

CENTRAL STATES WATER

The Official Magazine of the Central States Water Environment Association, Inc.

95TH ANNUAL MEETING PREVIEW



**Water Environment
Federation**
the water quality people

PLANT PROFILE:

Heart of the Valley Metropolitan
Sewerage District



PLUS:

2022 Officer Nominations

Mark Doneux Named
Stormwater Committee Chair

Striving for Equity at the Source



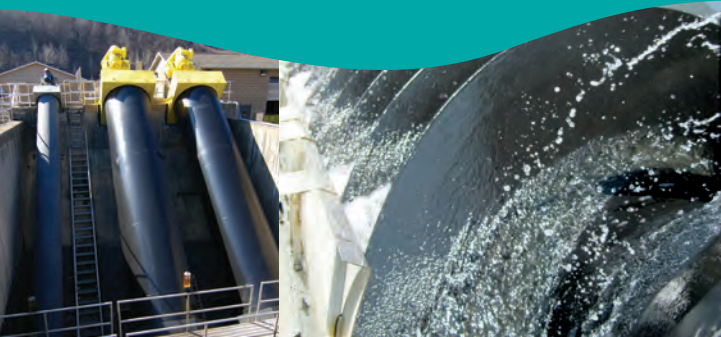
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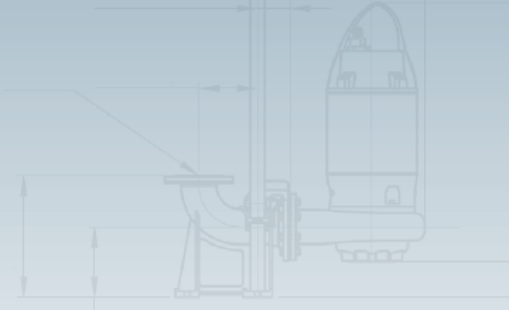
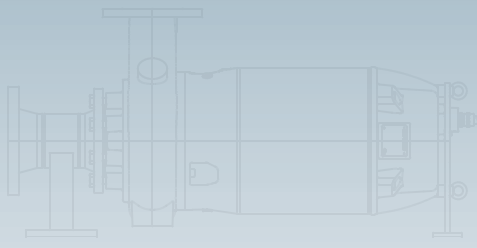


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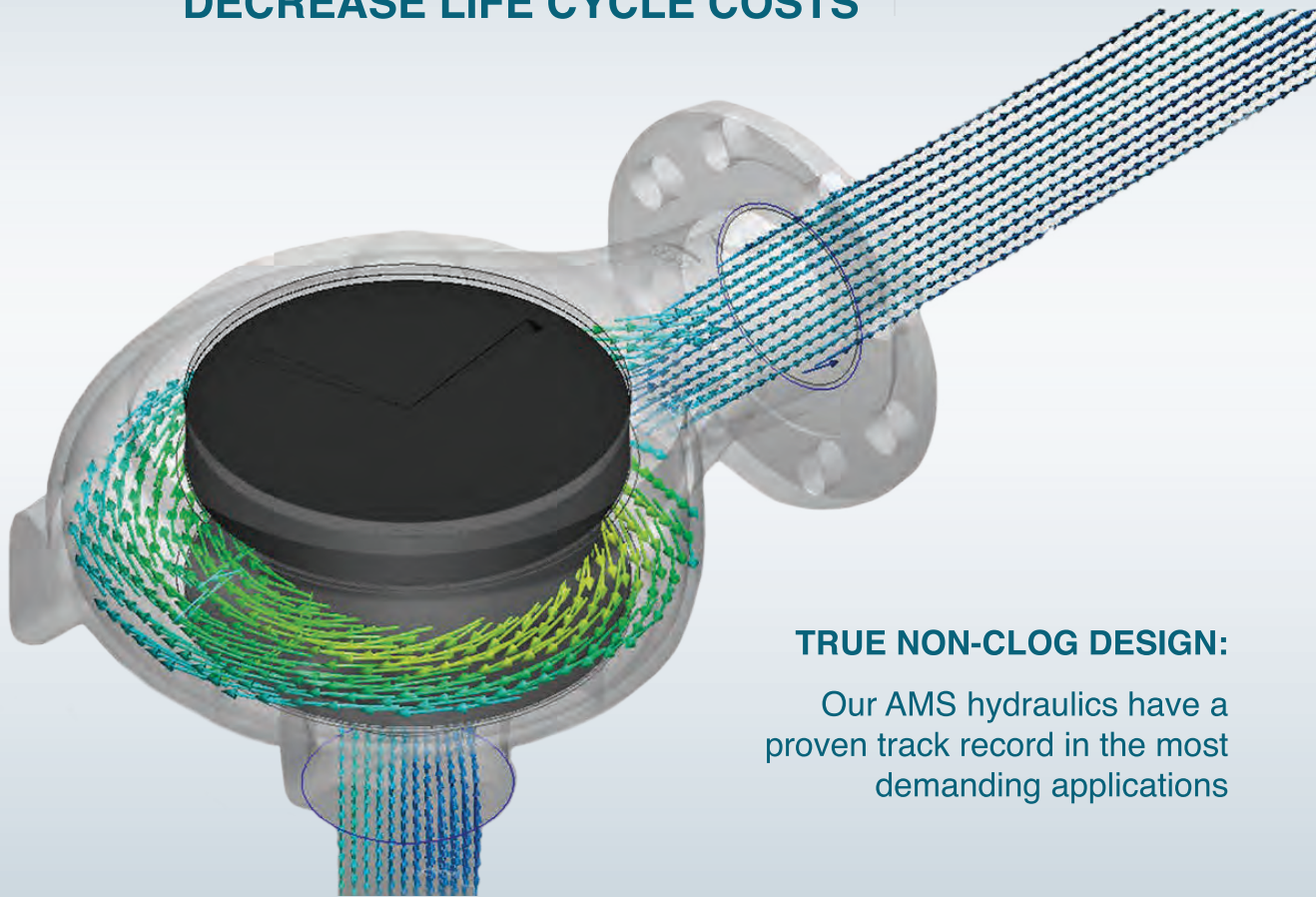


Screw Pumps

Open Screw Pumps
Enclosed Screw Pumps

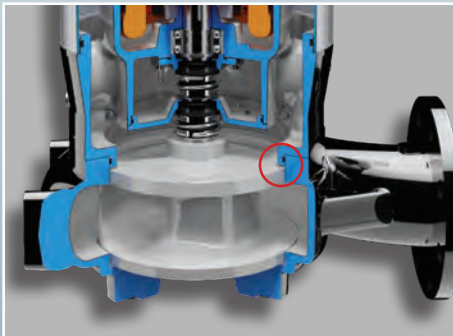


INCREASE PUMP STATION EFFICIENCY DECREASE LIFE CYCLE COSTS

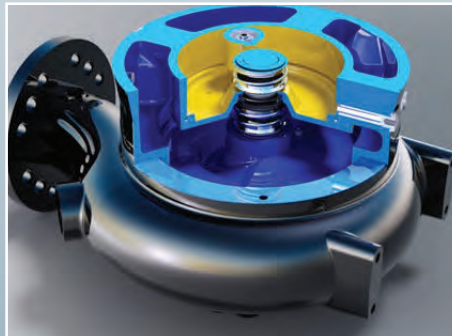


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CSWEA Strong

By Jane Carlson



The CSWEA administrative year has flown by – I am already writing my fourth and last article as President. As I'm writing this, the Omicron variant is on a steep decline, and we are looking forward to an in-person 95th Annual Meeting on May 17-19, 2022 in Madison. Our theme this year is *Stronger Together*, which we truly are! The format of this conference will be much like that of our more recent in-person meetings, with a few minor changes in response to your suggestions. The conference will kick off on Tuesday with golf, a young professionals' service project (seasoned professionals are encouraged to join, too!), and tours of storm water management practices and a waste treatment facility. The stormwater tour will be done by bike and e-bike again this year, weather permitting. The day will conclude with our social event and meet-and-greet at Monona Terrace. Start warming up your arm and aim for an exciting bean bag toss tournament! New this year, attendees will get an early peek at the exhibit hall during the social event.

Wednesday will start with a 5k fun run/walk along the lakeshore before our opening general session. We will open with a facilitated and inspirational discussion of diversity, equity, and inclusion in our industry. The day will be packed with excellent technical presentations that you've come to expect from CSWEA. There will be plenty of time to speak with vendors in the exhibit hall and have lunch and a reception there. Meetings for 7S Society, Golden Manhole Society, Young Professionals, and Global Water Stewardship groups will take place in the late afternoon.

“CSWEA has been around for almost a century. We are a strong organization thanks to our dozens – no, hundreds – of volunteers working in committees and on events for the state sections and the association. Your time is precious, and I think our collective volunteerism is a sign that we are truly passionate about clean water and resource recovery.”

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 event.

The State Section breakfasts will kick off Thursday, followed by additional technical sessions and the exhibit hall. Special tracks will include operator training in the morning and ethics in the afternoon. The Association Meeting and Luncheon will take place at mid-day.

Many volunteers are working hard to plan a worthwhile and enjoyable event for all our members I've always found the annual meetings to be an excellent value. For more information, go to www.cswea.org/events/cswea-95th-annual-meeting.

It's amazing to me to think that this is our 95th annual conference and CSWEA has been around for almost a century. We are a strong organization thanks to our dozens – no, hundreds – of volunteers working in committees and on events for the state sections and

the association. Your time is precious, and I think our collective volunteerism is a sign that we are truly passionate about clean water and resource recovery. We have a talented executive team of Haque and Associates to manage our affairs. We are certainly a much more diverse organization than we were 95 years ago, and that gives us greater strength. We also have a wise practice of having vice-chairs for almost all of our committees. This allows for smooth transitions of leadership when it's time for the chair to step aside, which typically happens at the annual meeting. I want to thank all our soon-to-be past chairs for their service. Thanks also to our association immediate past president, Mark Eddington, who will roll off the executive committee this May. He has been very supportive and helpful to me and others on the executive committee. Samantha Austin will finish her two-year stint as the Young Professional Representative on the executive committee. We thank her for her “can-do” leadership and her sense of camaraderie.

Thank you to our other representatives who are completing their roles, too; this article is being written too early for me to be able to name them here, but they are certainly appreciated.

A reminder that there are many other great CSWEA and State Section events coming up in 2022 as listed here: www.cswea.org/upcoming-events. I highly recommend the Midwest Student Design Competition and Education Seminar in April... two consecutive days of inspiration, to be sure!

It has been my privilege and an honor to be your association president. I will soon be immediate past president and at a loss for what to do with all my free time. Oh wait, that's not true. I'll be working on some updates to our governance documents, for one thing. Long time CSWEA member Joan Hawley offered to help with this... whew. She is a past president and was involved in the recent changes to the WEF Statements of Policy, so we're extra fortunate to have her guidance.



Let one of us know if you would like to have input, too.

Please continue to take good care of yourselves and each other. Spring will be

here soon, giving us more opportunities to meet up outdoors and recreate – maybe even on the water. Enjoy the season and I look forward to seeing you soon! [CS](#)

Inside Drops for Manholes

Stop wasting resources on outside drops!

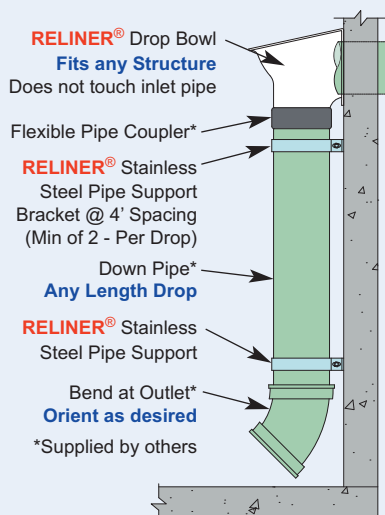
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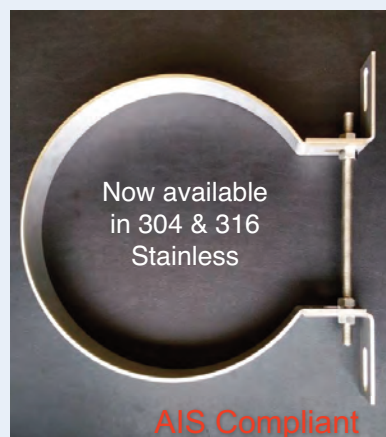
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Seeing the Future in Our YPs

By Mohammed Haque

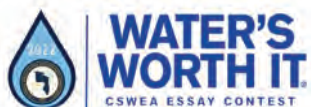


It's been a while since I have gotten to write a *Central States Water* article, and this time is extra special. Sustainability is determined by how you can persevere in the most turbulent of times and I'm proud to say that not only has CSWEA been sustainable, but COVID-19 and all of its trials and tribulations have made the association better and stronger. We've found new ways to network and, in the process, our educational offerings have grown. We've learned to network and connect with the public in new ways. Many publicly owned treatment works (POTWs) have had to go digital and this new digital push has allowed us to get out of our "Out of sight, out of mind" way of thinking and really embrace the good that we do in our industry... and make sure that the public knows. I'm so incredibly proud of a few of our members (and soon-to-be members) that have taken existing initiatives and made them better, and those that have had the drive to create new initiatives and make them really outstanding. I consider these folks the hidden gems in our industry... and while I am sure I am missing many other gems, it feels extra nice to call out many of these YPs that are helping us OGs look good. I realize many of these folks are from Illinois, so I apologize to my Wisconsin and Minnesota folk. We love you too – and wish you would move to Illinois, unless of course you fish for walleye. In that case, I understand why you prefer Wisconsin and Minnesota and I'm with you on that.



