions, Inc.	Elmhurst, Illinois – The Town that Addressed Residential Storm Water Flooding **Paul Burris**, City of Elmhurst
11:00-12:00	Exhibit Hall Hour			
12:00-1:30	Exhibitor Lunch (Ballroom ABCD)			
	1:30-4:30 PM (Break 2:30-3:30)			
	Session F:	**Session G:**	**Session H:**	**Session I:**
	Digestion & Biosolids	**Low Phosphorus Limits**	**Smorgasbord: Algae, Biogas, & Disinfection**	**Leadership & YP**
	Moderator: Ryan Giefer, WI YP Moderator: Ashley Hammerbeck, MN	**Moderator: Andy Bradshaw, MN YP Moderator: Megan Miklosik, IL**	**Moderator: Mandy Sheposh, IL YP Moderator: Ethan Yen, WI**	
1:30-2:00	Enhancing the marketability of biosolids via thermal drying and palletization, challenges and lessons learnt **Sudhakar Viswanathan**, Veolia	Accomplishments in the Silver Creek Adaptive Management and NEW Water's Plan for Full Scale Adaptive Management **Brent Brown**, Jacobs Engineering Group	Understanding Design Standards and Codes for Biogas Systems **Regina Hanson**, Varec Biogas	Cultivating Emotional Intelligence and Leadership Style **Mel Butcher**, Arcadis
2:00-2:30	Successful Marketing Strategies for a Biosolids Fertilizer: BMPs, Nutrient Stewardship and Third party agronomic trials **Mike Dougherty**, Lystek Intrenational	Water Quality Trading Feasibility Study with an In-Depth Site Evaluation Case Study **Mark B. Van Weelden**, Ruekert & Mielke, Inc.	Digester Gas Treatment, Storage and Utilization Transition and Implementation at MMSD SSWRF **Jay Kemp**, Black & Veatch	
2:30-3:30	Poster Session I/Afternoon Break			
3:30-4:00	Strategic Planning and an Environmental Management System lead to Composting at the Metropolitan Water Reclamation District of Greater Chicago **Dan Collins**, MWRDGC – Retired	Chemical Savings by Promoting Enhanced Biological Phosphorus Removal with True Batch Sequencing Batch Reactor **Manuel De Los Santos**, Aqua-Aerobic Systems, Inc.	Electrocoagulation and Electrooxidation Treatment of E. coli for Drinking Water Systems **William Lynn**, Marquette University	Leadership Panel – Saying yes, and other philosophies to gain experience, recognition, and career opportunities **Keith Haas**, **Rachel Lee**, **Cody Schoepke**, and **Mel Butcher**
4:00-4:30	Economic analysis of implementing centrifugal thickening and thermal alkali hydrolysis technologies in a medium sized water resource recovery facility **Zhongtian Li**, Centrisys/CNP	Beat Ultra-Low Phosphorus and Metals Targets with Reactive Filtration: How Citronelle, AL and Georgetown, CO consistently hits µg/L targets **Nick Janous**, Nexom	Current and Historical Wastewater Disinfection Practices: A WEF Survey **Scott Schaefer**, AE2S	
4:30-6:00	Exhibitor Reception			

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Thursday, May 16, 2019					
	8:30-11:00 AM (Break 9:30-10:00)				
	Session K:	**Session L:**	**Session M:**	**Session N:**	**Session O:**
	Collection Systems	**Phosphorus Recovery**	**Energy Reduction**	**Facility Management & Optimization**	**Operations Track**
	Moderator: Mandy Sheposh, IL YP Moderator: Tom Foley, WI	**Moderator: Andy Bradshaw, MN YP Moderator: Mark Van Weelden, WI**	**Moderator: Ryan Giefer, WI YP Moderator: Jilliam Kiss, IL**	**Moderator: Mark Eddington, IL YP Moderator: Leigha Green, IL**	
8:30-9:00	Dominating the Ecology of the Collection System to Reduce H2S Using the Principle of Competitive Exclusion **Ashley Elmore,** In-Pipe Technology	Targeted Phosphorus Recovery **Justin Wippo**, Thermal Processs Systems	Sanitaire OSCAR® Application in Energy Efficiency and Nutrient Removal **Dylan Friss**, Xylem	Oxidation Reduction Potential, a Versatile but Misunderstood Wastewater Treatment Monitoring Parameter **Robert Smith**, YSI, a Xylem brand	Pumps Crane Engineering
9:00-9:30	Wipe Out The Wipes Crisis **Tim Miller**, JWC Environmental	Doubling Down on Phosphorus **Rachel Lee**, Ostara Nutrient Recovery Technologies Inc.	Evaluation of high precision in-situ analysis against benchtop lab analyzers for process insight **Dave Rutowski**, Hach	Impact of Optimizing Polymer Activation on Sludge Dewatering **Yong Kim**, PhD, UGSI Solutions, Inc.	Instrumentation **Trevor Ghylin**, Energenecs/Microbe Detectives
9:30-10:00	Poster Session II/Morning Break				
10:00-10:30	Public versus Private: A Case Study in Infiltration and Inflow Reduction Efforts in Milwaukee, WI **Julie McMullin**, Brown and Caldwell	Phosphorus Control at Des Moines WRF **Eric Evans**, HDR	Generous Orthodoxy: Understanding the future of dissolved oxygen setpoints while acknowledging the past **Leon Downing**, Black & Veatch	Clarifying Settling Tank Capacity – 2D and 3D CFD Applications for Primary and Secondary Clarifiers **William Martin**, Hazen and Sawyer	Valves **Jim Jolly**, Jim Jolly Sales
10:30-11:00	Pipeline Design through the Eyes of a Young Professional **Karissa Brunette,** Greeley and Hansen	Impacts of Nutrient Recovery Performance on Achieving Low-P Effluent Under Dynamic Conditions **Tom Johnson**, Jacobs	To ABAC and beyond: Integrating advanced controls to optimize performance and resource utilization **Colin Fitzgerald**, Jacobs	City of Tulsa and Lafayette Wastewater Treatment Plant Stress Testing Abstract **Chris DeSilva**, Greeley and Hansen	Process Equipment **Tom Mulcahy**, Mulcahy Shaw
11:00-12:00	Exhibitor Hall Hour				
12:00-1:30	Annual CSWEA Association Meeting (Grand Terrace)				
	Session P:	**Session Q:**	**Session R:**	**Session S:**	**Session T:**
	Utility Management	**Phosphorus Recovery**	**Ammonia Removal**	**Facility Management & Optimization**	**Ethics**
	Moderator: Mandy Sheposh, IL YP Moderator: Ryan Holzem, WI	**Moderator: Andy Bradshaw, MN YP Moderator: Emily Maher, WI**	**Moderator: Ryan Giefer, WI YP Moderator: Lee Kimbell, WI**	**Moderator: Mark Eddington, IL YP Moderator: Matthew Hayes, WI**	
1:30-2:00	From Sewage Plant to a Nutrient, Energy and Water Recovery Facility **Patrick Shea** City of St. Cloud	Tons of Green: Algae-Based Nutrient Recovery in Waupun, Wisconsin **Leo Kucek**, Applied Technologies, Inc.	Fond du Lac's Sidestream Deammonification Project – Design, Startup, and Lessons Learned **Randall Wirtz**, Strand Associates, Inc.	The Road to Energy Neutrality – Where to Get Started (FOG/HSW) **Eider Alvarez**, Baxter & Woodman, Inc.	Back to the Future for Professional Ethics **Mark Peterson**, PhD UW-Milwaukee
2:00-2:30	Seeking Sustainable Solutions with Envision: A Comparison of Plant, Pump Station, and Interceptor Projects **Jen Hurlebaus**, Madison Metropolitan Sewerage District	High Efficiency Calcium Phosphate Recovery Technology at The Madison Metropolitan Sewerage District: Stability Metrics, Design Optimization, and Performance **Menachem Tabanpour**, Centrisys-CNP	Is Sidestream Treatment to Meet Ammonia Limits The Best Solution for Your Facility? **Anton Dapcic**, Carollo Engineers	Considerations for Densification of Activated Sludge to Improve Performance and Treatment Capacity **Wendell Khunjar**, Hazen and Sawyer	
2:30-3:00	Afternoon Break				
3:00-3:30	Collaborating for Success in Grand Rapids: Improving Effectiveness, Customer Service, and Saving $25M **Craig Yokopenic**, EMA, Inc.	Creating Value from Wastewater – Phosphorous Recovery for Small and Medium Sized Resource Recovery Facilities **Sudhakar Viswanathan**, Veolia	Evaluating Lagoon Upgrades for Increasingly Stringent Effluent Limits **Nick Bartolerio**, Strand Associates, Inc.	Global Water Stewardship: Bio-garden Construction and 2018-19 Update **Joe Lapastora**, Northern Morraine Wastewater Reclamation District	Ethics and Environmental Problems **Mark Peterson**, PhD, UW-Milwaukee
3:30-4:00	Partnering with Water Softening Providers for Chloride Compliance in Waukesha Wisconsin **Jim Fisher**, Jacobs	Demonstration of an Innovative Phosphorus Recovery Technology with Widespread Application to the Great Lakes Region **Rick Johnson**, InNow Water and Environmental Services	Submerged Attached-Growth Reactors As Lagoon Retrofits For Cold-Weather Ammonia Removal **Rebecca Mattson**, Barr Engineering	Intensification: When does it make cents or sense? A tale of three case studies **Matt Sokolowski**, Carollo Engineers	

Leadership/YP and Ethics Presenters

This year's program again includes presentations geared towards leadership and ethics topics, with an additional focus on young professionals topics. On Wednesday, May 15 from 1:30 pm to 4:30 pm, the Leadership and YP tracks will feature a leadership panel discussion with Mel Butcher, Keith Haas, Rachel Lee, and Cody Schoepke, who will share their insight and perspective. The popular Ethics track returns on Thursday, May 16 from 1:30-4:00 pm. Dr. Mark Peterson will provide sessions on professional ethics to fulfill the mandatory professional conduct and ethics requirement for the State of Wisconsin Professional Engineers (two PDHs). The presenters are listed below.

MEL BUTCHER

Melissa (Mel) Butcher is a Project Engineer at Arcadis. She earned a BS and MS in Civil Engineering from the University of South Florida. Mel specializes in industrial water sustainability and conservation. She has conducted global water risk studies for multi-national clients, and assessments focusing on the business value of water conservation. Mel previously served as Business Manager for Arcadis' North American Client Development team. Mel completed WEF's Water Leadership Institute program, was recognized as a New Face of Civil Engineering – College Edition by the American Society of Civil Engineers, and participated at the ULEASH global innovation lab, which gathers annually to collaborate on solutions to meet the United Nations Sustainable Development Goals. She also produces podcasts focused on highlighting and empowering women in the fields of science, technology, engineering and mathematics (STEM).