STEPHANIE CIONI

I don't know where Stephanie came from, but if I could bottle up this lady's energy and creativity and sell it, I would be super rich. She created the Water's Worth It Essay Contest as well as the Don't Flush That video challenge. Both initiatives have been super hits and have been great at getting elementary school kids to think about water and our industry. If you know Stephanie, make sure to thank her for all her volunteerism and the great ideas she developed DURING COVID-19!



The Clean Water Warriors team of Jason Neighbors, Matt Streicher, and Mike Holland compete at the Riptide Rowathon in 2020.

JASON NEIGHBORS/ MIKE HOLLAND

If you don't know Mike Holland, you should. He's an outstanding water aficionado and relentless volunteer. Mike's been so crucial in all things CSWEA for the last couple of decades that a little paragraph does not do him justice. Mike helped get the Operator Training program started a few years back and when COVID-19 hit, we took it virtual. In the process, Jason Neighbors

(another water hero) took the reins and has started to coordinate monthly operator trainings. Jason also hosts the Costa Rica Riptide Rowathon with his wife, Christie, which generates a great donation for GWS annually. Jason has done such a great job with the Operator Training initiative that the effort has morphed into a Spanish Operator Training program, providing virtual webinars with wastewater operators and engineers in Guatemala. The series is co-hosted by GWS and Engineers Without Borders – Guatemala. The first webinar was in March and another is planned for April and features the same topics that we teach to wastewater operators in the US. How cool is that? A special thanks to our friends Alexander Quilles (Marquette University graduate and EWB volunteer) and Steve Crowe for their partnership in this, and to Alejandro Quiros from Costa Rica for teaching the first Guatemalan class.



JOE LAPASTORA/MIKE HOLLAND

As I said, several of the last two decades of CSWEA's great initiatives have Mike Holland's name on them. The Student Design Competition (SDC) is no exception. Scott Trotter started the competition in 2004, and within a year or two, Mike took over and really laid the foundation for this. Mike steadily held the competition for many, many years and just recently he turned the reigns over to Joe Lapastora, a young lad with grit from Rockford, IL. and a solid real-world engineering education from UW-Platteville. Joe was a past contestant of the GWS portion of the SDC a few years back and we sure are glad that he chose to work in our field. He's been great and soon after competing in the competition, Joe has been actively involved at both the WEF level (Service Project) and has helped Mike expand the SDC into the Midwest Student Design Competition. Mike and Joe have



Joe Lapastora speaks at WEFTEC 2021.



Mike Holland, water aficionado and relentless volunteer.

MIDWEST STUDENT DESIGN COMPETITION (MSDC) FINAL DAY – OF COMPETITION SCHEDULE

Monday April 11, 2022 – Monona Terrace Event Center

	Room 1 – Hall of Ideas Room F	Room 2 – Hall of Ideas Room G
9:30 am–10:00 am	TEAM CHECK-IN/COFFEE/INTRO FROM MSDC LEADERSHIP	
10:00 am–10:30 am	Milwaukee School of Engineering (MSOE) Grace Cushing, Brandon Garrido, Josh Kleinschmidt, Jack Ferrante, Bennet Harris, Alexis Countryman	Marquette University Nicholas Collins, Caleb Zumm, Gillian Thomas, Jankson Stoll
10:30 am–11:00 am	Marquette University Anastasia Mourikes, Stan Kohls, Bethany Oceguera, Maura Cannon	University of Wisconsin – Platteville (UWP) Kaitlyn Galgon, Victoria Chanez, Caleb Radtke, Bryce Hetzel
11:00 am–11:15 am	BREAK	
11:15 am–11:45 am	Illinois Institute of Technology (IIT) Shayna Casupang, Myarah Lasky, Joshua Campbell, Nhat Nguyen, Ziling Han	Illinois Institute of Technology (IIT) Joyce Lam, Aaron Gregory, Thomas Novak, Luis Vazquez, Woorinuri Yang
11:45 pm–12:15 pm	Illinois Institute of Technology (IIT) Emma Dutkiewicz, Anna Slominski, Cornelio Estrella, Kane Liu, Nevin Abdelghani	Marquette University Faviola Perez Mercado, Shatden Harvey, Alondra Gonzalez, Alondra Rodriguez
12:15 pm–1:15 pm	LUNCH	
1:15 pm–1:45 pm	Illinois Institute of Technology (IIT) Greta Vasiliauskaite, Brennan Perez, Briar Moore, Lout Verder, Jonathan Sorg	Universidad de Costa Rica (UCR) Victor Peraza, Daniel Villalobos, Daniela Rodríguez, Adolfo Piedra, José Valverde
1:45 pm–2:00 pm	BREAK	
2:00 pm–2:30 pm	-	University of St. Thomas William Elskamp, Sophia Faacks, Abdi Abdimuhsin, Sean Roche
2:30 pm–3:00 pm	Universidad de Monterrey (UEM) Luis Reymundo Pérez García, Alejandro Vergara Montoya, Saul Sebastian Sánchez Rodríguez	Instituto Tecnológico de Costa Rica (TEC) Sol Carpio, Valeria Castillo, Maricel Chaves, Fabiola Perez, Adriana Rojas, Denisse Saborio, Melany Trujillo
	**Judges to review/judge virtual presentation prior to competition.	
3:00 pm–3:30 pm	JUDGE DISCUSSION	
3:30 pm–5:00 pm	CAREER FAIR – IN STUDENT DESIGN LOUNGE (HALL OF IDEAS ROOM EH)	
5:00 pm–5:15 pm	CATEGORY WINNERS ANNOUNCEMENT (HALL OF IDEAS ROOM G)	
5:30 pm–7:00 pm	RECEPTION (HALL OF IDEAS ROOM EH)	

WEF – Wastewater Category

WEF – Water Environment Category

Global Water Stewardship Category



succeeded on incorporating GWS into the SDC and convincing new universities from the Midwest (Purdue, St. Thomas – Minnesota, Notre Dame, Iowa State, IIT) and international GWS teams (University of Monterrey, Tecnológico de Costa Rica, University of Costa Rica) to jump on board. This year we will have a record 16 teams competing in the Midwest SDC and it's sub-competitions. This year's competition had over 80 students spending typically over 100 hours each on their student designs. All I can say is "Wow. I am so impressed."

If you are reading this and are in a position to support us, please sponsor the Student Design Competition. Your donation will go towards the \$500 per team that we spend to get students to the competition and \$4,000 GWS spends per team to allow international teams to compete and go on a one-week tour of wastewater treatment plants and manufacturers.

EIDER ALVAREZ-PURAS/GUISSEL DAVILLA/LIZ HEISE ETC.

About three years back, Laura Torres Corral, my dear friend from Costa Rica and I came up with the idea to create a wastewater technical conference, the first of its kind, for Costa Rica. At the time, I, of course jumped on the opportunity to have GWS do something totally unique and valuable and we got started on planning TicoSan 2020. Then COVID-19 hit and we took the conference virtual for 2020. It was great, but not great-great like it would be in person. As we proceeded with the initiative, we roped in the great Liz Heise and Eider Alvarez-Puras, along with our jack-of-all-trades volunteer, Mike Pepin. Little did I know that two more superstars in the making, Guissel Davilla (another former SDC participant) along with Maria Jesus Peralta (another former SDC participant from Costa Rica) would become critical parts of this initiative. But the true hero of all this is Eider Alvarez-Puras, the master planner who has kept us all on track to get TicoSan 2022 produced, planned, and delivered without a glitch. Her efforts produced the first wastewater technical conference in Costa Rica, which was featured in the national news in Costa Rica and was praised by the 4,000-employee strong national water and wastewater agency of Costa Rica (AyA). The president of AyA, Tomás Martínez (who keynoted the conference) thanked GWS for arranging TicoSan 2022. I am told that the conference has led the country to start thinking



Liz Heise, Joe Lapastora, Guissel Davilla, Eider Alvarez-Puras, and Maria Claudia Reed (front left, going clockwise).



Eider Alvarez-Puras on a GWS trip.



Liz Heise





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AyA Staff attending TicoSan 2022



Attendees at the TicoSan 2022 Los Tajos Tour



Audience at TicoSan 2022



Mohammed Haque and Tomás Martínez, President of AyA and TicoSan Keynote

about wastewater reuse and biosolids regulations and how to incorporate that thinking into the circular economy. I want that to sink in. A bunch of YPs are moving the needle on regulations in a country that is thousands of miles away because of their volunteerism and passion for wastewater and doing good. OMG. My hat goes off to all of these folks and our sponsors and supporters from the US that have given so much towards this initiative and into being a part of the developing wastewater industry in Costa Rica. Thank you, Baxter & Woodman, Centrisys, Komline-Sanderson, Lakeside Environmental, and Trotter & Associates for your direct sponsorship and allowing your employees to volunteer for this initiative.

Suffice to say, you can see there are many passionate folks in our membership and many more we are developing as part of our great work. While I know I have missed many, I hope this article inspires you to do something great to instill passion into YPs and to create opportunities where they can shine. I know as I get old and a bit tired, these YPs will be there to lift me up and get me to the finish line. [CS](#)

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WEF Strides Into 2022

By WEF Delegates, David Arnott and Tracy Ekola



David Arnott



Tracy Ekola

Greetings from Dave and Tracy, your WEF delegates from CSWEA! We are looking forward to the Annual Meeting in May – hope to see you all in Madison! Here some updates from WEF and the House of Delegates (HOD):

WEFMAX REGISTRATION IS OPEN

All are invited to attend the in-person WEFMAX meetings hosted by Hawaii WEA, WEA of South Carolina, and North Dakota WEA. There will be a different theme for each WEFMAX. Hawaii will focus on communications, South Carolina will focus on emerging leaders, and North Dakota will focus on DE&I. A virtual WEFMAX is also being planned, however not yet scheduled. CSWEA members are invited to register for these events to network and learn more about other member associations and WEF at www.wef.org/membership/wef-member-associations/wefmax.

WEF STRATEGIC PLANNING CONTINUES

WEF, working with a consulting partner, THRUUE, has conducted a first round of focus groups. WEF members shared about what they value from WEF and industry trends. The Board of Trustees (BOT) has begun diving into WEF's mission and vision, answering the critical question of "why does WEF exist?" The process will continue through the first half of 2022 with the goal of completing the work before WEFTEC 2022. The next planning sessions with THRUUE will occur after the WEF Board Meeting later this month.

WEF/AWWA YP SUMMIT

The WEF/AWWA YP Summit occurred in conjunction with the Utility Management Conference (UMC) in Orlando. The WEF Emerging YP Leadership Workshop was held February 20 and YP Summit on February 21.

MA GRANT PROGRAM RETURNS

The MA Grant Program has returned for 2022. The first round of applications has been completed and next round applications are due by June 24, 2022.

HOD WORKGROUPS AND COMMITTEE OFF AND RUNNING

Each of the HOD efforts in our workgroups and committee are underway. Dave is working with the Communications and Emerging Leaders workgroups and Tracy is working with the Federal Advocacy Workgroup.

The **Federal Advocacy Workgroup** is continuing the work from 2020-2021 to assist with amplifying WEF's advocacy priorities related to the federal government regulations and funding. WEF has advocated for more resources for our communities and utilities. This workgroup is focused on extending advocacy efforts to all member associations (MAs).

The workgroup has created the following subcommittees to communicate and encourage advocacy efforts in 2022 through the following channels:

- Print/Newsletter to WEF members and MAs
- Webinar/Presentations to WEF members and MAs
- Social Media/Email Blasts to WEF members and MAs

WEF's efforts helped increase appropriations by Congress to the Clean Water Revolving Fund (CW SRF). Congress recently established several new infrastructure funding programs to address a variety of priority areas for wastewater and stormwater. Continued efforts are needed to further implement funding. Recent past successes have been in part due to our members writing Members of Congress, visiting their representatives, and being informed on the issues.

If you haven't already, please consider becoming a Water Advocate (www.wef.org).

Also check out information on Water Week 2022 here: www.waterweek.us.

The Federal Advocacy workgroup is closely linked to the WEF Government Affairs Committee and has been tracking the Bipartisan Infrastructure Bill, which was signed into law on November 15, 2021. The main parts of the bill are:

- \$20+ billion for safe drinking water
- \$15 billion in dedicated funding to replace lead pipes
- \$12+ billion to ensure clean water for communities
- \$1.8 billion to protect regional waters
- \$135 million for additional water improvements

Steve Dye, WEF Legislative Director, is leading the effort to track developments of this bill. Steve can be reached at sdye@wef.org. Tracy Ekola participates on both the Federal Advocacy and the Government Affairs Committee and can be contacted at tekola@brwnald.com.

The **Communications Workgroup** aims to help people with a technical background communicate more effectively. Communications is an important discipline within the water sector, just like engineering, project management, and other technical areas.

Further detail on the Clean Water for Communities portion of the bill is as follows:


Clean Water for Communities	
\$11.7 billion	Clean Water State Revolving Funds (CWSRF) 49% of funds will be available for grants or principal forgiveness loans. 51% of funds will be available for low-interest loans. State match is reduced to 10%.
\$1 billion	Addressing Emerging Contaminants Funding through Clean Water State Revolving Funds. All funds provided as grants or principal forgiveness loans. State match is not required.

We have identified a series of leaders in the water industry to talk with the workgroup at our monthly meetings about the importance of and how to conduct clear communication with the various stakeholders in the water sector. The goal is that our workgroup will learn communication best practices from these leaders. Our first speaker was Randy Hayman, Esq., Commissioner & CEO of Philadelphia Water. Randy shared some great insights such as being willing to have the tough conversations, giving plenty of advance notice of meetings

and presentations so stakeholders can prepare and they are not surprised, demonstrating that you are approachable and that you listen, and showing respect to your stakeholders by allowing them time to come back to you with questions and comments after an idea or initiative is first introduced.

The **Emerging Leaders Workgroup** is another workgroup at WEF. For WEF to continue to grow, we need the engagement and advancement of new leaders from within the organization.

This workgroup wants to identify different paths to WEF leadership to facilitate a broader spectrum of involvement by WEF members. To do this, at the workgroup meetings for the first part of the year, we will have one or two members share the WEF Story. These are stories of how they become involved in their MA and WEF. We hope to uncover some non-traditional pathways of MA and WEF leadership and contributions. We will then share these pathways in hopes to spark interest among WEF member on ways to emerge as a WEF leader.

As WEF Delegates, we are here to support you and represent the interests of the CSWEA to the House of Delegates and WEF. If something is on your mind, please feel free to call or email. We are here to serve you/CSWEA and be a liaison to WEF leadership. We look forward to hearing from you! Contact tekola@brwnald.com/darnott@ruekert-mielke.com. 



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Living with Intention

By Mary-Frances Klimek

There are those new (or at least newer) ways of thinking, ideas that were not around in the past, like concept “living with intention.” But what is living with intention? What does the concept really mean?

Living with intention means different things to different people, but I will take a stab at it. To me, living with intention means living a balanced life that has meaning and purpose. It means that you are doing what you enjoy at a level where you are able to focus on what is important to you. It is about having a purpose so that you are able to say “no” to become overwhelmed but also able to say “yes” in order to enjoy the challenges and rewards that come with meeting or attempting to meet our own expectations.

You may be thinking that while this sounds fine, how does this relate to CSWEA? Think about it for a minute and the list of things that are important to our organization and to each of us. These are intentions. Not everyone will have the same list, but that is to the betterment of the organization because it allows the group to make a difference in more areas, simply because of the diversity of intentions.

As an individual, start by making a plan. Are you tired of having a list that never seems to get shorter? Ask yourself why that is. Do you have control over that list? You must have at least some control, so start there. Prioritize and then stick with the plan, while judging your priorities. When you set an intention, you commit to making it happen.

When living with intention, individuals choose activities that are of interest to them. You may be interested in helping plan a seminar, but not want to give a presentation. Other people may



choose to give the presentation, but not want to plan. By having individuals with intentions in each category, the seminar and organization both benefit.

Those that live with intention are working toward personal growth. One intention may be to be part of a service project, but it may also be to only commit to projects that are of interest to you or where you will learn a new skill.

Those that choose to live with intention choose to enjoy what is going on now. Did you just complete a project, get a process working, or write

a report? Take time to enjoy the accomplishment. This extends to time away from work too. Have you ever planned a party and at the end of the night realize that you haven’t had anything to eat? You were not mindful of the party and especially of your enjoyment.

When living with intention, you strive for balance and choose commitments that make a difference. This is often where the saying “no” or even “yes” comes in. If a committee already has enough members, those living with intention may choose the one committee that they are interested in that really needs their help.

Realize that by living and choosing with intention, you will not please everyone. The committee that you say no to may not be happy, but by limiting the number of optional commitments, you will be able to give more to those projects you do commit to. By doing this, you will feel self-satisfaction that carries over to other areas, perhaps even to those areas that are not optional but that are requirements. No matter your decision, choose without regret and you will find that all will benefit. [CS](#)

“When living with intention, individuals choose activities that are of interest to them.”

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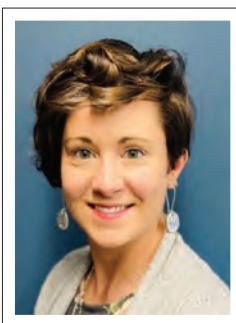
Bringing 2021's Life Lessons into 2022



By Emma Larson

A few months ago, while driving and listening to the radio, I heard a phrase that struck a chord within me: "Surround yourself with people that do their job better than you do." This phrase hit home so much that I made my husband find a scrap of paper to write it down so I that I didn't forget it. When searching online for the entire quote, it seems to be accredited to Jose Miguel Sokoloff; but it turns out there are a lot of different, but very similar lines of thinking.

When the world is telling us that we always have to be the best, have the best, do the best, show the best – how does this



leave room for others to be the best? How can we support those around us to be the best and do the best, when we are so focused on ourselves? As a supervisor and colleague (and friend), surrounding yourself with a team that knows their job inside out and every direction will not only save you from having to know a lot of jobs, but it means your team can grow and thrive where others can't. Giving your team, your colleagues, your family, and your friends the time, space, support, and encouragement to be their best will not only inspire you to be your best, it

will also be a self-giving reward.

2021 has been a lot of things, chaos being one of them, sad being another. With the loss of our friend Ryan Giefer in November, it is a good reminder that life is short and should be cherished. Even when we don't feel like cherishing it.

In Minnesota Section we have a few things lined up to get us back together in 2022. The Collections Workshop on January 19, 2022 in the Twin Cities and Innovative Approached to Wastewater in St. Cloud, held on February 8, 2022 were only the beginning. We are really hoping to be able to continue to get together in person through 2022 and return to the colleagues and friends we have missed these last few years. I'll see you there. [CS](#)

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"When the world is telling us that we always have to be the best, have the best, do the best, show the best – how does this leave room for others to be the best? How can we support those around us to be the best and do the best, when we are so focused on ourselves?"

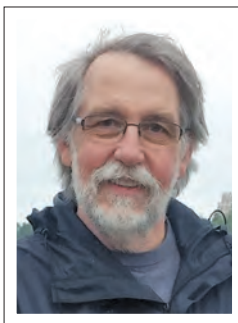
More Events May Be Happening In Person



By Bob Swirsky

It's the beginning of February and I am optimistic that the lessening of a recent upsurge in COVID-19 cases means that the in-person activities being planned will be able to take place.

The Illinois section meeting was held virtually on January 11, 2022. The various committee chair people gave their reports and talked about the many interesting events and activities that have taken place and are being planned to take place both virtually and in person. Here is a summary of what was reported.



Mike Holland gave his Treasurer's report and presented the 2022 Illinois section budget, it was put up for a vote of approval by the committee members that were present, and it was approved.

Stephanie Cioni gave the Public Education Committee report, she reported that the 3rd Annual Student Essay Contest was launched in January and that winners from northern, central and southern Illinois will be selected as well as a grand prize for statewide winners in both the research and a creative writing categories.

Aaron Berry gave the Membership Committee report, he talked about the joint initiative with WEF for the recruitment of new members by offering free memberships and that all the sections are pooling additional funds to purchase improved fabulous prizes that can be bestowed upon some lucky winners at the annual meeting.

Nick Domalewski gave the Student and YP committee report, where he mentioned working with the other sections on a volunteer project and career fair for the annual meeting. He also mentioned working on pushing out the student design competition to the U of I student chapter and environmental education students at IIT.

Eduardo Gasca and Mary Dressel gave the Laboratory/Industrial Pre-Treatment Committee report. Eduardo talked about organizing a presentation for March 10, 2022, and he said they will be sending the program to Mohammed for registration arrangement and release. Mary mentioned that they are looking to do an in-person seminar if pandemic permitting to take place several months down the road.

Paul Siegfried gave the Collection System/Stormwater Committee report, he noted that the in-person seminar that was going to take place downstate last fall was cancelled due to

COVID-19 concerns. A collection system committee meeting was held on January 13, 2022 to begin planning the joint Collection System/Stormwater seminar to be held in person in June. Paul's report on the Stormwater committee mentioned the joint webinar presented in November featuring speakers from all three states talking about climate change adaptation and resiliency in the Midwest. He also mentioned that the committee would like to have a Central States booth at IFSM in Bloomington/Normal again this year if it is held in person this March.

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Jason Neighbors reported that the Operations/Safety committee will be continuing to present training webinars with the first one for this year scheduled to be presented in February and he will be talking with the other state committee chairs for planning the subsequent webinars for the year.

Matt Streicher gave the Government Affairs report saying that if IAWA is back in person in March they will team up with them for the seminar and if not, they will plan to present a 2-hour virtual seminar.

Chris Buckley reported that the Biosolids/Energy/Resource Recovery committee had a webinar in September that was presented by James at FRWRD. They may join with the Wisconsin Biosolids group in March for their symposium. Possibly a future seminar in Illinois later in the year.

Liz Heise gave a report on Global Water Stewardship, she mentioned that the TicoSan conference is being held in San Jose, Costa Rica this year on March 21 and 22, 2022 and that there has been a lot of interest from Costa Rican companies to attend and exhibit. If everything is fine the regular trip to Costa Rica will take place in August.

Derek Wold reported that LIFT is no being supported by WEF but an innovation committee should continue on, the three main things being worked on are, new chair, vice chair and some kind of event for the education seminar in April, probably dinner and a speaker. Also looking at different plant tours to coordinate.

“It’s the beginning of February and I am optimistic that the lessening of a recent upsurge in COVID-19 cases means that the in-person activities being planned will be able to take place.”

Matt Streicher reported that the PWO will put together teams after award winners are announced.

Thank you to all the committee members that keep working hard to make sure the association can provide all these opportunities for education, involvement and networking.

Thank you to everyone for your support!

Bob CS



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2022

Officer Nominations



TROY LARSON

Second Vice President

Troy Larson has been an active member of CSWEA for over two decades and has been a member of the 7S Society since 2011. Troy has been a member of the WI Section Operations Committee for 20 years and was the chair for 10 years. As Chair of the Operations Committee he lead efforts to develop an annual operations seminar that focuses on topics that benefit from collaboration and troubleshooting in hopes of educating and improving facility operations. Troy served as the Wisconsin Section Chair in 2019 and was the 2021 Service Award Recipient for the WI Section. Troy has a Degree in Biology from the University of Wisconsin – Whitewater and is a certified operator wastewater treatment plant operator in the state of Wisconsin. Troy has been employed as a Wastewater Operations Specialist for Strand Associates since 1996.



RICHARD HUSSEY

WEF Delegate 2022-2025

Richard Hussey worked for a Midwest engineering consulting firm as a project manager and project engineer from 2000 to 2004. There, he established a client base that allowed him to work on various wastewater and water treatment plant projects. He graduated from the University of Illinois Urbana-Champaign with a BS and MS in Environmental Engineering and is a licensed Professional Engineer in the State of Illinois. In 2004, Richard joined LAI Ltd. (manufacturer representative of water/wastewater process equipment) and became partner in 2014. Rich has served various roles (IL Section Chair, YP Chair, IL Section Trustee) within CSWEA and is currently the Chair of the Education Seminar Committee.