RACHEL LEE

Rachel M. Lee, PE, is Manager of Nutrient Recovery Solutions for Ostara Nutrient Recovery Technologies, Inc. Prior to joining Ostara, Rachel worked as a consulting engineer. Her work as a project engineer and project manager encompassed planning, design, and construction work for wastewater facilities large and small. These projects included nutrient removal, permit negotiations, biosolids treatment and handing, dewatering, disinfection, and watershed solutions. She is a past Education Seminar Chair and Executive Board Member of the CSWEA and continues to serve as Vice Chair of the Wisconsin Section. Rachel graduated from the University of Notre Dame with a BS in Civil Engineering with an environmental emphasis.

KEITH HAAS

Keith Haas is the General Manager of the Racine Water and Wastewater Utilities, which provides water and wastewater services to several municipal clients near and including Racine, WI. Keith has worked for Racine in various administrative roles for 25 years and holds a MS in Engineering from the University of Illinois Champaign-Urbana. Keith is a past president of the CSWEA. He is currently the president of MEG Water in Wisconsin and a steering committee member of MEG wastewater. He is a registered PE in Wisconsin, Illinois, and Iowa.

MARK PETERSON

Mark C.E. Peterson, PhD, is Professor of Philosophy at the University of Wisconsin Milwaukee's College of General Studies. Dr. Peterson has published and lectured on environmental ethics and philosophies of nature for the past 30 years in places as diverse as Riga, Latvia; Shanghai, China; and Newberg, Wisconsin. His major research interests are strung along the fault lines joining religion and nature with the history of science and technology.

CODY SCHOEPKE

Cody graduated from the University of Wisconsin Stevens Point with a BS in Soil and Waste Resource Management. His career began as an Operator at the Jones Island WRF in Milwaukee. He worked for five years at Jones Island WRF ending in supervision. Cody has been at the Fond du Lac Regional Wastewater Treatment and Resource Recovery Facility (WTRRF) for 3½ years. He began as the Operations Leader, transitioned to the Assistant Superintendent, and is now the Superintendent. Cody serves as President of WWOA South District and on the CSWEA Operations Committee.

Special Guest

RAJENDRA P. BHATTARAI
2018-2019 Trustee

Water Environment Federation®
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Rajendra P. Bhattarai is a member of the 2018-2019 Board of Trustees for the Water Environment Federation (WEF), an international organization of water quality professionals headquartered in Alexandria, VA.

Raj is the president and founder of Clean Water Strategies that provides technical and regulatory services for sustainable water solutions. He has nearly four decades of public sector experience in water quality management and water resource recovery as the manager of Environmental and Regulatory Services Division at Austin Water for almost 35 years and as an engineering assistant at the Texas Department of Water Resources for 3½ years.

Raj served as the 2007-2008 president of the Water Environment Association of Texas (WEAT), as a WEF Delegate, and as a member of several WEF Task Forces and Committees. He was President of the Texas Association of Clean Water Agencies in 2001, 2013 and 2014, and a board member of the National Association of Clean Water Agencies, and President of the Water Environment & Reuse Foundation, where he also chaired the Research Council.

Raj received the Gascoigne Medal and the Bedell Award from WEF, and the Mahlie Award from WEAT for 'significant contributions to the art and science of wastewater treatment and water pollution control'. He has a Bachelor in Civil Engineering from the Indian Institute of Technology, Kanpur and a Master's Degree in Environmental Health Engineering from the University of Texas at Austin. Raj is a Distinguished Alumnus of the Civil, Architectural and Environmental Engineering Department of the University of Texas at Austin, and a WEF Life Member and a WEF Fellow. He has more than 130 presentations and publications to his credit.

About WEF

The Water Environment Federation (WEF) is a not-for-profit technical and educational organization of 35,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world. Since 1928, WEF and its members have protected public health and the environment. As a global water sector leader, our mission is to connect water professionals; enrich the expertise of water professionals; increase the awareness of the impact and value of water; and provide a platform for water sector innovation. To learn more, visit *www.wef.org*.

CSWEA'S 92ND ANNUAL MEETING

MONONA TERRACE
1 John Nolen Drive, Madison, WI 53703

The conference will be held at Monona Terrace in Madison, Wisconsin on MAY 14-16, 2019. The venue is a 250,000 square-foot, multi-level convention center. The venue is a mix of beautiful, curvy architecture that contrasts with the surrounding natural environment.

HILTON MADISON MONONA TERRACE
9 E Wilson St., Madison, WI 53703

The Hilton Madison Monona Terrace is the official Conference Hotel. We expect that there will be great demand for rooms, so please book early. **Book your room for $183/night on *www.cswea.org/hilton* or use block code CSWEA by calling 608-255-5100.**

Parking:
Self Parking: $17.00 (Garage Parking)
Valet parking: $20.00 (in/out access)
Secured Available
Covered Available
In/Out Privilegea Available

Check-in:
3:00 pm

Check-out:
12:00 pm

Amenities:
Fitness room, pool, 24-hour pavilion pantry market, ATM, baggage storage, bar area, elevators, gift shop, laundry/ valet service, local area transportation, lounge, luggage hold, onsite convenience store, room service, and safety deposit box. Staff is multilingual. Accessibility options available.

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Featured Events

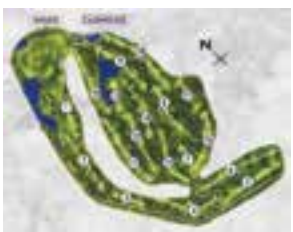
TUESDAY NIGHT SOCIAL

Madison Children's Museum (100 N Hamilton Street)
6:30 to 10:30 pm

By day, Madison Children's Museum offers creative play and discovery-learning for children and families. By night, they host many grown-up events, including ours! Join us for the annual social event where, if you'd like, you get to tap your inner child. Start on the rooftop garden and visit the museum's animal friends, with gorgeous views of the Capitol and Lake Mendota. Then move inside for appetizers, drinking, socializing, games and fun – whatever your playful heart desires. There's something for every kid and kid at heart! Join us from 6:30 to 10:30 pm. The Madison Children's Museum is just a short walk from the Hilton.

GOLF OUTING

Yahara Hills Golf Course
6701 Hwy 12 & 18 East Madison, WI 53718
10:00 am to 3:00 pm



Yahara Hills offers a 36-hole regulation golf course spread over 400 acres of rolling hillside. Both 18-hole courses feature large bunkered greens, well-placed hazards and beautiful water features. The 2019 golf event fee includes greens fee, cart, lunch, courtesy gift, along with a chance at many skill prizes. Registration begins at 9:00 am with a shotgun start at 10:00 am.

For corporate sponsorship opportunities or for outing details, contact Marc Zimmerman, Golf Outing Coordinator, by phone (608-373-3461) or by e-mail at *zimmermanm@ci.janesville.wi.us*.

5K RUN/WALK

Lake Monona Bike Path
6:30 to 8:00 am

Participants are asked to meet at the starting line for 6:30 am start. Directions will be provided at registration and via e-mail.

Featured Events

CITY OF MADISON STORMWATER TOUR

Stormwater Facilities Protecting the UW-Madison Arboretum and Lake Wingra
12:30 to 3:45 pm

Please join us as the Wisconsin Section Watershed and Stormwater Committee will be hosting a bike tour around Lake Wingra to visit eight stormwater treatment facilities providing stormwater treatment to protect Lake Wingra and the UW-Madison Arboretum. Lake Wingra is a 339-acre lake in the City of Madison with a 5.68 square mile highly urbanized watershed surrounded by the UW-Madison Arboretum, Vilas Park, and Edgewood College lands. The story of rehabilitation, restoration and stormwater treatment will unfold as you participate in a gentle 9.2-mile bike ride (with some modest hills), looping around the lake.

This tour will include:

- Lake Wingra Dam with viewing deck (Might see a Muskie jump).
- Wingra Park Coanda Screen Stormwater Treatment Device.
- Monroe Street Wet Pond Rehabilitation and Alum Pilot Project.
- Manitou Pond Wet Pond and Natural Channel Restoration.
- Nakoma Park Stream Restoration.
- Pond 3 Wet Pond and Upstream Coanda Screen Stormwater Treatment device.
- Pond 4 Wet Pond Rehabilitation.
- Wingra Creek Streambank Restoration.

The bikes (3-speed) will be rented through Madison B-Cycle (*www.madison.bcycle.com*) or attendees can bring their own bikes. Please indicate on registration form if you are bringing your own bike. After the tour, attendees are invited to visit a local brewpub for a beverage before returning to their lodging accommodations.

Tour Logistics: Attendees will drive vehicles from the conference site to the Strand Associates, Inc. parking lot located just east of 901 Plaenert Drive, Madison, WI 53713. Bicycles will be available at the Strand parking lot where the tour will start and end. Afterwards, attendees will gather at the downtown Great Dane Pub & Brewing Company. Carpooling is encouraged. In the event of inclement weather, the tour will either consist of a vehicle tour of the sites or a presentation at the conference site.

Please contact Jon Lindert by phone at 608-251-4843 x1191 or by email at *jon.lindert@strand.com* with questions or for more tour details.

SERVICE PROJECT

Capital Springs State Recreation Area
Madison, WI
1:00 to 3:45 pm

Volunteer to work with other CSWEA members for an enriching experience at the Metropolitan Sewerage District's restored wetlands and lagoons, a short drive from Monona Terrace. The lagoons and wetlands – part of the Capital Springs State Recreation Area – provide habitat for a variety of birds and wildlife. With the help of District staff, volunteers will identify and remove invasive species as an effort to enhance a unique and valuable resource. Volunteers will meet at Monona Terrace and carpool to the site. Volunteers are asked to wear boots and dress appropriately for the weather. Work gloves and safety glasses will be provided. Afterwards, volunteers are welcome to meet-up and socialize with Stormwater Tour and Plant Tour participants at the Great Dane Pub and Brewing Company (123 E Doty St, Madison). For more information about this year's service project, contact Jillian Kiss at *j.kiss@trotter-inc.com*.

SILENT AUCTION

Exhibit Hall/Registration Area

GLOBAL WATER STEWARDSHIP

Auction items donated by exhibitors to benefit the Global Water Stewardship will be displayed in the Exhibit Hall. Support this amazing social and humanitarian effort by donating or bidding on the items. Interested in donating an item? Contact Tom Mulcahy at *tmulcahy@mulcahyshaw.com* for more information. Bids are due by 10:30 am Wednesday. Winners will be posted in the Exhibit Hall at 12:00 pm Wednesday.

PLANT TOUR

Nine Springs Treatment Facility
3398, 1610 Moorland Rd, Madison, WI 53713
1:00 to 3:00 pm

Madison Metropolitan Sewerage District

The Nine Springs Treatment Facility is a 42 MGD activated sludge treatment facility serving the City of Madison and the surrounding suburbs. The tour will consist of seeing the new state-of-the-art nutrient recovery system; its Platinum LEED certified plant additions; the siloxane scrubbing and mesophilic digestion systems; and include a progress update on their new interpretive public relations/museum building. The facility is a five-minute drive from the Monona Terrace Conference Center.

After the tour, attendees will gather at the downtown Great Dane Pub & Brewing Company. Carpooling is encouraged.

Featured Events

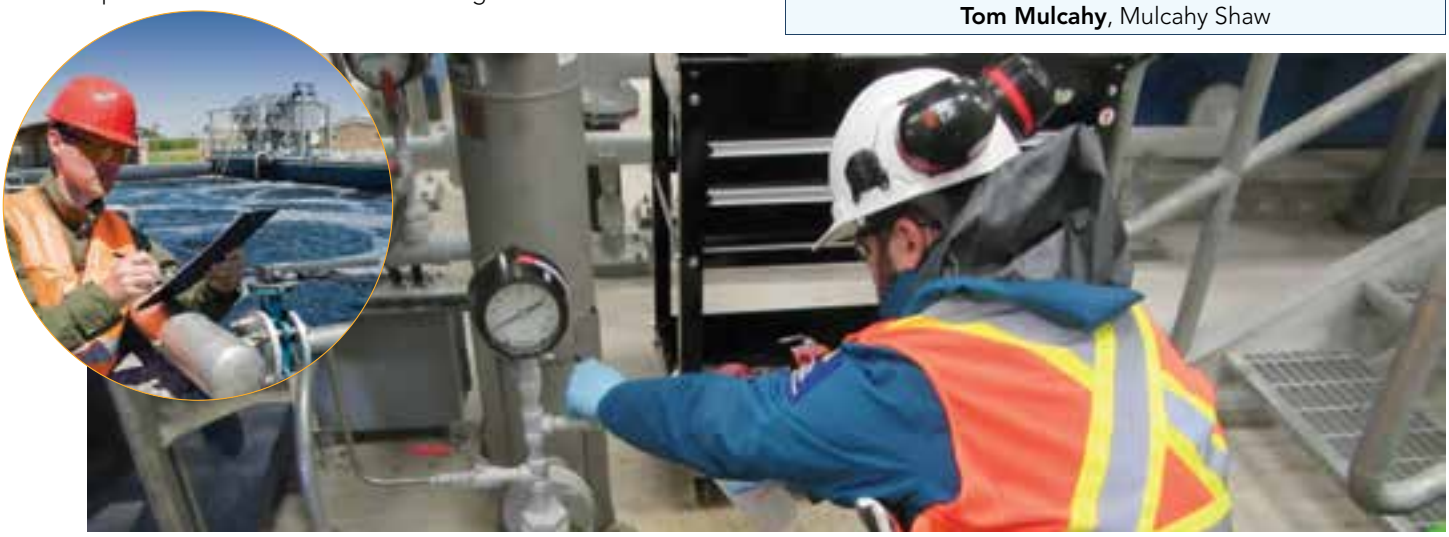
OPERATORS TRACK

Thursday, May 16 | 8:30 to 11:00 am

The CSWEA Annual Conference will again be offering an Operators Track developed for operators with an emphasis on the fundamental of key operation topics. Designed for operators, this session features practical information related to pumps, instrumentation, valves, and process equipment. Presenters are operators and wastewater professionals knowledgeable of daily wastewater operations.

The format of the Operators Track will promote interaction, networking and learning. Anyone interested in learning more about, or contributing to, the art and science of wastewater operations should consider attending.

Session O:
Operations Track
Pumps **Crane Engineering**
Instrumentation **Trevor Ghylin**, Energenecs/Microbe Detectives
Valves **Jim Jolly**, Jim Jolly Sales
Process Equipment **Tom Mulcahy**, Mulcahy Shaw



NEW THIS YEAR

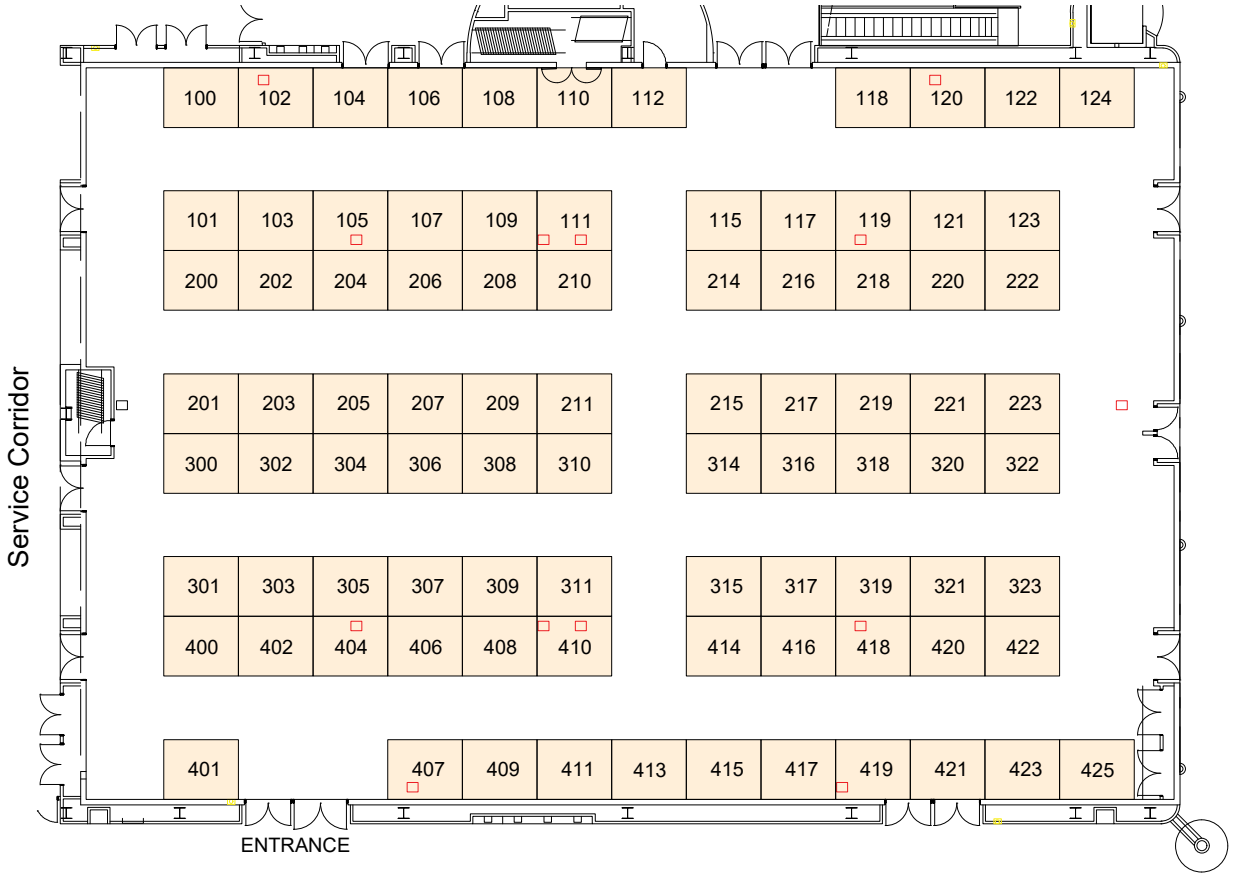
Career Fair Networking Events

Continuing with the conference theme of *Transitioning to a New Generation* and WEF's reGeneration, we will have opportunities for job seekers and employers to connect throughout the conference. Building a strong water workforce is something important today and in the future. All who are interested in meeting new candidates, looking for career growth, or learning about opportunities should participate. There are many ways to participate:

- Stop by a participating vendor booth marked with a balloon to learn about their internship and career opportunities.
- Attend the Career Networking Meetup on Wednesday to socialize.
- Strike up a conversation with someone with a student ribbon on his or her nametag.
- Invite students or others seeking new opportunities to attend the conference.

Please help keep our water sector strong. We encourage you to participate in this great opportunity to inspire, engage, and recruit the next generation of water professionals!If anyone has any questions about participating, please reach out to Rachel Lee at *rlee@ostara.com*.

Floor Plan and Exhibitors



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Gore Cover

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International Valve - Vent Tech

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Wisconsin Pump Works

Wonderware Midwest

WTR Solutions

Xylem Analytics

xylem

Xylem Inc.

Utility Pricing

SEND MORE PEOPLE AND STILL SAVE MONEY!

UTILITY REGISTRATION PRICING

Based on the success in past years, CSWEA will continue to offer flat rate utility pricing for the Annual Meeting. The pricing allows utilities to pay a flat fee for registration with the cost determined by their treatment plant design size. For that price, a utility may send as many people as they want to the annual meeting. The utility would still have to purchase event and meal tickets separately for each individual. The only included meals would be the continental breakfasts, coffee/snacks, and box lunch.

Five tiers have been set up for the Utility registrations.

PRICING TIERS FOR ANNUAL MEETING

MICRO UTILITY	(<1 MGD or Collection Only) @ $150
SMALL UTILITY	(1-5 MGD) @ $250
MEDIUM UTILITY	(5-20 MGD) @ $500
LARGE UTILITY	(20-50 MGD) @ $900
MEGA UTILITY	(>50 MGD) @ $2,000

COST COMPARISON (OLD vs. NEW) – using simple pricing

An Example of the cost savings is below.