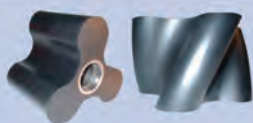


ANNDEE HUFF CHESTER

Young Professional Representative 2022-2024

Anndee has been a member of WEF since 2012 and a member of the Minnesota Section CSWEA since 2016. Anndee had served on many committees but most recently the Minnesota Section Resource Recovery and Energy Committee and the WEF Water Reuse Committee. She was also the recipient of the CSWEA Academic Excellence Award in 2020 and the Brown and Caldwell Women in Leadership Scholarship in 2020. She graduated from Portland State University with an undergraduate degree in Environmental Engineering, a master's degree from the University of Minnesota, and is currently a PhD Candidate at the University of Minnesota.

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PROGRAM AND REGISTRATION INFORMATION



Welcome to the 95th Annual Meeting



Jane Carlson,
CSWEA President
2021-2022

The Local Arrangements Committee is pleased to welcome you to CSWEA's 95th Annual Meeting at the Monona Terrace in beautiful downtown Madison, WI. Our theme this year is Stronger Together, which reflects the hope that we will be meeting again in person this year. The theme also reminds us that we are stronger when we work together instead of individually. It celebrates that we are stronger when we are together in all our diversity – race, ethnicity, age, technical background, gender and more. We are stronger when we work together on our core business of clean water and resource recovery, and when we work together on really big problems like climate change and environmental justice.

We have been working hard to provide a great annual meeting to disseminate technical and regulatory information, provide networking opportunities, conduct section and association business, honor award recipients, and provide time for our members to reconnect with friends and colleagues. The Annual Meeting starts on Tuesday with golf; a service project, and concurrent tours of stormwater practices and a waste treatment facility. The stormwater tour will be done by bike and e-bike (weather permitting) again this year. The day concludes with our social event at Monona Terrace. New this year, attendees will have access to the exhibit hall during the social event period, including starting the bidding for the silent auction which will raise funds for Global Water Stewardship.

Wednesday starts with a 5k fun run or walk before our opening keynote session. The opening session will include an inspirational discussion on being Stronger Together in our "new normal." We will then transition into technical sessions and the exhibit hall. We have a couple time periods reserved for 'exhibition only', and lunch will take place in the exhibit hall. In the afternoon, there are additional technical sessions followed by the exhibitor reception and meetings for the 7S Society, Golden Manhole Society, Young Professionals, and Global Water Stewardship groups. We will recognize outstanding members who do great things every day to support the water environment on Wednesday evening during the awards event.

The State Section Breakfast kicks off activities on Thursday, followed by technical sessions and the exhibit hall. Special tracks will include operator training in the morning and ethics in the afternoon. The Association Meeting and Luncheon will take place at mid-day.

Thanks to all who have worked to plan for this Annual Meeting, and a special thanks to Lindsey Busch for her leadership and expertise as chair of the local arrangements committee. We are Stronger Together, and we look forward to visiting with you at the conference!

**Register
online at:**
[www.cswea.org/
events](http://www.cswea.org/events)

Conference at a Glance

TUESDAY MAY 17		LOCATION	ROOM
10:00 am-3:00 pm	Golf Outing	Pleasantview Golf Course	---
1:00-4:00 pm	YP Service Project	Monona Terrace	---
12:30-3:45 pm	Stormwater Tour	Monona Terrace	---
2:00-4:00 pm	Plant Tour	Springfield Biogas Facility, Pub & Brewing Co. (Doty St.)	---
4:00-5:30 pm	Tours Meet-up at Brewery	Great Dane	---
6:00-6:30 pm	Global Water Stewardship Annual Meeting	Monona Terrace	Grand Terrace
6:30-9:00 pm	Social / Meet & Greet	Monona Terrace	Grand Terrace

WEDNESDAY MAY 18		LOCATION	ROOM
6:30-7:45 am	5k Run/Walk	Lake Monona Bike Path	---
9:00 am-6:00 pm	Exhibits	Monona Terrace	Ballroom ABCD
8:00-9:00 am	Opening Session and Keynote	Monona Terrace	Grand Terrace
9:00-9:15 am	Morning Break	Monona Terrace	Hall of Ideas
9:15-10:15 am	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
10:15-11:00 am	Exhibits Only	Monona Terrace	Ballroom ABCD
11:00 am-12:00 pm	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
12:00-1:00 pm	Exhibitor Lunch	Monona Terrace	Ballroom ABCD
1:00-2:00 pm	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
2:00-2:30 pm	Poster Session I, Afternoon Break	Monona Terrace	Hall of Ideas
2:30-3:30 pm	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
3:30-6:00 pm	Exhibitor Reception	Monona Terrace	Ballroom ABCD
3:30-4:00 pm	7S Meeting	Monona Terrace	Hall of Ideas EH
4:00-4:30 pm	Golden Manhole Society	Monona Terrace	Hall of Ideas FI
4:30-5:00 pm	YP Gathering	Monona Terrace	Hall of Ideas G
5:00-6:00 pm	Annual Business Meeting	Monona Terrace	Hall of Ideas EH
6:30-7:00 pm	Awards Reception	Monona Terrace	Grand Terrace
7:00-9:00 pm	Annual CSWEA Awards Event	Monona Terrace	Grand Terrace

THURSDAY MAY 19		LOCATION	ROOM
7:30-8:30 am	State Section Business Meetings	Monona Terrace	Meeting Rooms K-R
9:00-11:30 am	Exhibits	Monona Terrace	Ballroom ABCD
9:00-10:00 am	Technical Sessions	Monona Terrace	Hall of Ideas GJFI
9:00-11:30 am	Ops Training	Monona Terrace	Hall of Ideas EH
10:00-10:30 am	Poster Session II, Morning Break	Monona Terrace	Hall of Ideas
10:30-11:30 am	Technical Sessions	Monona Terrace	Hall of Ideas GJFI
11:40 am	Silent Auction Bids Due	Monona Terrace	Ballroom ABCD
11:30 am-1:30 pm	Annual CSWEA Association Meeting	Monona Terrace	Grand Terrace
1:30-3:30 pm	Technical Sessions / Ethics	Monona Terrace	Hall of Ideas EFGHIJ

REGISTRATION HOURS		LOCATION
11:00 am-5:00 pm	Tuesday, May 17	Hilton Madison Monona Terrace
2:00-7:00 pm	Tuesday, May 17	Monona Terrace
6:30-9:00 pm	Tuesday, May 17	Hilton Madison Monona Terrace
8:00 am-5:00 pm	Wednesday, May 18	Monona Terrace
8:00 am-4:00 pm	Thursday, May 19	Monona Terrace

EXHIBIT HALL HOURS		
2:00-6:00 pm	Tuesday, May 17	Exhibitor Set-Up
6:30-9:00 pm	Tuesday, May 17	Social/Meet & Greet
8:00 am-6:00 pm	Wednesday, May 18	Exhibit Hall Open
8:00-11:30 am	Thursday, May 19	Exhibit Hall Open
11:30 am-3:00 pm	Thursday, May 19	Exhibitor Move Out

Local Arrangements Committee

Name	Organization	LAC Role	Email
Jane Carlson	UW-Madison	2021-2022 CSWEA President	jane.carlson@wisc.edu
Lindsey Busch	Carollo Engineers	2022 LAC Chair	lbusch@carollo.com
Ryan Giefer	City of Wisconsin Rapids	Technical Committee Chair	---
Cary Solberg	Milwaukee MSD	Speaker Search Chair	csolberg@mmsd.com
Tom Mulcahy	Mulcahy-Shaw Water	Exhibits Chair	tmulcahy@mulcahyshaw.com
Liz Kramer	City of St. Cloud	Silent Auction Chair	elizabeth.kramer@ci.stcloud.mn.us
Dave Arnott	Ruekert-Mielke	Conference Advisor	darnott@ruekert-mielke.com
Amy Underwood	Downers Grove Sanitary District	Conference Advisor	aunderwood@dgsd.org
Glenn Tranowski	Strand Associates, Inc.	5k Run/Walk Chairperson	glenn.tranowski@strand.com
Rachel Lee	LAI	Social Program Chair	rlee@lai-ltd.com
Mary-Frances Klimek	Racine Wastewater Utility	Catering Chair	maryfrances.klimek@cityofracine.org
Mel Butcher	Carollo Engineers	Golf Outing	mbutcher@carollo.com
Greg Gunderson	MSA	Printing and Signage Chair	ggunderson@msa-ps.com
Leon Downing	Black & Veatch	Local Tour Chair	downingl@bv.com
Patrick McNamara	Black & Veatch	Local Tour Support	mcnamarap@bv.com
Jon Lindert	Strand Associates, Inc.	Stormwater Tour Chair	jon.lindert@strand.com
Lila Johnson	Baxter & Woodman	A/V Chair	ljohnson@baxterwoodman.com
Samantha Austin	Jacobs	Student Design Chair & YP Chair	sam.austin@jacobs.com
Amy Haque	CSWEA	Registration	ahaque@cswea.org
Ashley Leisgang	AECOM	Registration	ashley.leisgang@aecom.com

Technical Program Committee

Ryan Giefer (Chair)	Wisconsin Rapids WTF	---	WI
Matt Seib	Madison MSD	matts@madsewer.org	WI
Colin Fitzgerald	Jacobs	colin.fitzgerald@jacobs.com	MN
Emma Larson	City of St. Cloud	emma.larson@ci.stcloud.mn.us	MN
Mandy Sheposh	Johnson Controls	amanda.sheposh@jci.com	IL
Chris Buckley	EEI	cbuckley@eeiweb.com	IL

Executive Committee

- President, Jane Carlson
- 1st Vice President, Tracy Hodel
- 2nd Vice President, Amy Underwood
- Treasurer, Alan Grooms
- Immediate Past President, Mark Eddington
- WEF Delegate '22, Tracy Ekola
- WEF Delegate '23, David Arnott
- PWO Representative '23, Matt Streicher
- YP Representative '22, Samantha Austin
- Minnesota Section Trustee '22, Chris Harrington
- Illinois Section Trustee '23, Chris Marschinke
- Wisconsin Section Trustee '23, Rachel Lee
- Executive Management, Amy Haque and Mohammed Haque



Conference Highlights

Tuesday, May 17, 2022

GOLF OUTING

Pleasant View Golf Course
1322 Pleasant View Rd
Middleton, WI 53562
10:00 am to 3:00 pm



Situated on hills approximately 300 feet above Lake Mendota, Pleasant View Golf Course provides a panoramic view of the City of Madison, WI. The course offers 27 holes of well-maintained, championship golf, a nine hole, scenic par 3 course, and an outstanding practice range. The course was awarded the Gold in *Madison Magazine's* Best of Golf Courses for 2018, 2019, and 2020.

For corporate sponsorship opportunities or for outing details, contact Mel Butcher, Golf Outing Coordinator, at m butcher@carollo.com.

COMMUNITY SERVICE PROJECT

Plogging and Scavenger Hunt
1:00 to 4:00 pm

Join fellow CSWEA members for a combined Plogging & Scavenger Hunt event! Plogging, the Swedish craze of jogging while picking up litter, will have your team running or walking around downtown Madison picking up litter and collecting water resources related photos as part of the scavenger hunt. Tour Logistics: Attendees will walk to the SE side of the WI State Capitol Building to meet and be divided into teams. Please contact Sam Austin at sam.austin@jacobs.com with questions or for more details.

LAKE MONONA STORMWATER TOUR

Stormwater Facilities Protecting Lake Monona
12:30 to 3:45 pm

Please join us as the Wisconsin Section Watershed and Stormwater



Committee hosts a bike tour around Lake Monona to visit nine stormwater facilities (quality, quantity, green infrastructure, streambank restoration) providing stormwater control and treatment to protect Lake Monona and downstream waters.

Lake Monona is a 3,359-acre lake in Dane County with a 96 square-mile watershed surrounded by the City of Monona and the City of Madison and 24 parks. The story of stormwater treatment, stormwater flood control, and waterfront redevelopment will unfold as you participate in a gentle 13.7 mile bike ride (with some modest hills) looping around the lake.