OLD Pricing

Sample pricing for a 7 MGD Treatment Plant
Old Pricing with 6 attendees:

Attendee	Reg Type	Reg Cost	Events	Meals	Subtotal
District Manager	Full	$350	$110	$120	$580
Asst Manager	Full	$350	$85	$105	$540
Chief Operator	Full	$350		$40	$390
Maint Manager	Thurs Only	$200		$40	$240
Operator 1	Thurs Only	$200			$200
Operator 2	Thurs Only	$200			$200
TOTAL		$1,650	$195	$305	$2,150

New Utility Pricing With 2 more Operators and 1 Trustee Attending

Attendee	Registration Type	Registration Cost	Event	Meals	Subtotal
Utility Regn	5-20 MGD	$500			$500
District Manager	Full		$110	$50	$160
Asst Manager	Full		$85	$50	$135
Chief Operator	Full			$50	$50
Maint Manager	Thurs Only			$50	$50
Operator 1	Thurs Only				
Operator 2	Wed Only				
Operator 3	Thurs Only				
Operator 4	Wed Only				
Trustee	Thurs Only			$50	$50
TOTAL		$500	$195	$250	$945

Questions? Contact Amy Haque at *ahaque@cswea.org*

NEW

First 20 non-members will recieve free membership for a year to CSWEA **and WEF.**

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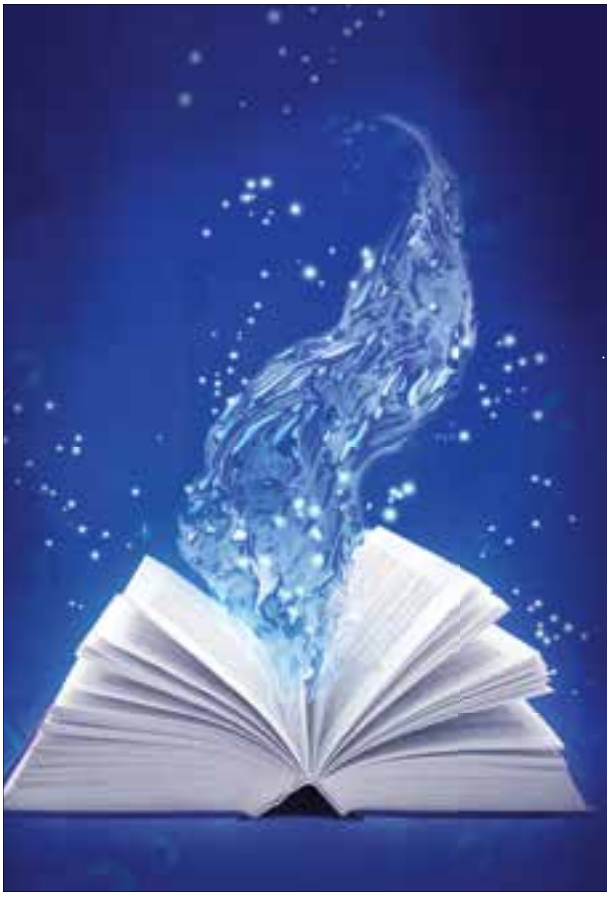

$1,000 SCHOLARSHIP

As the publisher of *Central States Water* magazine, we at Craig Kelman & Associates have a deep appreciation for our readers and members of CSWEA whose task it is to ensure that water taken from and put back into our precious Mother Earth is clean and safe for the people, animals and plants whose very existence depends upon it.

To demonstrate our admiration and respect for the association, its members and the water industry as a whole, we have established a yearly educational scholarship of $1,000 to be funded through a percentage of advertising sales generated in *Central States Water.*

On behalf of the publishing professionals who form part of our team, as well as our advertisers who use the pages of *Central States Water* to convey their important messages, we look forward to helping a worthy individual further their education in the water industry.

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CLEARAS WATER RECOVERY

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LIFT Spotlight:
Clearas Water Recovery's ABNR™ Solution

CLEARAS WATER RECOVERY

LIFT affiliate

The INNOVATION & TECHNOLOGY COMMITTEE will regularly solicit articles for publication in the *Central States Water* magazine regarding new water technologies and innovation in the water field and will help promote CSWEA Leaders Innovation Forum for Technology (LIFT) engagement. This first article focuses on an innovative activated sludge process, a granular sludge process, which allows for multiple process benefits to be realized. This is one of the innovative technologies in LIFT Link. LIFT Link was developed by the Water Research Foundation (WRF), then known as the Water Environment Research Foundation. LIFT Link is part of the WRF/WEF LIFT (*www.werf.org/lift*) program to accelerate innovation into practice. LIFT Link is an online platform which serves as a conduit of interaction among municipal and industrial water, wastewater, and stormwater agencies, technology providers, consultants, academics, investors, federal agencies, and others for advancing innovation. LIFT Link allows its users to discover new technologies and research needs; connect with others with similar needs, technology interests, and desired expertise; and collaborate on research and technology ideas, proposals, projects, demonstrations, and implementation. If interested in accessing LIFT and gaining a login please reach out to Mohammed Haque at *mhaque@cswea.org*.
Look for more innovative articles in the near future.

Clearas Water Recovery's new advancement in nutrient discharge requirements helps wastewater facilities with cost recovery.

Tightening Nutrient Discharge Requirements

Many wastewater facilities are faced with the challenge of identifying, selecting, and implementing nutrient recovery technologies to meet tightening nutrient discharge requirements. This is due to a number of political, regulatory, social, and economic factors that are driving demand and pressure to improve our nation's rivers, lakes, and watersheds.

Constituents such as phosphorus and nitrogen are natural parts of aquatic ecosystems and they support the growth of algae and other aquatic plants. However, the quality of our receiving waters is reduced when excessive amounts of nutrients enter the environment through wastewater, industrial discharge or agricultural runoff. The resulting impacts have affected numerous streams, rivers, lakes, and coastlines for the past several decades and generated serious environmental, economic, and human health concerns. These impacts have prompted the US Environmental Protection Agency (EPA) to accelerate planning efforts with individual states on the implementation of water quality requirements and nutrient discharge standards.

Existing traditional wastewater treatment methods range from the use of conventional activated sludge and chemicals to filtration or other mechanical methods. Adding nutrient removal only increases the cost to operate and maintain these

Figure 1: Algae Bloom – Western Basin of Lake Erie. Photo credit: Aerial Associates Photography, Inc.

facilities and contributes to increased sludge hauling demands. Because of this, many wastewater facilities are in search of zero-waste, chemical-free solutions to recover nutrients and reach ultra-low levels of detection while using it to their economic benefit.

A Chemical-Free, Zero-Waste Solution Available with Cost Recovery Opportunities

The CLEARAS *Advanced Biological Nutrient Recovery* (ABNR™) system, a chemical-free and biologically based solution for municipal and industrial point source dischargers, leverages its zero-waste process to effectively achieve ultra low-level nutrient results. The CLEARAS ABNR system treats secondary effluent utilizing a process that consists of four core phases:

Phase I is the '*mix*' phase. In this stage, phosphorus and nitrogen loaded wastewater is mixed with a biodiverse blend of algae and other micro-organisms to initiate nutrient recovery. This bio-diverse blend is referred to as the Mixture Flow.

Phase II is the '*recover*' stage. In this stage, the Mixture Flow enters a photo-bioreactor (PBR) which optimizes biological activity and promotes photosynthesis where phosphorus, nitrogen, and carbon dioxide are rapidly consumed.

Phase III is the '*separate*' stage. In this stage, the wastewater, now free of nutrients and other constituents, is separated from algae and other microorganisms and results in an oxygenated clean water stream for discharge or reuse. A majority of the biomass stream is then returned to the mix stage as Return Activated Algae (RAA) to sustain the treatment process.

Phase IV is the '*harvest*' stage. In this stage, a side stream of the RAA is wasted (or harvested in the case of ABNR) where biomass is processed for a wide-range of downstream market opportunities, resulting in cost recovery for the wastewater plant.

The ABNR process is very similar to the well-known activated sludge process in the sense that it takes advantage of aerobic micro-organisms but, in the case of the ABNR system, an activated algae stream is returned back into the cycle to continue the systems' process. Plus, unlike the conventional activated sludge process, the ABNR process eliminates the need for chemical addition and can reduce hauling costs.

In addition to the more common constituents such as phosphorus and nitrogen species, the ABNR system is the only solution in the market to recover additional constituents as well as recycle greenhouse gasses such as carbon dioxide, which are used in the process.

Because the ABNR technology relies on the biological growth activity of algae, biomass is constantly harvested to maintain optimal system performance. The asset of harvested algae is demanded in a wide range of markets, presenting facilities with the unique opportunity to recover nutrients and use the algae as a cost recovery mechanism. The demand for bio-based sources of supply continues to increase and CLEARAS partners with each facility to sell the algae into a variety of diversified markets.

Figure 2: CLEARAS ABNR Photobioreactor – Recover stage.

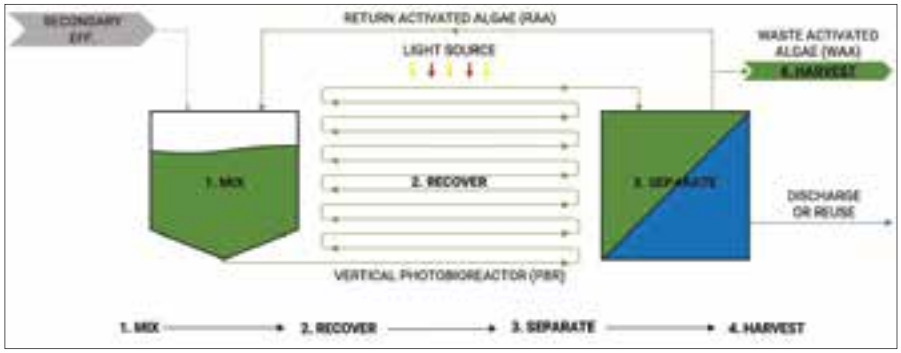

Figure 3: CLEARAS ABNR process flow diagram.

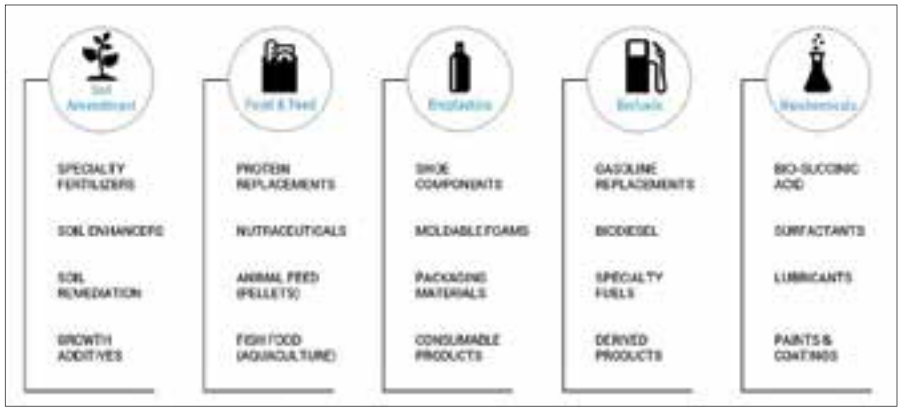

Figure 4: Algae can be used in diversified markets.

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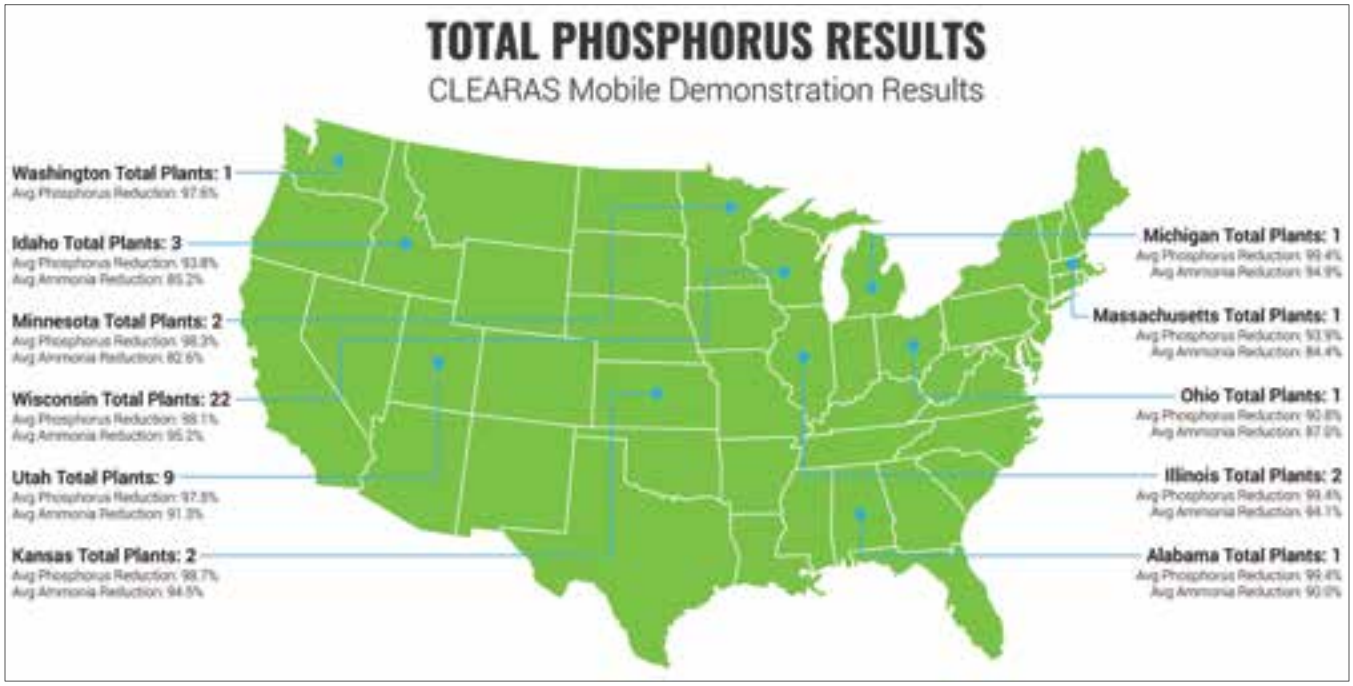
A Proven Resource Recovery Solution

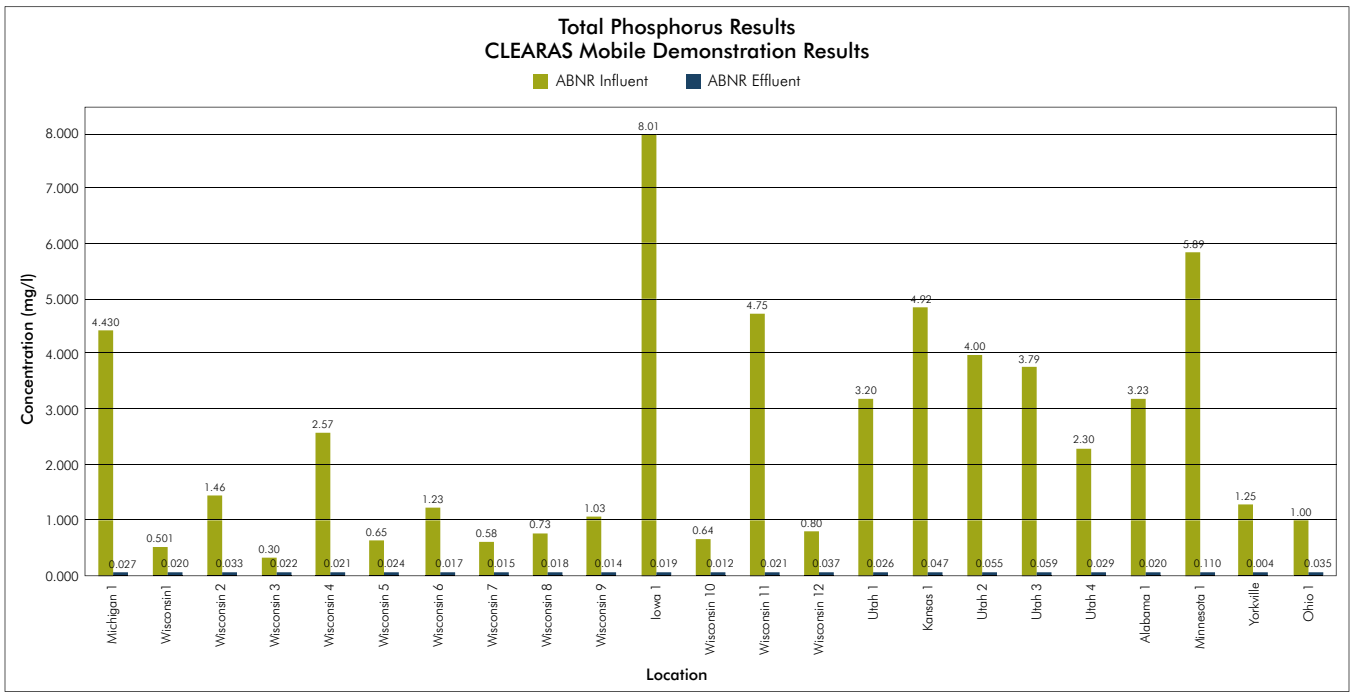
The ABNR technology has been proven in 45+ pilots across Wisconsin, Utah, Minnesota, Illinois, Kansas and Ohio, and is applicable in a broad spectrum of wastewater applications such as municipal, pulp and paper, food and beverage, and aquaculture industries.

In addition to technology evaluation and comparison studies for wastewater treatment facilities, pilot demonstrations, data collection and optimization have contributed to a partnership between CLEARAS and Dr. Jeremy Guest and his research team at the University of Illinois at Urbana – Champaign. The data collected will assist Dr. Guest and his team to study the enhancement of a phototropic process model (PPM) to advance modeling tools and make them reliable and accessible to the industry.

ABNR as the Selected Alternative for Two Wisconsin Facilities

The ability of ABNR to maximize existing wastewater treatment infrastructure, meeting nutrient regulations and provide downstream opportunities has driven two wastewater treatment facilities in the state of Wisconsin to select ABNR to meet upcoming nutrient regulations. Both the Village of Roberts and the Village of





Figures 5a & 5b: CLEARAS mobile demonstration results.

Figure 6: Village of Roberts, CLEARAS ABNR site layout.

Figure 7: Village of Cambria, CLEARAS ABNR site layout.

Cambria will initiate construction of the CLEARAS ABNR system in 2019 after they explored process optimization, facility upgrades/modifications, and tertiary technology evaluation including the ABNR mobile demonstration unit.

At the Village of Roberts, the ABNR mobile pilot effectively reduced total phosphorus (TP) to below the expected 0.04 mg/L P limit and prompted the Village to select the ABNR system from CLEARAS as the long-term and cost-effective solution. CLEARAS proposed a 0.150 million gallon per day (MGD) ABNR system with an ABNR Influent Feed TP of 4.0 mg/L and designed the system to take advantage of existing infrastructure and eliminate upstream chemical phosphorus removal treatment for cost savings.

The flexibility of the ABNR system will also give the Village of Roberts the opportunity to generate revenue by implementing a future septage-receiving program through a phased approach. This demonstrates the unique ability to create and optimize downstream algal biomass market opportunity for a sustainable approach to tertiary nutrient recovery.

The Village of Cambria conducted an ABNR pilot study in the Spring of 2017, effectively reducing their secondary effluent TP to an average of 0.02 mg/L, well below the future 0.075 mg/L limit. Cambria will have the ability to maintain current operation with the ABNR system, designed to treat 0.120 MGD and 2.0 mg/L P. Implementing the ABNR solution has presented the Village of Cambria with the opportunity to meet phosphorus compliance without chemical addition and reduce O and M costs.

Proven as a Sustainable Solution

The CLEARAS ABNR solution is the only ultra-low, multi-resource recovery technology that provides a sustainable and chemical-free option to wastewater treatment facilities for addressing nutrient discharge requirements. The proven and comprehensive approach produces high-quality effluent water and converts captured nutrients into valuable assets that maximize cost recovery for a facility. The ABNR system is modular and easily expands to meet increased flow and loading requirements to grow with a facility well into the future. CS

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GLOBAL WATER STEWARDSHIP

GWS Winter Update

Despite the remarkably cold winter we've experience this year in the Central States, GWS has been in anything but hibernation. While daydreaming of warmer days on the Costa Rican 'playa', we have been working hard to push toward our goals and have seen amazing progress. This article will cover some of the most notable items.

We were fortunate to receive multiple generous donations in late 2018 and early 2019 and will explore ways to use the income to make our operations more efficient. During our latest board meeting, we agreed to use a large portion of our funds as a scholarship or sponsorship program to help bring Costa Rican water operators to the US for training and wastewater treatment plant tours. This training will be invaluable to the future of wastewater treatment in Costa Rica.

Our Student Design Competition is now up and running. We are excited about participation from a couple of new schools and from schools that didn't participate for a few years. We also welcome help from some newer members as mentors.

Our first blog post for WEF was posted this winter. This is a great way to inform a large audience about the work of GWS. We were also a guest for WEFs 'Words on Water' podcast for World Toilet Day on November 19. Check us out on iTunes, or wherever you get your podcasts, as well as at *www.wef.org*.

In regard to projects, we have been working on the Monte Verde design, helping the Student Design group gather information with local contacts and volunteers. We are also starting to scout the new location and it seems like the town of La Fortuna is the top candidate. The town is a tourist destination in the north center of the country, with the Arenal Volcano as one of its main attractions. We may even have a school in the town interested on the biogarden project for this year.

In the last few months we have been in the first stages of working on the workshops for the August trip. We will focus this year on primary treatment, collection systems and secondary treatment. We are lucky that the IP Committee has gained a few members in the last few months with the experience on the subjects to be presented in the workshops. Thanks to the new volunteers, your help is greatly appreciated.

Preparation for out second educational seminar in August for wastewater professionals in Costa Rica has started. We've connected with other groups in the US that provide knowledge exchange with wastewater professionals in Central America and we hope to share resources to enhance our seminars.

We have been working hard on our *new* and *improved* website, which is scheduled to launch this month. By the time of publication, it should be active. Go check us out at *www.globalwaterstewardship.org*.