This tour will include:

- Stonebridge Park Underground Wet Detention Basin and High-Capacity Inlet
- Schluter Park Stormwater Treatment Device (Vortech)
- Winnequah Park Lagoon Dredging and Shoreline Restoration
- Winnequah Park Stormwater Treatment Devices (2 Vortech)
- Graham Park Stormwater Treatment Device (Suntree)
- Pirate Island Stormwater Treatment Device (Suntree)
- Gateway Green Flood Relief Pipe and High Capacity Inlet
- Grand Crossing Park and Yahara River Waterfront Development
- Wingra Creek Streambank Restoration

E-Bikes can be rented through Madison B-Cycle (www.madison.bicycle.com) or attendees are welcome to bring their own bikes. Rental fees are included in your registration fees when selecting the stormwater tour. After the tour, attendees are invited to visit a local brewpub for a beverage before returning to their lodging accommodations.

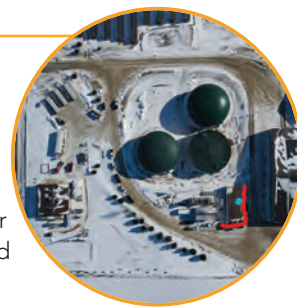
Tour Logistics: Attendees will walk to the B-Cycle station located at the corner of Martin Luther King Jr. Boulevard and W. Wilson Street intersection about a block from the conference. Attendees will drive vehicles or walk to local brewpub afterwards, if desired. Carpooling is encouraged. In the event of inclement weather, the tour will either consist of a vehicle tour of the sites or a presentation at the conference location.

Please contact Jon Lindert by phone at 608-251-4843 (Ext. 1191) or by email at jon.lindert@strand.com with questions or for more tour details.

PLANT TOUR

Springfield Biogas Facility:
EnTech Solutions Farm Waste to Energy Digester
7167 Schneider Rd, Middleton WI, 53562
2:00 to 4:00 pm

Utilizing anaerobic digestion, this facility turns manure waste from local dairy farms into renewable natural gas and concentrated nutrients. Manure from more than 4,000 cows from local dairy farms is processed through three anaerobic digester tanks. The biogas is captured and processed into renewable natural gas (RNG). The RNG is injected into the pipeline in Madison. The tour will highlight the digesters and associated resource recovery equipment. After the tour, attendees will gather at the downtown Great Dane Pub & Brewing Company. No shuttle bus will be arranged. Attendees will need to drive or carpool.



TUESDAY NIGHT SOCIAL

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

Please join us for the pre-conference wastewater tailgate of the year! Get ready for an evening of fun socializing with your fellow CSWEA members and exhibitors at the Monona Terrace. Brush up on your bean bag toss skills and be prepared to participate in a bean bag toss tournament that will be held during the evening. The Exhibit Hall will be open, and we invite all exhibitors and attendees to take advantage of this extra time to mingle and learn from our vendors. Heavy appetizers and refreshments will be served during the event.



Wednesday, May 18, 2022

5K RUN/WALK

Lake Monona Bike Path
6:30 to 7:45 am

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

OPENING SESSION AND KEYNOTE

Monona Terrace Grand Terrace
8:00 to 9:00 am

Join us as we start the day with a Keynote address, presented by Tania Ibarra (Step Up: Equity Matters), on how we can all be stronger together in this new normal. Tania is the co-founder and CEO of the Madison-based group, Step Up: Equity Matters. Ibarra successfully guides leaders to clarify the mission, vision, and purpose of their organizations to create a one-team culture.

TECHNICAL SESSIONS

Monona Terrace Hall of Ideas EFGHIJ
9:15 to 10:15 am, 11:00 am to 12:00 pm, 1:00 to 2:00 pm, 2:30 to 3:30 pm

There will be four concurrent half-hour sessions. A, B, C, and D will be from 9:15 to 10:15 am and 11:00 am to 12:00 pm. There will be four afternoon concurrent half-hour sessions E, F, G, and H will be from 1:00 to 2:00 pm and 2:30 to 3:30 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 1:00 pm

The Exhibitor Lunch offers exhibitors and conference attendees to meet in a relaxing and social environment. Visit the Monona Terrace Ballroom to take part in this exciting chance to mingle.

POSTER SESSION I

Monona Terrace Hall of Ideas
2:00 to 2:30 pm

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

EXHIBITOR RECEPTION

Monona Terrace Ballroom
3:30 to 6:00 pm

Light snacks and refreshments will be provided in the ballroom. 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 EH
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 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 19, 2022

STATE SECTION BUSINESS MEETINGS

Monona Terrace Meeting Rooms K-R

7:30 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

9:00 to 10:00 am, 10:30 to 11:30 am, 1:30 to 3:30 pm

There will be four concurrent half-hour technical sessions K, L, M, and N from 9:00 to 10:00 am and 10:30 am to 11:30 am and four afternoon concurrent half-hour technical sessions P, Q, R, and S from 1:30 to 3:30 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 Hall of Ideas

10:00 to 10:30 am

Posters will be on display in the Hall of Ideas. 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



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 Liz Kramer at elizabeth.kramer@ci.stcloud.mn.us for more information. Bids will be posted at 11:40 am in the Exhibit Hall.

ANNUAL CSWEA ASSOCIATION MEETING

Monona Terrace Grand Terrace

11:30 am 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 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 18				
	Hall of Ideas Room FI	Hall of Ideas Room G	Hall of Ideas Room J	Hall of Ideas Room EH
	Biomass Intensification	Utility Management	Filters for Secondary and Tertiary Treatment	Nutrient Management & Recovery
Moderator	Matt Seib	Chris Buckley	Colin Fitzgerald	Shanna Czek
9:15-9:45	Latest Case Studies for Aerobic Granular Sludge in North America Brett Quimby	A Holistic Look at Infrastructure Replacements: The Madison Metropolitan Sewerage District's Energy Management Master Plan Lindsey Busch	The Old Dog Learns a New Trick: Rethinking The City of Waukesha's Tertiary Process to Achieve Ultra-Low Phosphorus Limits Greg Markle	Demystifying Sidestream Deammonification Application Practices Eric Redmond
9:45-10:15	Intensification Processes for BNR Upgrades - Technology Comparisons at Three Midwest WWTPs Randall Wirtz	So You Want to Set Up an I/I Program... Jennifer Hurlebaus	Comparison of Three Filter Technologies for Complying with Phosphorus Limits at the Oshkosh WWTP Jim Fisher	Two-Stage Partial-Nitritation/Anammox Process Demonstrates Stable and Efficient Treatment of High-Strength Digestate Jonathan Liberzon
Break 10:15-11:00 AM				
11:00-11:30	Enhancing the Activated Sludge Process Using CFD Modeling to Keep Granular Sludge in the System Ed Wicklein	The Unflushables Pilot Project Tricia Garrison	Sustained 60 MGD for Consent Decree! Katherine Merkle	Single Stream Phosphorus and Ammonia Recovery in Community Anaerobic Digestion Projects Rick Johnson
11:30-12:00	Wasting Through the Spin Cycle Colin Fitzgerald	Diversity: How to Get More Mix in Your Mix Liquors Nathaniel Tillis	Enhanced Domestic Primary Wastewater Treatment Utilizing Pile Cloth Media Filtration for Operational Savings and Sustainability John Dyson	Plant Wide Effects of Magprex Phosphorous Removal System Implementation: Pilot to Full Scale Brett Bevers
Exhibitor Lunch 12:00-1:00				
	Hall of Ideas Room EH	Hall of Ideas Room FI	Hall of Ideas Room G	Hall of Ideas Room J
	Advanced Activated Sludge	Digestion and Biosolids	Watershed P Approaches/Operational Challenges	Advanced Data Tools
Moderator	Matt Seib	Emma Larson	Colin Fitzgerald	Shanna Czek
1:00-1:30	Carbon Optimization for Granular Sludge Systems Leon Downing	Are Biosolids Dryers in Your Future? Dale Gabel	Digital Solutions for Data Management and Visualization to Support Program Management of a Watershed-Based Approach for Phosphorus Compliance Natalie Lenz	Advanced Sewer Process Modeling to Develop Odor and Corrosion Solutions in Collection Systems John Siczka
1:30-2:00	Controlling Nitrogen and Phosphorus Removal in Suboxic Activated Sludge Treatment Processes Tanja Rauch-Williams	Cooking Without Gas: Reducing Sludge Management Costs Using Thermal Hydrolysis Process (THP) in Plants Without Anaerobic Digestion Mohamed Abdelbadie	Phosphorus Water Quality Trading Success: A Downstream Water Quality Trade in a Different Community David Arnott	Dynamic Watershed Characterization and Prioritization in Gwinnett County, GA Tyler Smith
Break 2:00-2:30				
2:30-3:00	Full-Scale Demonstration of Low Energy BNR Don Esping	Polymer 101: Chemistry, Handling, Activation/Mixing, and Optimization Yong Kim	The Influent has Changed! Now What? David Quast	Expanding Your Toolbox: Using Data-Driven Tools for Process Decision Making Brian Shoener
3:00-3:30	Advanced Primary Treatment for Increased Biological Capacity in Existing Wastewater Treatment Matthew Johnson	Lessons Learned from Biosolids Drying Travis Anderson	Alternative Compliance Strategies for Phosphorus with Watershed Projects Erin Delawalla	Optimizing Lead Service Line Replacement with Machine Learning Lindsay Birt
End of Day				

Thursday, May 19					
	Hall of Ideas Room G	Hall of Ideas Room J	Hall of Ideas Room F	Hall of Ideas Room I	Hall of Ideas Room EH
	Novel Technology	Facility Management in Emergencies	S2EBPR	Resource Recovery & Energy (R2E)	Operations Track
Moderator	Matt Seib	Emma Larson	Chris Buckley	Colin Fitzgerald	
9:00-9:30	Addressing the Environmental Impacts of Chloride in Wastewater with a New Chloride-Specific Removal/ Recovery Technology Margaret Lumley	Emergency Repair of Metro Wastewater Force Mains Constructed of Prestressed Concrete Cylinder Pipe (PCCP) Timothy Hewett	Diversifying Carbon for Phosphorus Removal: Understanding RAS Fermentation and S2EBPR Leon Downing	Outside the Fence: How Resource Recovery Connects Wastewater Treatment to Other Industries and the Community Expert Panel Discussion (Facilitated by Gustavo Gallo-Chacon)	Fundamentals of Wastewater Treatment Mike Holland
9:30-10:00	Utilizing the Revolving Algal Biofilm (RAB) System for Industrial Pretreatment in Sioux City, IA Jens Dancer	Pandemonium – Leveraging Procurement, Relationships, and Flexibility to Produce a Successful Project During a Pandemic Amanda Streicher	Lessons Learned from Early Side-Stream EBPR (S2EBPR) Adopters: How S2EBPR Can Increase Process Resiliency and Reduce Capital Costs Bryan Coday		
Break 10:00-11:00					
11:00-11:30	Treatment of High-Strength Brewery Wastewater with Enhanced Performance Metrics using Novel Anaerobic Ceramic Membrane Bioreactor Technology Ashutosh Sharma	It's 2:00 AM – Do You Know Where Your SCADA System Backup Is? Mauritz Botha	Mixing Alternatives for S2EBPR Jennifer Loconsole	Committee Spotlight: State Section and Association-level Resource Recovery and Energy (R2E) Committees	Fundamentals of Wastewater Treatment (Cont.) Mike Holland
11:30-12:00	UV Technology's Role in Advanced Oxidation Processes as a Barrier Against Emerging Contaminants Patrick Bollman	Louisville MSD MFWQTC Emergency Biosolids Dryer Replacement Project David Osborne	Compressed Gas Mixing and Inline Fermentation Enhances Biological Phosphorus Removal John Koch		
Lunch 12:00-1:30					
	Hall of Ideas Room I	Hall of Ideas Room G	Hall of Ideas Room F	Hall of Ideas Room J	Hall of Ideas Room EH
	PFAS	Biogas & Renewables	N&P Removal	Stormwater	Ethics
Moderator	Emma Larson	Shanna Czek	Colin Fitzgerald	Chris Buckley	
1:30-2:00	Establishing the Impact of Pyrolysis on Removal of PFAS and Other Pollutants of Emerging Concern Patrick McNamara	Operational Best Practices of Anaerobic Digesters: Tips, Tricks, and Lessons Learned Adam Parmenter	What Have We Learned? An Operability Review of Low-Level Phosphorus Implementation Troy Larson	Prediction of Stormwater Pond TP Removal Performance by Limnological Investigation and Rapid Field Assessment Methods David Austin	Ethics Track Mark Peterson
2:00-2:30	Novel Approach to PFAS Removal Using a Highly Adsorbent Material and Robust Separator Minimizes Sorbent Usage and Waste Production Dave Holland	Path to Energy Neutrality: Energy Efficiency, External Feedstocks, CHP, and Solar Mark Gockowski	Low-Cost Nitrogen Removal and Optimization Alyssa Mayer	MnDOT's I35W Stormwater Storage Facility-Design and Constructing Hydraulic Resiliency with a CMGC Procurement Environment Thomas Pullen	
2:30-3:00	In-Depth Characterization of PFAS in Wastewater, a More Comprehensive Analysis Taryn Mcknight	Biogas to Pipeline RNG-Lincoln, NE Case Study Kim Murdock-Timmerman	Exploring the Carbon Balance in a Sidestream Enhanced Biological Phosphorus Removal (S2EBPR) Demonstration Facility Derek Budsberg	Occurrence of Antibiotic Resistance Genes in Green Stormwater Infrastructure across Milwaukee County Kassidy O'Malley	
3:00-3:30	Synthetic Media as a Sustainable Treatment Solution for PFAS Nicole Bolea	Comparison of Life Cycle Costs at Operating Cogeneration and RNG Facilities Becky Luna	Achieving Low Effluent TP Limits with Enhanced Biological Phosphorus Removal in an Oxidation Ditch Process with Aerobic Digestion Dennis Barnes	Stormwater Quality and Flood Control in Monona's Tight Spaces Jon Lindert	
End					

Presenters

Keynote Speaker

TANIA IBARRA, CPA



Tania Ibarra is an Equity, Diversity, and Inclusion entrepreneur shaking up the models traditionally used to advance diversity in the workplace, helping organizations in the private, public, and non-profit sectors build long-term strategies for real and lasting change. Asco founder and CEO of Step Up: Equity Matters, based in Madison, WI, Ibarra

works with mid to large-sized companies to embed equity within their strategy, operations, and culture, using methods based on neuroscience and practical learning engagement principles. She engages in customized work that first focuses on candidly assessing the capabilities of an organization, its leadership, and its employees. Her approach prevents the common problem of people "getting stuck" due to feeling defensive or guilty when they engage in the process of uprooting bias. Ibarra successfully guides leaders to clarify the mission, vision, and purpose of their organizations to create a one-team culture.

Resource Recovery and Energy Track Expert Panelists

GREG KESTER (CASA)



Greg Kester has been the Director of Renewable Resource Programs with the California Association of Sanitation Agencies (CASA) since 2007. Greg serves as both the technical and programmatic contact for CASA members and conduit for emerging issues on the state and federal levels on all biosolids, renewable energy, climate change mitigation, and during the pandemic on wastewater-based epidemiology and related COVID issues.

He holds a BS in Civil and Environmental Engineering from the University of Wisconsin – Madison and is a registered Professional Engineer in Wisconsin.

BECKY LUNA, PE (CAROLLO ENGINEERS, INC.)



Ms. Luna is a Senior Vice President and Project Manager with Carollo Engineers with 20 years of experience in the evaluation, design, and construction of municipal wastewater treatment facilities. Her primary areas of focus have been in solids handling and biogas facilities. She has worked with multiple municipalities to evaluate options for beneficial use of biogas and has implemented biogas upgrading facilities at several utilities to convert biogas to renewable natural gas for pipeline injection and for use as vehicle fuel.

AMY UNDERWOOD, PE (DOWNERS GROVE SANITATION DISTRICT)



Amy R. Underwood, PE has been the General Manager of the Downers Grove Sanitary District for two years. Prior to joining the District, Amy worked for 20 years as an engineering consultant primarily planning, designing and providing construction management services for wastewater treatment facilities. Amy is a licensed professional engineer in the State of Illinois and currently serves as Second Vice President of CSWEA.

DR. PATRICK MCNAMARA, PHD, PE (MARQUETTE UNIVERSITY)



Pat is a Wastewater Process Engineer with Black & Veatch and an associate professor at Marquette University. His research group investigates pyrolysis of biosolids and the fate of micropollutants, including antimicrobial chemicals and antibiotic resistant bacteria. His research is currently funded by the National Science Foundation, the Milwaukee Metropolitan Sewerage District, and private foundations. He got his PhD at Minnesota and his MS from Texas where he worked on dewaterability at Hornsby Bend.

Ethics Presenter

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.

Special Guest

GUSTAVO R. GALLO-CHACON 2021-22 WEF Trustee



Gustavo R. Gallo-Chacon is a member of the 2021-22 Board of Trustees for the Water Environment Federation (WEF), an international organization of water quality professionals headquartered in Alexandria, VA.

Gallo-Chacon is the president and founder of Galher Ambiental, SA de CV in Monterrey, NL, Mexico, providing consulting, engineering and contractor services. He has a bachelor's in chemical engineering from UANL and a master's in environmental engineering from Civil Engineering institute UANL. He has 46 years of

experience in industrial wastewater treatment, drinking water treatment and municipal wastewater treatment.

As Sociedad Mexicana de Aguas, AC (Mexico WEF MA) member since 1976, Gallo-Chacon served as the 1993-94 and 2015-2017 president, as a WEF HOD member and as WEF executive committee member 1998-1999 and WEF Health and safety committee member 1997-1998. In 1999 with the help of WEAT and Texas TNRCC he started operators' school and voluntary operators' certification program. Both programs continue offering courses and voluntary certification now days. He is SMAAC training committee member and trainer since 1999 and was IPA. Founder councilor (Nuevo Leon State Environmental Protection Institute) 1989-1990.

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.



MONONA TERRACE

1 John Nolen Drive, Madison, WI 53703



The conference will be held at Monona Terrace in Madison, Wisconsin on May 17-19, 2022. 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 by calling 608-255-5100 and using the code WATER, or through the link on www.cswea.org.**

Parking:

Self Parking: \$17.00 (Garage Parking)

Valet parking: \$20.00 (in/out access)

Secured Available

Covered Available

In/Out Privileges 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.



OPERATIONS TRACK

Thursday May 19 | 9:00 to 11:30 am

Session O:

Operations Track

Fundamentals of Wastewater Treatment
Mike Holland, Kishwaukee Water Reclamation District

The CSWEA Annual Conference will again be offering an Operators Track developed for operators with an emphasis on the fundamental of wastewater treatment. Designed for operators, this session begins with the water cycle. It is an overview of the wastewater treatment process, beginning to end. This gives the individual the concepts of the entirety and impact of the work done in treatment plants. This class will be excellent for those new to the profession and those who have had a limited scope of job duties. This will be a unique opportunity of great value to persons providing products and services in the wastewater industry.

Course Topics:

- Why We Treat Wastewater
- Sources of Wastewater
- Mechanical Equipment
- Collection Systems
- Treatment Plant
- Effluent Disposal
- Basics of Laboratory Analysis
- Health and Safety
- Emerging Issues



Presenter Mike Holland,
Kishwaukee Water
Reclamation District

Featured Events

LAKE MONONA STORMWATER TOUR

Stormwater Facilities Protecting Lake Monona

12:30 to 3:45 pm

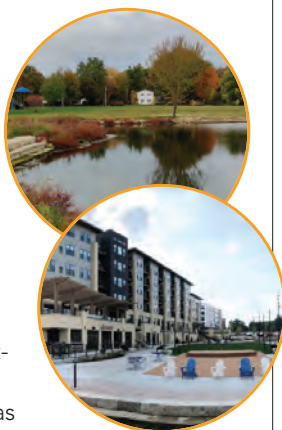


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Lake Monona is a 3,359-acre lake in Dane County with a 96 square-mile watershed surrounded by the City of Monona and the City of Madison and 24 parks. The story of stormwater treatment, stormwater flood control, and waterfront redevelopment will unfold as you participate in a gentle 13.7 mile bike ride (with some modest hills) looping around the lake.

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- Gateway Green Flood Relief Pipe and High Capacity Inlet
- Grand Crossing Park and Yahara River Waterfront Development
- Wingra Creek Streambank Restoration

E-Bikes can be rented through Madison B-Cycle (www.madison.bcycle.com) or attendees are welcome to bring their own bikes. Rental fees are included in your registration fees when selecting the stormwater tour. After the tour, attendees are invited to visit a local brewpub for a beverage before returning to their lodging accommodations.

Tour Logistics:

Attendees will walk to the B-Cycle station located at the corner of Martin Luther King Jr. Boulevard and W. Wilson Street intersection about a block from the conference. Attendees will drive vehicles or walk to local brewpub afterwards, if desired. 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 location.

Please contact Jon Lindert by phone at 608-251-4843 (Ext. 1191) or by email at jon.lindert@strand.com with questions or for more tour details.

COMMUNITY SERVICE PROJECT

Plogging and Scavenger Hunt

1:00 to 4:00 pm

Join fellow CSWEA members for a combined Plogging & Scavenger Hunt event! Plogging, the Swedish craze of jogging while picking up litter, will have your team running or walking around downtown Madison picking up litter and collecting water resources related photos

as part of the scavenger hunt. Tour Logistics: Attendees will walk to the SE side of the WI State Capitol Building to meet and be divided into teams. Please contact Sam Austin at sam.austin@jacobs.com with questions or for more details.

Featured Events

TUESDAY NIGHT SOCIAL

Monona Terrace - Grand Terrace and Exhibit Hall
6:30 to 9:00 pm

Please join us for the pre-conference wastewater tailgate of the year! Get ready for an evening of fun socializing with your fellow CSWEA members and exhibitors at the Monona Terrace. Brush up on your bean bag toss skills and be prepared to participate in a bean bag toss tournament that will be held during the evening. The Exhibit Hall will be open, and we invite

all exhibitors and attendees to take advantage of this extra time to mingle and learn from our vendors. Heavy appetizers and refreshments will be served during the event.



GLOBAL WATER STEWARDSHIP SILENT AUCTION

A great cause to support:

The Silent Auction at the 2022

Annual Meeting will benefit GWS

Here in the Midwest, it's easy to take our functioning sanitary sewer systems for granted. We often don't give them another thought, we "flush and forget."

As water sector professionals, we're immersed in this critical service, which keeps our communities healthy, our economies running, and protects our precious, life-sustaining water resources. With an estimated 2.4 billion lacking proper sanitation globally, there is an opportunity to leverage our shared wealth of knowledge and expertise to help tackle this problem.

GWS does just that.

Since 2013, GWS has been addressing sanitation issues through a unique international exchange of know-how, and partnerships between professionals and communities: "GWS resolves sanitation issues in the developing world by educating people and engineering sustainable centralized solutions that keep waterways clean and communities healthy," reads a statement on the website.

So how did it all begin? Executive Director Mohammed Haque, PE, MBA., reflected back. While earning his MBA, Haque visualized the concept, pulling from his own background. Originally from Pakistan, he recalls seeing poor sanitation systems in action – including raw sewage running down streets.

"The United Nation's Sustainable Development Goals (SDGs) had just come out, and sanitation was pathetic in so many parts of the world. It was like – why aren't we able to solve this? We have the technology, we have the people," he said. "We've got to be able to do more than just write a check."

GWS now has 1,300 members and a wealth of initiatives benefitting children, students, families, water professionals, public health, the environment, and communities on both sides of the borders through meaningful exchanges. Programs include public education, an innovative student design competition, wastewater projects throughout Costa Rica, and TicoSan.

The Student Design Competition has become a keystone initiative of GWS, through harnessing "the creativity and ingenuity of students" from many universities and student



chapters throughout the Midwest, as well as Costa Rica. Each fall, a problem statement is identified for a community in Costa Rica. Student teams collaborate to produce a sanitation solution, which is sustainable at its core. Annually, GWS judges select a winning design that would "best addresses the sanitation needs of the chosen community." The winning team visits Costa Rica to present the design and interact with the community.

One of the sanitation challenges in Costa Rica, Haque explains, is the lack of centralization. In many parts of the country, there are septic tanks, and when it rains, they can leak. "Guess what? That doesn't help tourism," he says. "I haven't seen a de-centralized treatment system that is sustainable. Centralized works."

The international exchanges have elevated the power of the wastewater sector, and enhanced approaches to this critical service. The progress of GWS continues to grow. A growing partnership with the main wastewater utility in Costa Rica, a GWS chapter in Texas, operator trainings, and potentially branching out further into Central America are among activities in action and on the horizon.

Though the pandemic suspended in-person events, GWS has continued going strong. In March 2022, TicoSan will be held in person. TicoSan is a technical wastewater conference that convenes Costa Rican and US wastewater professionals together for a wastewater technology transfer, a wastewater manufacturer exhibition, and a networking opportunity.

Haque reflects on the international exchange of knowledge through GWS. "The people who get involved have a respect for knowledge, and for the ability to make a change. It really makes you more passionate about what you do," he says.