We are totally looking forward to the first 2019 trip to warm Costa Rica. Normally the first trip is in February, but this year Costa Rica is hosting LatinoSan on the first week of April and the trip will be moved to that week. LatinoSan is one of the main sanitation conferences in Latin America. GWS members will be presenting alongside with AyA representatives (the Costa Rican water/wastewater authority) on our efforts and partnership, in addition to other technical abstracts. This will be a great opportunity to represent the US, teach attendees from other countries about interesting technologies, and get to know GWS.

Finally, several new members have contacted us over the past few weeks, seeking ways to volunteer for GWS. Among them are bilingual engineers, collection systems experts, educators, people willing to travel to Costa Rica, and most importantly, people who care about our mission. It is encouraging to see how our organization continues to grow. The dedication of our members and supporters is contagious. To stay up to date with all our progress and all things GWS find us on Facebook, Instagram, and Twitter (*@H2OStewards*). CS

GLOBAL WATER STEWARDSHIP

Global Water Stewardship (GWS) Volunteer Spotlight

Liz Heise

By Maureen Drunkin, GWS Chair

It is surprising to recall that Global Water Stewardship's Marketing Committee Chair, Liz Heise, has not been a member of GWS since its inception. Liz is a key volunteer who actively contributes to each of GWS' activities and inspires others with her enthusiasm and dedication. Read on to get to know Liz better.

How did you learn about GWS and decide to get involved?
In college, I was very involved with the UIUC Chapter of Engineers Without Borders and I was looking for a way to continue my humanitarian efforts in my professional career. Shortly after I started at Trotter And Associates, Amanda Heller (GWS Chair at the time) reached out to some of my coworkers to see if they knew of anyone interested in getting involved. They mentioned it to me and I jumped at the opportunity. I listened in on my first GWS call and the projects sounded so interesting and the group sounded fun, so I reached out to Amanda and told her I wanted to help.

What made you decide to get involved as GWS' Marketing chair?
I kind of fell into this position. Shortly after that first GWS call, we had a meeting with a marketing professional that was hoping to give us some advice on how to develop a marketing plan. I attended this meeting and tried to learn what I could about marketing. At the CSWEA Annual Meeting in May 2016, GWS had our first elections for the chair positions. I was nominated by Matt Streicher (Treasurer) and voted in. I wanted to do what I could to help GWS be successful, so I accepted and have worked on learning as much as I can about marketing for a nonprofit organization.

How many GWS trips to Costa Rica have you participated in? How has this helped you with GWS marketing initiatives?
I have been on two trips (August 2016 and 2017). Going to Costa Rica with the group and seeing the communities firsthand has really helped me understand exactly what our goals are, making it easier for me to try and spread the word. It also has been beneficial to meet with the local officials there, so I know exactly what they are looking for from us. I also have helped develop the material that we use to for education of students and community members in Costa Rica, so the trips have allowed me to be part of the education aspect as well.

What are your goals with respect to marketing of GWS?
I hope to develop a marketing plan that will help GWS become a well-known organization outside of just the CSWEA community. I hope to not only spread the word locally, but also in Costa Rica.

GLOBAL WATER STEWARDSHIP

What made you decide to serve as second Vice Chair, and thus, future Chair of GWS?

I think serving as marketing chair has prepared me to help lead the organization. I want to remain involved and do what I can to help us to continue to grow and improve. I actually was nominated for 2nd Vice Chair, and hadn't really been considering it before that, but I feel that my involvement over the last couple of years kind of naturally progressed to this. I think in another couple of years when I take on the position, GWS will be in a totally different place than it is right now. There are big things happening this year and next within the group.

How has your participation in GWS helped you professionally?

Being involved in GWS has helped me to grow my professional network substantially. It helped me to find my place in the industry. I graduated from UIUC in December 2015 and got involved with GWS in March 2016. Since I got involved very shortly after graduating college, it gave me the opportunity to be exposed to what the water and wastewater world is like much more quickly than I probably would have without my involvement. I have learned a ton about different types of wastewater treatment technologies that we have considered using in our designs that I probably wouldn't see otherwise. I also have made some great friends from the trips, which has made it fun to be involved.

What is your full time job?

I am a staff engineer at Trotter and Associates in Saint Charles, Illinois.

What advice do you have for new YPs considering volunteering for GWS?

Just do it! Join a call, reach out to a committee chair, or come find us at the annual meeting. All of the committees could use some extra hands on deck. We have tons of fun at our meetings and on the trips. It is a great way learn more and to use your knowledge to help others. CS

GLOBAL WATER STEWARDSHIP

GWS Donor Spotlight

Frey Foundation

By Liz Heise

We recently sat down with Cam Frey, Trustee, to understand the motives of the Foundation and why he personally supports the goals and efforts of GWS.

GWS: What should people know about the Frey Foundation?
CAM: We are a family foundation with eight trustees and two next-generation members. The foundation was created in 1974 by my grandparents, Edward and Frances Frey. They had a passion for community and a commitment to philanthropy. For three generations the Frey Family has continued their work. We are committed to preserving our grandparents' interests, passions, and legacy. We also strive to make our own impact on the communities we grew up in.

As a group we invest collaboratively in western and northern Michigan to create a better place to live by strengthening communities, protecting the natural environment, enhancing the arts, and transforming the lives of individuals and families. One great thing about the foundation is the many different insights, passions, and life experiences of each trustee. We currently live all over the country and the ages of trustees range from mid-30's to mid-70's. That said, we are all tied together by a mutual conscious decision to make an impact in Michigan, regardless of where we live. I would say we are an evolving foundation that is always open to new ideas and strategies around our focus areas.

GWS: Why does the Frey Foundation, and you personally, support GWS? What motivates you to donate?
CAM: We have an environmental focus. To give you more background, we actually have four areas of focus: the environment, community arts, children and family, and building community. In a way we have a fifth area of focus too – Board-driven initiatives. We call these initiatives FAPS, which stands for Foundation Administered Programs. Going back to the environment, we have three strategic priorities: preserving and restoring watersheds, lakes, and streams, in Lake Michigan's 12 sub-watersheds; expanding and connecting regional trails and greenways; and protecting critical lands, including farmland, park land, and natural habitats. While the board and organization as a whole stay within the focus areas I previously mentioned, the trustees have the ability to make discretionary donations outside of the these areas. GWS clearly fits within our environmental

focus area, but not necessarily within our geographic focus, so I took the opportunity to use discretionary funds. What's great about GWS is that our donation hits on other focus areas as well. It supports children and family and building community. It's great when our investments support more than one focus area.

As for what motives me to donate? For me, it's about water. Water is the lifeblood of an ecosystem. Whether it is wastewater, watersheds, water management, etc., it's a great area to focus on. Many of my discretionary donations have been to animal related groups and causes. In many cases these animals and their habitat depend on the environment and a large part of that is related to water. In addition, my role as an architect often involves wastewater and water management. Water systems in the environment are a big part of my job. Also, I live in Colorado and water is a huge issue in this region.

GWS: One of the foundation's focus areas is the environment. Why do you focus on the environment and why is it important?
CAM: A few years ago we fine-tuned our areas of focus. For the environment we wanted to make an impact on the Great Lakes, so we have a focus on watersheds. We do a lot of watershed projects with the understanding they all feed the Great Lakes' ecosystem while being a hyper-local resource as well. Our grandparents had a passion for the environment and we all grew up exploring the dunes, forest, and lakes of western and northern Michigan. We want everyone to be able to enjoy the same wonders we did as kids and as a family that continues today, from our northern Michigan fishing trips to a family farm. Our family is very passionate about the environment.

GWS: Tell us about a few contributions, achievements, and accomplishments you and the foundation are most proud of?
CAM: Environmentally speaking, we've supported a lot of different trails and parkways connecting western Michigan to different parts of northern Michigan. We've worked with counties and community foundations to bridge the gaps between existing trails. We have also been a committed supporter of dam removal in parts of the Michigan that help restore these ecosystems to their natural state. This can have a profound effect on the surrounding ecologies and communities.

GWS: You mentioned that previous donations have gone to animal related groups. Tell us a little more about that and what other organizations you personally support?
CAM: Growing up as a kid, I have many great memories of fly fishing and playing in the rivers and lakes nearby. As a group we have a lot of memories in northern Michigan enjoying the environment. That is one reason the foundation has an environmental focus area. In the past I've supported everything from lemurs to lions to sea turtles along with related organizations such as Trout Unlimited and *www.water.org*.

GWS: Cam, it was great to talk to you and learn more about your passions and the foundation. From all of GWS, we want to say thank you for your and the foundation's support. Your donation was unexpected and we greatly appreciate your investment!
CAM: I am really lucky to be able to do this. I believe in what GWS is doing. It's a worthwhile area for people. All of your members are volunteers. People are donating their time and energy and that's amazing. We work with a lot of large groups, but we believe in supporting small groups, volunteer organizations. It's a great way to make an impact.

For more information about the Frey Foundation and what they do, visit *www.freyfdn.org*. CS

The Future of Phosphorus

By Patrick Dube

In January, the Water Environment Federation convened the James Barnard Research Forum on Emerging Themes in Biological Phosphorus Removal and Recovery. This three day forum paid tribute to Dr. James Barnard by celebrating his significant contributions to wastewater processing, specifically focusing on biological phosphorus removal.

Three themes emerged from the forum. First, participants set out to discuss the science behind phosphorus removal and recovery to find out how much we know and don't know about the process. Second, the forum turned an eye toward future markets and drivers. This discussion also focused on the value proposition of phosphorus recovery, including products (phosphorus, biosolids, valuable metals), services (eutrophication prevention, meeting discharge limits), and global drivers (food products, energy to mine mineral phosphorus). Third, the forum provided an opportunity to look at a broad overview of the environmental effects of phosphorus recovery.

About James Barnard and the Forum

As the developer of the Bardenpho, Modified Ludzack-Ettinger, and Phoredox processes for biological nitrogen and phosphorus removal, Barnard was instrumental in bringing these innovative technologies to water resource recovery facilities (WRRFs) around the globe. The forum, held in Austin, TX, featured leaders in biological phosphorus (bioP) removal for invited presentations and facilitated discussions. With short presentations and panel discussions, the forum encouraged free-flowing dialogue to examine the past, present, and future of biological phosphorus removal topics and set the agenda for years to come.

Phosphorus 101

Phosphorus is an essential mineral for growth. However, phosphorus runoff and deposition in water bodies can cause aquatic dead zones that choke off oxygen to plants and wildlife. This leads to a unique conundrum where there can be no life without phosphorus, yet too much has disastrous effects.