GWS operates on a shoestring budget of \$10,000, and is a labor of love of many who have joined the cause over the years. "It's 100% volunteers," Haque says. "Any donations offset travel costs, and scholarships to get students up here."

Auction items 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 Liz Kramer at elizabeth.kramer@ci.stcloud.mn.us for more information. Bids will be posted at 11:40 am on Thursday in the Exhibit Hall. Learn more about GWS at www.globalwaterstewardship.org.

Exhibit Hall

The Exhibit Hall will be open two days: Wednesday and Thursday, May 18 and 19, 2022. This year, there will be a Exhibit-Only Break from 10:15 to 11:00 am on Wednesday, for those who wish to attend. As well, the conference provides longer breaks during the technical sessions with refreshments in the exhibit hall.

Exhibit-Only Break

10:15 - 11:00
Wednesday

Box Lunch and
Reception Wednesday

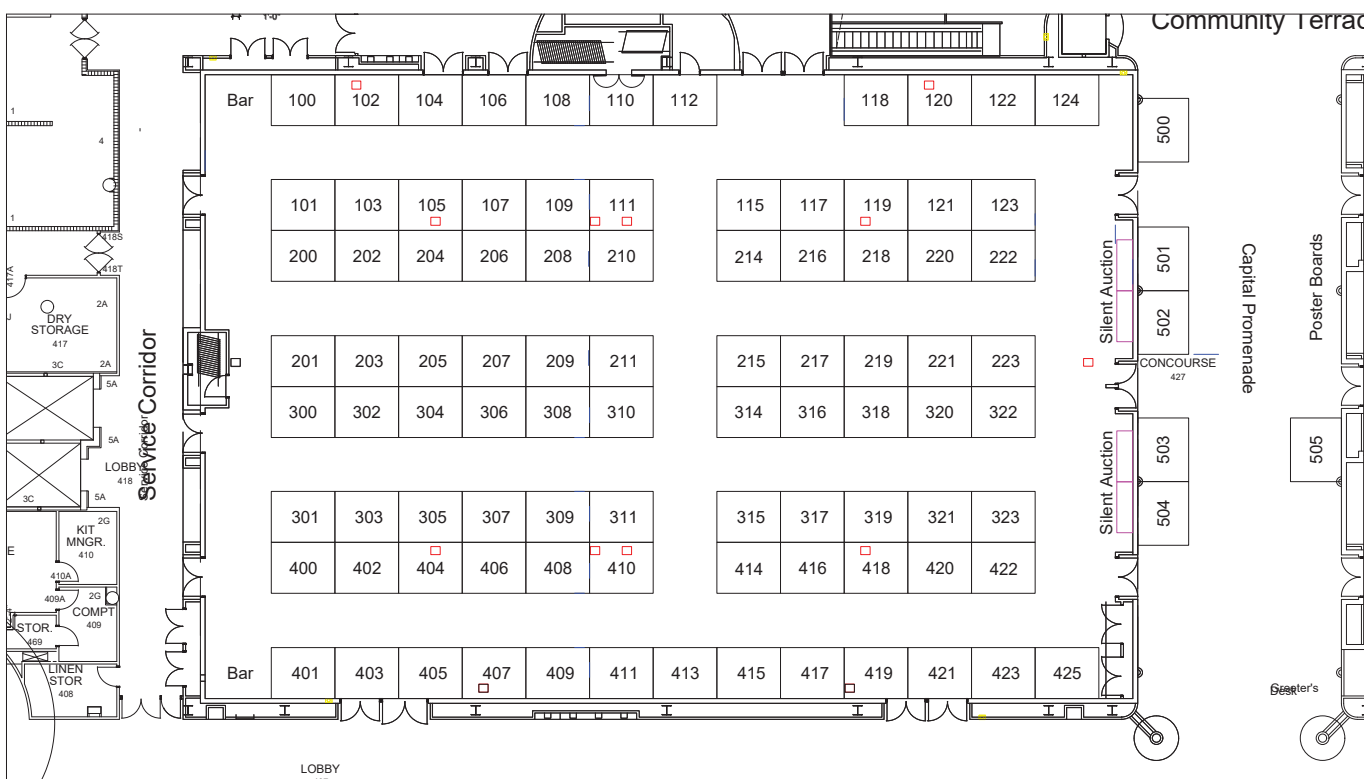
EXHIBITORS

ADS Environmental Services
AllMax Software Inc.
Aqua-Aerobic Systems, Inc.
Blue-White Industries
Boerger, LLC
BPH Pump & Equipment, Inc.
Brierley Associates Corporation
Brown and Caldwell
Cady Aquastore Inc.
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DN Tanks, LLC
Drydon Equipment, Inc.
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Forberg Smith Process Solutions
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GS PlantOptics
Hobas Pipe USA
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EXHIBIT HALL LAYOUT



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

Register online at:
www.cswea.org/events

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 receive free membership for a year to CSWEA and WEF.

Attendee Registration Form

Register online at: www.cswea.org/events

FULL CONFERENCE REGISTRATION

Includes Tuesday Night Social, Exhibits, Technical Sessions, Wednesday Exhibitors Box Lunch, Wednesday Exhibitors Reception and Annual Awards Event. Full Conference Registration also includes all meals on Wednesday, State Section Business Meeting, and Annual Association Meeting.

	Before April 19	After April 19	AMOUNT
Member	\$475	\$500	
Non-Member [1]	\$505	\$530	
Retiree	\$280	\$280	
Student	\$175	\$175	
Banquet Selection [2]	S I C I S f I V		

BASIC CONFERENCE REGISTRATION

Includes Tuesday Night Social, Exhibits, Technical Sessions, Exhibitors Box Lunch, and Wednesday Exhibitors Reception. Sit-down meals on Wednesday and Thursday must be purchased separately.

	Before April 19	After April 19	AMOUNT
Member	\$375	\$400	
Non-Member [1]	\$405	\$430	
Retiree	\$160	\$160	
Student	\$ 50	\$ 50	

ONE DAY REGISTRATION

Wednesday: Includes Tuesday Night Social, Exhibits, Technical Sessions, Exhibitors Box Lunch, and Exhibitors Reception. Sit-down meals must be purchased separately.

Thursday: Includes Exhibits and Technical Sessions. Sit-down meals must be purchased separately.

	Before April 19	After April 19	AMOUNT
Wed - Member	\$200	\$225	
Wed - Non-Member [1]	\$230	\$255	
Thurs - Member	\$200	\$225	
Thurs - Non-Member [1]	\$230	\$255	

EVENTS AND MEALS (A LA CARTE)

Please circle event & meal selections for you and any guest/spouse who may be joining you for an event or meal.

ATTENDEE OR GUEST NAME	EVENTS						EVENTS W/MEALS					TOTAL
	Golf Outing	Stormwater Tour	5k Run/Walk	Service Project	Tuesday Social (Guests)	Plant Tour	State Section Business Meeting	Annual Association Meeting	Annual Award Event	ALL MEALS	Banquet Choice [2]	
	\$85	\$25	\$15	N/C	\$15	N/C	\$20	\$30	\$60	\$110	S I C I S f I V	
	\$85	\$25	\$15	N/C	\$15	N/C	\$20	\$30	\$60	\$110	S I C I S f I V	
	\$85	\$25	\$15	N/C	\$15	N/C	\$20	\$30	\$60	\$110	S I C I S f I V	
	\$85	\$25	\$15	N/C	\$15	N/C	\$20	\$30	\$60	\$110	S I C I S f I V	
	\$85	\$25	\$15	N/C	\$15	N/C	\$20	\$30	\$60	\$110	S I C I S f I V	

Global Water Stewardship Donation \$ _____

GRAND TOTAL \$ _____

[1] Includes one (1) year of membership to CSWEA.

[2] S = Roasted Garlic Sirloin | C = Truffle Butter Chicken | Sf = Seafood Wellington | V = Balsamic Maple Glazed Tempeh (Vegan)

[3] Guest/Spouse Registration includes Meet & Greet, Exhibitor Reception and Refreshments in Exhibit Hall.

Name _____

Employer _____

Address _____

City _____ State _____ ZIP _____

Phone _____

Email _____

WEF Member Number _____

New Member (within last year) ☐ Yes ☐ No

Operator Number (if applicable) _____

Are you a Young Professional (less than 36 years old) ☐ Yes ☐ No Do you want to become more active in CSWEA? ☐ Yes

Dietary Restrictions/Special Accommodations _____

Golf Partners _____

Would you like to donate an item to the CSWEA Global Water Stewardship Silent Auction ☐ Yes

Make Checks Payable to CENTRAL STATES WATER ENVIRONMENT ASSOCIATION | 1021 Alexandra Blvd, Crystal Lake, IL 60014

Questions?

Registration: Amy Haque – 855-692-7932 x102 | ahaque@cswea.org

Register online at
www.cswea.org/events

Utility Registration Form

Register online at: www.cswea.org/events

Contact Person _____

Utility _____

Address _____

City _____ State _____ ZIP _____

Phone _____

Email _____

UTILITY REGISTRATION [1]

Registration includes Tuesday Night Social, Exhibits, Technical Sessions, Box Lunch, and Exhibitors' Reception. (Registration does not include the State Section Business Meeting, Annual Association Meeting, Annual Awards Event, or other Events. Register for them below.)

	Before April 19	After April 19	AMOUNT
Collection System Only or 0-1 MGD	\$150	\$200	
1 - 5 MGD	\$250	\$300	
5 - 20 MGD	\$500	\$550	
20 - 50 MGD	\$900	\$950	
> 50 MGD	\$2,000	\$2,050	

UTILITY ATTENDEE REGISTRATION INFO & A LA CARTE SELECTIONS

Please mark the days of attendance, circle events and meals for each utility attendee and indicate the total for each attendee to the right.

ATTENDEE NAME	ATTENDING			EVENTS						EVENTS w/ MEALS [2]					TOTAL
	Wed	Thurs	Both	Golf Outing	Stormwater Tour	Service Project	5k Run/Walk	Tuesday Social (guests)	Plant Tour	State Section Business Meeting	Annual Association Meeting	Annual Award Event	ALL MEALS	Banquet Choice [3]	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	
				\$85	\$25	N/C	\$15	\$15	N/C	\$10	\$15	\$25	\$50	SICISFIV	

Global Water Stewardship Donation \$ _____

GRAND TOTAL \$ _____

[1] Registration based on NPDES permitted flow.

[2] Rates reflect maximum rates allowable on per diem or GSA rates. Only available to members registered as utilities.

[3] S = Roasted Garlic Sirloin | C = Truffle Butter Chicken | Sf = Seafood Wellington | V = Balsamic Maple Glazed Tempeh (Vegan)

GUEST & SPOUSE REGISTRATIONS

Please use the Attendee Form on previous page to purchase all Guest/Spouse event and meal tickets.

List any new WEF/CSWEA Members from the last year: _____

List all Young Professionals (35 years old or younger): _____

List attendees that would like to be more active in CSWEA: _____

Dietary Restrictions/Special Accommodations _____

Please list name with request _____

Golf Partners _____

Would you like to donate an item to the CSWEA Global Water Stewardship Silent Auction ☐ Yes

Make Checks Payable to CENTRAL STATES WATER ENVIRONMENT ASSOCIATION | 1021 Alexandra Blvd, Crystal Lake, IL 60014

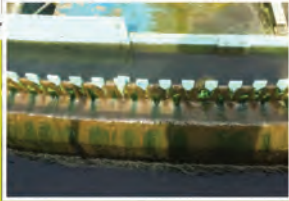
Questions?

Registration: Amy Haque – 855-692-7932 x102 | ahaque@cswea.orgRegister online at
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Heart of the Valley
Metropolitan Sewerage
District, 1969.



Heart of the Valley
METROPOLITAN SEWERAGE DISTRICT

HEART OF THE VALLEY **METROPOLITAN SEWERAGE DISTRICT**

KAUKAUNA, WISCONSIN

The Heart of the Valley Metropolitan Sewerage

District (HOVMSD) is located in Wisconsin's Fox River Valley and provides treatment of domestic, commercial and industrial wastewater from the city of Kaukauna, villages of Combined Locks, Kimberly, Little Chute, and the Darboy Sanitary District.

HOVMSD was formed in 1974 to meet growing demand as the region's business and residential areas flourished. The new regional approach included the City of Kaukauna Wastewater Treatment Facility, which was constructed in 1939 and is located in Kaukauna, WI, on an island adjacent to the Ahlstrom-Munksjo-Thilmany Mill.