Furthermore, global supplies are dwindling, and we are facing a potential crisis if renewable sources are not developed. A balance must be struck between efficiently using phosphorus while simultaneously developing recovery techniques. Recovering biological phosphorus via WRRFs can help fill this gap, but continued research is necessary to make it more efficient, reliable and accessible to utilities of all sizes.

Bacterial Populations and Modeling

Current knowledge and existing gaps emerged as the first theme at the forum. Presentations dove into the microbial ecology of enhanced biological phosphorus removal (EBPR), starting with understanding two of the most important polyphosphate accumulating organisms (PAOs) in wastewater treatment – tetrasphaera and accumulibacter. These two organisms are studied widely, but there remains a knowledge gap about them as researchers continue to try to better use them by fully unlocking their mechanisms.

The Microbial Database for Activated Sludge (MiDAS), a program started at Aalborg University in Denmark, aims to learn more about these and other organisms by mapping the microbial diversity present in wastewater treatment systems worldwide. Getting people talking the same language by learning more about what options are present at WRRFs can help select for the most efficient and effective microorganisms.

Likewise, models are frequently used to help optimize WRRFs, plan for upgrades, and design new facilities. However, the limitations of these models came to the forefront of the modeling discussions as presentations addressed different approaches to unlocking the process dynamics of a WRRF. Each WRRF is a unique system with specific parameters and influent; as such, there exists no one size-fits-all approach to modeling or treatment.

Two approaches highlighted during the forum tackled overcoming modeling challenges. One suggested modeling individual units within a system, while the other seeks to develop a predictive system relying on process metabolics. Both models are viable options and the presentations set up a further discussion on how to use information gleaned from a model and put it into practice.

> "The key to success is broadening the current value potential of bioP from only recovered products to the entire ecosphere."

The discussions highlighted one universal truth: the key to all good models is more data to better understand process dynamics. As we get to know more about the intricacies of these systems, models will be more accurate.

Value Propositions

Forum participants also examined the value proposition of phosphorus recovery. One of the current pain points in widespread phosphorus recovery is that turning these value propositions into reality requires overcoming current technology bottlenecks and improving industry business models.

The key to success is broadening the current value potential of bioP from only recovered products to the entire ecosphere. When discussing the barriers for real-world application, several ideas were put forth. These included implementing real-time population sensing, developing cheaper and simpler instruments that can be used by utilities of any size, and incorporating phosphorus recovery in all industries such as food reduction and waste recycling. Additionally, work must be done to develop regulations and incentives that help promote resource recovery while continuing to educate the public and increase awareness about the potential value.

Overall, the tone of the session was optimistic, and attendees agreed that the research and ideas currently being developed were building a much-needed knowledge base which will soon be translated to implementation at WRRFs.

Addressing Environmental Effects

The forum also provided an opportunity to look broadly at the environmental effects of phosphorus recovery. Representatives from utilities and government entities who have successfully addressed phosphorus concerns in their regions provided insight on replicating their successes. All panelists agreed that clearly defining regional problems are the first step in beginning to address them – science alone can't fix all problems. The buy in of local communities and positive

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public perception often drives success as much as sounds science. Without seeing a direct effect – perhaps, the project isn't entirely local or the effects aren't readily visual – achieving buy-in can be difficult.

One example shared the experience of the US Environmental Protection Agency's Chesapeake Bay Program. When first starting, this program, which aims to clean up the formerly polluted bay, required getting signatures on more than 400 best management practice documents from around the entire region. These 400 individual agreements combined to increase the health of the bay, but individually, they only had a small effect and local communities had to be convinced to buy-in to help the overall region.

Forum speakers recommended making the effort to translate national or regional challenges into the effects it has on your specific locality. By making it a personal issue, citizens are more likely to connect. Also, involving key, trusted members of a community can further help promote public acceptance. Overall, a clear message tackling a well-defined problem that community members can engage with is the best way to quickly and efficiently get projects completed locally.

More to Come

All participants reconvened at the end of the forum to summarize and discuss the best ways to approach phosphorus removal and recovery now and in the future. Throughout the next few months, the forum's steering committee members plan to summarize the event thoroughly and release outcome reports. They aim to capture the entirety of the forum, the current state of the phosphorus removal and recovery science, what recovery needs to look like in the next 50 years, and what research needs to be tackled to meet these needs. In the meantime, the forum's complete, 42-page technical program can be accessed online at *www.wef.org/forum*. CS

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

From wef hq

The WEF InFLOW Program

New initiative introduces underrepresented minority students to working in water

By Morgan Brown and Bri Nakamura

WEF InFLOW participants with WEF President Tom Kunetz and panelists from a networking event scheduled just for them. *(Credit: Oscar & Associates)*

As the 'silver tsunami' of retirements that will result in a mass exodus of US workers approaches, the water sector is taking steps to prepare as well as encourage greater diversity in its workforce. At WEFTEC 2018, the Water Environment Federation (WEF) piloted a new program to help address this need for a younger and more diverse workforce. WEF InFLOW, which stands for Introducing Future Leaders to Opportunities in Water, brought underrepresented minority students to WEFTEC and introduced them to working in the water sector. The program also sought to help these students foster a network within WEF's membership to increase opportunities for mentorship and employment.

The Exodus

New research this summer helped prompt action on the coming wave of retirements. In June 2018 the Brookings Institution (Washington, DC published the report, Renewing the Water Workforce: Improving Water Infrastructure and Creating a Pipeline to Opportunity. The report found that the silver tsunami will cut drastically into the pool of skilled, qualified water sector workers. For some utilities this could result in staffing vacancies of up to 50%.

The report also points out a lack of diversity in the water workforce. The percentage of black and Asian water workers lags behind the national average for all occupations combined. Additionally, for higher paying water occupations, such as engineering and management, black and Hispanic workers are particularly underrepresented.

WEF InFLOW

This pilot year of the WEF InFLOW primarily focused on African American students. African Americans are one of the most underrepresented groups with respect to the percentage of the population versus percentage engaged in STEM.

InFLOW brought a total of 16 undergraduate and graduate students to WEFTEC from Howard University (Washington, DC), Tuskegee University (Tuskegee, AL), and the University of South Florida (Tampa, FL). The group of eight men and eight women had a range of technical backgrounds and awareness of water sector opportunities. One student is pursuing a doctorate in the water sector. The students from Tuskegee University had summer internships related to water. Many other students, however, had no background knowledge of water sector possibilities.

The 2018 InFLOW program relied on generous support from program sponsors: Arcadis, GlobalWET, Centrysis/CNP, Environmental Technical Sales Inc. (ETEC), and the Milwaukee Water Council. Because of these sponsors, the students received travel assistance, hotel accommodations, registration, and special networking opportunities at WEFTEC.

Students from University of South Florida teach the next generation of water students the 'Water Cycle Dance' during Water Palooza at St. Mary's Academy in New Orleans. *(Credit: Rahkia Nance/Water Environment Federation)*

Water Sector Introductions

The students' schedules included both technical and networking events. They participated in many events coordinated by the WEF Students and Young Professionals Committee. These included Water Palooza – where the USF students are now famous for introducing us to the 'Water Cycle Dance' – the Community Service Project, committee meetings, the WEF Career Fair, and Student Design Competition. The students attended the Opening General Session and were encouraged to explore the exhibition and attend technical sessions.

Aside from these traditional WEFTEC activities, the students attended two special events. The first was a networking panel that introduced the students to some African American water sector leaders who represented utilities, academia, consulting, and manufacturing. Panelist such as David Gadis, CEO and president of DC Water (Washington, DC), and Kishia Powell, Commissioner of the Department of Watershed Management for the City of Atlanta, talked about their journeys and career paths as well as answered the students' questions. Gadis and Powell shared their insights about how to use diversity not as a barrier, but as a quality to be remembered by. A networking lunch wrapped up the InFLOW students' WEFTEC experience.

The WEFTEC Opening General Session was among the activities slated for student participating in the WEF InFLOW program. The students received front row seats. *(Credit: Oscar & Associates)*

The program already has yielded one result: Howard University is working to start a WEF student chapter. This chapter which will help to expand the program's reach to more students at the university. The chapter is hoping to participate in future Student Design Competitions.

The InFLOW program will continue to grow in the coming years. WEF intends to expand the number of participating schools and students, as well as include a second track with activities focused on operations and maintenance. CS

Morgan Brown *is a technical programs manager in the Water Science & Engineering Center at the Water Environment Federation (Alexandria, Va.). She can be reached at* mbrown@wef.org. ***Brianne Nakamura****, PE, ENVSP, is a senior manager in the Water Science & Engineering Center at WEF. She can be contacted at* bnakamura@wef.org.

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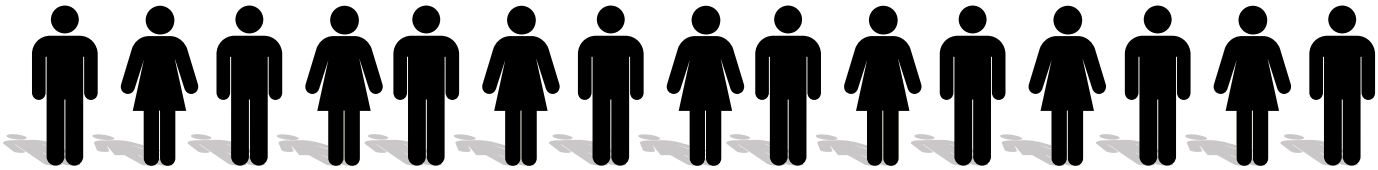
CSWEA Welcomes Our New Members



January

Damian Lukasik, North Shore WRD
Thomas Romza, Glenbard WW Authority
Ashley Staat, Glenbard WW Authority
Dawn Lesley
Megan Dressel, Milwaukee MSD
Christopher Bocciardi, City of Racine
William Henning
James Sparber
Mohammad Alizadeh Fard, MSA Professional Services

February

John Rangel, Lake County PW
Doug Lange, Hawkins Inc.
Kyle Korbines, Milwaukee MSD
Allie Lobue, MSA Professional Services
A.J. Schwidder, Upstream Technologies
Laura Kerschner, Suez Advanced Solutions
Matt Patterson, Becher-Hoppe Associates
Jia Liu, Southern Illinois University
Kassie Paul, Marquette University
Alexander Koutsostamatis
Michael Penn, UW-Platteville
Dawn Kissack, United Laboratories
Katherine Raab, North Dakota State University

March

Payal Shah, Xylem
Tom Greybill, City of Naperville
Scott Schramm, Strategic Muncipal
Greg Ackerson, Apex
Eileen Kennedy
Steve Stiles, Racine Wastewater Utility
Jason Tranchitella
Mark Harold
Mike Marquardt, Village of Buffalo Grove
Trenton Shutter, UW-Platteville
Rob Bredeson, City of Detroit Lakes

APRIL

MN R2E Water and Energy Innovations Seminar
April 23
St. Cloud Nutrient, Energy & Water (New) Recovery Facility | St. Cloud, MN

Operator Training Course #14046: Wastewater Math I
April 23
Elmhurst Public Works Garage | 985 S. Riverside Drive, Elmhurst, IL

MAY

CSWEA 92nd Annual Meeting
May 14-16
Monona Terrace | Madison, Wi

JUNE

WEF 2019 Collection Systems Conference
Jun 4-7
Indiana Convention Center | Indianapolis, In

WI Section Classic Collection System Seminar
June 6
Watertown, WI

MNX
June 18

Il Stormwater/ Collection Systems Conference
June 26
NIU – Naperville Campus | Naperville, IL

JULY

WEF Nutrient Removal And Recovery Symposium
July 23
Renaissance Minneapolis Hotel, The Depot | Minneapolis, MN

WI Section Northwoods Collection System Seminar
July 25
Marshfield, WI

SEPTEMBER

2019 CSWEA/IWEA WEFTEC Reception
September 22
Hilton Chicago | Chicago, IL

Collections Workshop (w/ MWOA)
September 25
Western Lake Superior Sanitary District | Duluth, MN

NOVEMBER

MN Conference On The Environment
November 7
Minneapolis Convention Center | Minneapolis, MN

For up-to-date CSWEA events, visit our website ***www.cswea.org***

WEF/Central States WEA
Membership Application 2019

Water Environment Federation
the water quality people

Personal Information

Last Name	M.I.	First Name	(Jr., Sr., etc.)
Business Name *(if applicable)*			
Street or P.O. Box ❑ Business Address ❑ Home Address			
City	State	Zip	Country
Home Phone Number	Mobile Number	Business Phone Number	
E-mail Address to receive *WEF Highlights Online*		Date of Birth (mm/yyyy):	

❑ Please send me information on special offers, discounts, training and educational events, and new product information to enhance my career.

Demographic Information

The following is requested for informational purposes only. **Gender:** ☐ Female ☐ Male

Education: ☐ Doctorate ☐ MA/MBA/MS ☐ BA/BS ☐ AA/AAS ☐ Technical School ☐ High School

Did anyone recommend that you join WEF?

Referring member's name:	Referring member's email address:

Membership Information

Membership Categories (select one only)		**Member Benefit Subscription**	**Dues**
☐ **Professional**	Individuals involved in or interested in water quality.	✔ *WE&T* (including *Operations Forum*) ✔ *Water Environment Research* (Online) ✔ *WEF Highlights* ✔ *Central States Water Magazine*	**$170.00**
☐ **Executive**	Upper level managers interested in an expanded suite of WEF products/services.	✔ *WE&T* (including *Operations Forum*) ✔ *World Water* ✔ *Water Environment Research* (Online) ✔ *WEF Highlights* ✔ *Central States Water Magazine*	**$340.00**
☐ **Professional Operator**	Individuals involved in the day-to-day operation of wastewater collection, treatment or laboratory facility, or for facilities with a daily flow of < 1 mgd or 40 L/sec. **License #:** _____	✔ *WE&T* (including *Operations Forum*) ✔ *Water Environment Research* (Online) ✔ *WEF Highlights* ✔ *Central States Water Magazine*	**$105.00**
☐ **Young Professional (YP)**	WEF members or former WEF Student members with 5 or less years of experience in the industry and less than 35 years of age. This package is available for 3 years.	✔ *WE&T* (including *Operations Forum*) ✔ *Water Environment Research* (Online) ✔ *WEF Highlights* ✔ *Central States Water Magazine*	**$64.00**
☐ **Student**	Must be enrolled for a minimum of six credit hours in an accredited college or university. Must provide written documentation on school letterhead verifying status, signed by an advisor or faculty member.	✔ *WE&T* (including *Operations Forum*) ✔ *Water Environment Research* (Online) ✔ *WEF Highlights* ✔ *Central States Water Magazine*	**$20.00**
☐ **Corporate**	**One person is entitled to receive member benefits.** Companies engaged in the design, construction, operation or management of water quality systems. **Designate one membership contact.**	✔ *WE&T* (including *Operations Forum*) ✔ *Water Environment Research* (Online) ✔ *WEF Highlights* ✔ *Central States Water Magazine*	**$393.00**

Additional Subscriptions

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

❑ *World Water*	$75	$
❑ *World Water: Stormwater Management*	$55	$

PAYMENT Forms received without payment will not be processed.

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☐ MasterCard
☐ VISA

Card Number — Exp Date — CVV

Signature I authorize WEF to charge my credit card for the amount indicated.

Name on Card

Billing Address *(if different than above)*

City/ State/Province

Zip/Postal Code — Country

GRAND TOTAL $

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Signature _____ **Date** _____
(Signature required for all applications)

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Baltimore, MD 21297-8008 USA

Phone: 1.800.666.0206 or 1.571.830.1545 globally
Fax: 1.240.396.2471

Email: csc@wef.org

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WEF/Central States WEA
Membership Application 2019

MEMBERSHIP PROFILE

Please take a few moments to tell us about your background and professional interests.

1. What is the nature of your ORGANIZATION? (circle one only) - required

01 Public/Private, Wastewater and/or Drinking Water and/or Stormwater
02 Public/Private Wastewater only
03 Public/Private Drinking Water only
04 Industrial Systems/Plants
05 Consulting or Contracting Firm
06 State, Federal, Regional Government Agency
07 Research or Analytical Laboratories
08 Educational Institution
09 Manufacturer of Water/Wastewater/Stormwater Equipment or Products
10 Water/Wastewater/Stormwater Product Distributor or Manufacturer's Rep.
11 Public/Private Stormwater (MS4) Program Only
12 Public Finance, Investment, and Banking
13 Non-profits
99 Other (please specify) _____

2. What is your Primary JOB FUNCTION? (circle one only) (JOB)

01 Management: Upper or Senior
02 Management: Engineering, Laboratory, Operations, Inspection, Maintenance
03 Engineering & Design Staff
04 Scientific & Research Staff
05 Operations/Inspection & Maintenance
06 Purchasing/Marketing/Sales
07 Educator
08 Student
09 Elected or Appointed Public Official
10 Other (please specify) _____

3. What areas do you consider to be your KEY FOCUS AREAS? (circle all that apply) (FOC)

01 Collection Systems
02 Drinking Water
03 Industrial Water/Wastewater/Process Water
04 Groundwater
05 Odor/Air Emissions
06 Land and Soil Systems
07 Legislation (Policy, Legislation, Regulation)
08 Public Education/Information
09 Residuals/Sludge/Biosolids/Solid Waste
10 Stormwater Management/Floodplain Management/Wet Weather
11 Toxic and Hazardous Material
12 Utility Management and Environmental
13 Wastewater
14 Water Reuse and/or Recycle
15 Watershed/Surface Water Systems
16 Water/Wastewater Analysis and Health/Safety Water Systems
17 Other _____

4. Optional Items (OPT)

Education/Concentration Area(s) (CON)

1. Physical Sciences (Chemistry, Physics, etc.)
2. Biological Sciences
3. Engineering Sciences
4. Liberal Arts
5. Law
6. Business

COMPANY	PAGE	TELEPHONE	WEBSITE
Advanced Aquaculteral Technologies, Inc.	61	574-457-6193	www.advancedaquaculturaltechnologies.com
Advanced Engineering and Environmental Services (AE2S)	6	763-463-5036	www.ae2s.com
AECOM	67	312-373-7700	www.aecom.com
Aerzen USA Corporation	11	610-380-0244	www.aerzen.com
Badger Meter, Inc.	11	800-876-3837	www.badgermeter.com
Baxter & Woodman, Inc.	64	815-459-1260	www.baxterwoodman.com
Bolton & Menk, Inc.	42	507-625-4171	www.bolton-menk.com
Brown and Caldwell	55	651-298-0710	www.brownandcaldwell.com
Burns & McDonnell	67		www.burnsmcd.com
CDM Smith	71	651-772-1313	www.cdmsmith.com
Centrisys/CNP	50	262-654-6006	www.centrisys.com
Clark Dietz, Inc.	55	262-657-1550	www.clark-dietz.com
CLEARAS Water Recovery	3	541-930-3201	www.clearaswater.com
Crawford, Murphy & Tilly, Inc.	71	217-787-8050	www.cmtengr.com
Deuchler Engineering	33	630-897-4651	www.deuchler.com
Donohue & Associates, Inc.	76	888-736-6648	www.donohue-associates.com
Energenecs	64	262-377-6360	www.energenecs.com
Energy Systems Group	10		www.energysystemsgroup.com
Environmental Dynamics International (EDI)	20	573-474-9456	www.wastewater.com
Fergus Power Pump, Inc.	17	218-736-6772	www.ferguspowerpump.com
Fluence	68	763-746-8400	www.fluencecorp.com
Force Flow	54	800-893-6723	www.forceflow.com
Gasvoda and Associates	75	708-891-4400	www.gasvoda.com
Greeley and Hansen	63	800-837-9779	www.greeley-hansen.com
Hawkins Water Treatment Group	18	800-328-5460	www.hawkinsinc.com
HR Green, Inc.	55	800-728-7805	www.hrgreen.com
InfoSense, Inc.	13	877-747-3245	www.infosense.com
Integrated Process Solutions (IPS), Inc.	50	218-435-1703	www.ipsamerica.biz
JDV Equipment Corporation	74	973-366-6556	www.jdvequipment.com
Kanaflex Corp. USA	33	224-545-2012	www.kanaflexcorp.com
Kusters Water	11	800-264-7005	www.kusterswater.com

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L.W. Allen, Inc.	26	608-222-8622	www.lwallen.com
McMahon Associates, Inc.	60	920-751-4200	www.mcmgrp.com
Metropolitan Industries	73	815-886-9200	www.metropolitanind.com
PAXXO	43	770-502-0055	www.paxxo.se/us
Pittsburg Tank & Tower	55	270-826-9000	www.pttg.com
Process Equipment Repair Services, Inc.	58	262-629-1059	
RELINER/Duran Inc.	4	800-508-6001	www.reliner.com
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Sekisui SPR Americas, LLC	8	614-634-2291	www.sekisui-spr.com
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Snyder & Associates	71	888-964-2020	www.snyder-associates.com
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Strand Associates, Inc.	47	608-251-4843	www.strand.com
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WTR Solutions, LLC	57	515-758-3833	www.wtrsolutions.com
Xylem	74		www.xyleminc.com

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Each spring, we recognize and renew our appreciation for water quality professionals who protect public health, the environment, and our quality of life.