To achieve its mission, the district is governed by a five-member commission, with each member community represented by a commissioner. Member community commissioners are officially appointed by the Outagamie County Executive to five-year terms. The Commission oversees the interceptor system and treatment facility through the district director, utility staff, and O&M crew that perform the daily operation and maintenance duties.

HOVMSD utilizes a 5.5-mile gravity interceptor sewer to transport wastewater from the communities it serves to the wastewater treatment facility. The interceptor receives flow through seven metering stations with an additional two-meter stations discharging directly to the plant headworks. The meter stations totalize daily flows and a composite sampler collects representative samples that are analyzed for member community billing.

The district also accepts and treats hauled waste discharged by local holding and septic tank pumpers. Permitted haulers are issued a code that allows



Heart of the Valley
METROPOLITAN
SEWERAGE DISTRICT
801 THILMANY ROAD

TO ACHIEVE ITS MISSION, THE DISTRICT IS GOVERNED BY A FIVE-MEMBER COMMISSION, WITH EACH MEMBER COMMUNITY REPRESENTED BY A COMMISSIONER. MEMBER COMMUNITY COMMISSIONERS ARE OFFICIALLY APPOINTED BY THE OUTAGAMIE COUNTY EXECUTIVE TO FIVE-YEAR TERMS.

them access to the plant receiving station. Hauled waste is stored in a tank outfitted with pumps that allow the waste to be slowly fed into the headwork flow stream.

Since the creation of the Heart of the Valley Metropolitan Sewerage District in the 1970s, several major upgrades representing significant investment have been made to the interceptor and treatment facility. The treatment facility footprint is compact as the facility site is constricted which has proven to be a major factor in the selection of treatment technologies. HOVMSD completed its most recent major upgrade in 2007. Extensive rehabilitation of existing infrastructure and equipment including new processes were constructed and placed into service.

The Commission, utility staff, and O&M crew take pride in the operation of the treatment facility ensuring effluent meets or exceeds WDNR permit requirements while protecting the environment for future generations.

CURRENT FACILITY AND TREATMENT PROCESSES

The influent wastewater enters the headworks building where it is metered, screened, and flow proportionally composite sampled. Influent flows in excess of 25 MGD are diverted to the peak flow headworks which has an additional 35 MGD design. Each of the headworks are equipped with 36' Parshall flumes and all influent flow measurement, sampling and screening is conducted at these two locations.

With preliminary treatment complete, the influent flow enters the wet well in the Actiflo building. Three 20-inch vertical turbine pumps, each rated at 10,000 GPM, deliver normal flow and four 14-inch refurbished primary effluent pumps are used to deliver peak flows to the upper floor of the Actiflo building. The wastewater is pumped once and moves through the remainder of the facility by gravity. Grit removal and chemically



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Biostyr from Actiflo



Actiflo Turbine Pumps

enhanced primary treatment both take place in the Actiflo building. All the captured grit is processed through a Coanda grit washer and deposited into a dumpster and landfilled.

After grit removal, the wastewater flows to the Actiflo Ballasted Sedimentation System.

Ferric sulfate, polymer, and 150-micron sand combine in a series of mixing chambers, as part of the high-rate clarification process. Rubber-lined pumps transfer settled solids and microsand to hydrocyclones, where the microsand is separated and returned to the process while the sludge solids flow to a gravity thickener for further dewatering prior to solids handling. The Actiflo process provides effective primary treatment in a fraction of the footprint that would be necessary for a 60 MGD facility.

The Actiflo effluent then flows to the Biostyr Biological Aerated Filter (BAF) process. When flows are in excess of 26.4 MGD they are automatically

diverted around the BAF to the peak flow chlorine contact tanks where they are disinfected and blended with the effluent. The BAF is an up-flow biological aerated filter technology which removes suspended solids, BOD and ammonia nitrogen, with up to eight cells available for biological treatment. Accumulated biological solids are periodically backwashed from each BAF cell and pumped back to the Actiflo process for removal. The BAF design only uses about 10% of the space required for a traditional nitrifying activated sludge system.

Biostyr effluent then continues onto disinfection and the chlorine contact tank. Seasonal disinfection is required and achieved using liquid sodium-hypochlorite that is introduced just ahead of contact chamber with sodium-bisulfite added just prior to discharge to neutralize any remaining residual chlorine.

The district has a long-standing effluent agreement where approximately 60% of its effluent is diverted to a nearby electrical power generating facility. A portion of the reused effluent is further purified and used to make steam and condensate directly in power production with the remainder being used for cooling water. The power plant discharges its process and cooling water under its own WPDES permit.



Water/Wastewater

Supply, Treatment, Reclamation, Reuse

Solutions



TKDA

The comingled primary and secondary biological solids are pumped from the gravity thickener to one of two Dissolved Air Floatation units where it is further thickened and pumped to a batch day tank prior to conditioning and digestion. HOVMSD utilizes the Auto Thermal Aerobic Digestion (ATAD) process that after a 14-day HRT produces a Class A biosolids. Post ATAD Reactors provide nitrification/denitrification of biosolids, and a 10% to 15% reduction in ammonia nitrogen. Together, the system provides 65% VSS destruction and uses less than one half of the footprint required for conventional anaerobic digestion. Biosolids are land applied annually on local agricultural cropland.

Past district projects and improvements have served the district well ensuring that HOVMSD continues to provide quality service as growth in the region continues. Two additional projects are currently underway that will continue that mission.

EFFLUENT DISK FILTER PROJECT

Installation of tertiary level treatment is necessary for the district to meet its suspended solids and phosphorus TMDL allocations. Six existing sand filters that have been out of service since 2006, will be rehabbed to house the effluent disc filter equipment. Two filter basins will be repurposed for chemical feed and flocculation and the remaining four basins will house the new disk filters. A splitter structure will be added for Biostyr effluent to be either directed straight to the disk filters or to chemical treatment prior to filtration, or finally to bypass effluent filtration and direct it to disinfection and then discharge. This project is scheduled to go to bid in the first quarter of 2022 and will be funded with a below market interest rate Clean Water Fund loan.

INTERCEPTOR REHABILITATION PROJECT

The 5.5-mile interceptor system, which was originally installed in 1974, has experienced microbial induced corrosion (MIC) of the concrete pipe and manhole structures. The interceptor is televised every five years and video inspections have shown extensive surface corrosion of the pipe which if left unchecked will greatly reduce the longevity of the interceptor. The interceptor pipe remains structurally sound and has the flow capacity to serve the district and its communities for many years. The rehabilitation project involves installation of a new cured in place pipe (CIPP) liner and the application of acid resistant coatings

to the manhole structures. The district is moving forward with this project with the knowledge that more widespread damage is certain and it would require even more expensive and costly renovation or even full replacement if left unchecked. The interceptor rehabilitation is expected to take two construction seasons and be completed in 2024.

As the 2021 Operations Award winner for Wisconsin, district Director Brian Helminger says it's great to be recognized for the work we do that most of the time goes unnoticed. We are lucky to have a dedicated staff of wastewater professionals and they deserve the credit for a job well done! **CS**

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The image shows a Halogen Emergency Chlorine Shutoff System. It consists of two white, vertical, cylindrical chlorine gas cylinders. A grey control box is mounted on top of the cylinders, connected by yellow and black wires. The control box has a red emergency stop button and a yellow label. The cylinders are secured with metal chains at the base.




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MARK DONEUX

Doneux Named Stormwater Committee Chair, Co-Chair

2022 Stormwater Summit

As the frigid winter of 2022

speeds into spring, events all over the globe are beginning to take place, in-person and in-classroom again.

One annual event – the 2022 Stormwater Summit – will be taking place under the leadership of a new Stormwater Committee Chair, a name many in CSWEA may recognize: Mark Doneux, Administrator of the Capitol Region Watershed District (CRWD) in St. Paul, MN.

Doneux stepped into the role of the WEF Stormwater Committee's 2021–2023 Chair during WEFTEC 2021, after several years to volunteering with the WEF Stormwater Committee and the CSWEA Stormwater Committee, on top of his work at CRWD.

In an interview with the *Stormwater Report*, a news service managed by WEF, Doneux detailed some of the projects in motion for the Stormwater Committee. One major initiative that he hopes to build on is the 2021 realignment of the Stormwater Committee's subcommittees and the addition of the Industrial Stormwater Subcommittee.

"Overall, the realignment aimed to place a greater emphasis on emerging and high-interest topics within the stormwater sector, provide greater opportunities for volunteering, engagement, and leadership among members," Doneux said. "In 2022, the committee will work to ensure the successful launch of these new subcommittees and support their leaderships."

The subcommittees now include Funding and Finance; Green

Infrastructure and Stormwater Control Measures; Industrial Stormwater; Innovation and Technology; Policy, Governance, and Regulation; Resiliency; and Public Outreach, Education, and Collaboration.

"Members also will work this year to ensure that stormwater is identified in the next US EPA Clean Watersheds Needs Survey (CWNS)," Doneux added, "which begins in 2022; support WEF's Water Week efforts; and present at the June 2022 Stormwater Summit and at WEFTEC."

Though it may feel like June is years away, the plans are already underway to make this summit an exciting, must-attend event. The summit will be held on June 27-29, 2022 and will feature an opening general session, 19 technical sessions, two facility tours, and a pre-conference workshop.

The exciting in-person format means that professionals throughout the CSWEA and WEF organizations can mingle and network face-to-face again, and even more importantly, it provides a chance to get back into the classroom – literally.

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Doneux will be Co-Chair of the event, which is hosted by CSWEA in cooperation with the WEF Stormwater Institute. Organizers are offering Super Saver Registration Fee rates for both members and non-members of WEF, starting on March 22, 2022 and ending on May 13, 2022. Visit www.wef.org/stormwatersummit for more information as the event continues to develop.

Doneux has more than 35 years of experience in the water resources field, and according to www.capitolregionwd.org, he was the first employee of CRWD in 2003. In his interview with the *Stormwater Report*, Doneux said that as Administrator, he oversees all CRWD operations, including 22 staff, as well as manage the \$11-million CRWD annual budget and work plan.

With his experience in the industry along with his passion for advancing stormwater management, it will be exciting to watch as Doneux continues in his role in the coming years.

The WEF Stormwater Committee aims to provide leadership and advocate for effective stormwater management by developing high-quality technical

products and programming to support stormwater professionals, promoting innovation in the field, supporting policies that recognize the importance of implementing sound management principles, encouraging communication and outreach with the public and decision makers, and collaborating with organizations and groups to advance the field.

References

Capitol Region Watershed District. (2022, January 3). Mark Doneux. Capitol Region WD. Retrieved from www.capitolregionwd.org/team/mark-doneux.

Doneux stepped into the role of the WEF Stormwater Committee's 2021–2023 Chair during WEFTEC 2021, after several years to volunteering with the WEF Stormwater Committee and the CSWEA Stormwater Committee, on top of his work at CRWD.

Jacques, J. (2022, February 25). *Explore the Stormwater Summit 2022 Technical Program*. Stormwater Report. Retrieved from www.stormwater.wef.org/2022/02/explore-the-stormwater-summit-2022-technical-program.

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WEF Stormwater Institute. (2022, January 5). *WEF Stormwater Report*. Retrieved from www.stormwater.wef.org/2022/01/meet-wefs-newest-stormwater-leaders. [CS](#)

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STRIVING FOR EQUITY AT THE SOURCE

WATER WORK FORCE BUILDS VISIBLY SOLID COMMUNITIES

BY MARIAH WALTERS OROSE

CHANGING

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

LEADERSHIP PLAYBOOK

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

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

David Gadis, CEO and General Manager of DC Water, also shared how lived experience affects leadership. He noted he is a third-generation

water worker, and he has seen many changes firsthand.

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

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

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

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

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

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

PASSION AND PARTICIPATION

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

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

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

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

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



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

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

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

“I don’t discriminate,” she said. “I take wastewater from everybody! We supply water to everybody.”

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

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

“It’s an evolution,” she said of the culture changes. “It seems like stuff happens overnight, but it is over decades.

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When you think of the Civil Rights Movement, the Women's Movement, the Gay Liberation Movement, and more recently, the Black Lives Matter Movement, these are big social changes. And why it's different is because it permeates a consciousness. Maybe there's resistance from older generations, but when younger generations grow up in this environment, they get it quicker – and they are more open to change."

NOTICEABLE CHANGE

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

For Elardo, social evolution has hit home.

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

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

Steele mentioned her early open-door policy and workforce advocacy pays off. She often gets emails from staff that say "thank you for doing this" or "thank you for listening." [CS](#)

**GADIS HAS
INSTITUTED A
LEADERSHIP CULTURE
AROUND HIS OWN
SET OF THREE P'S:
PEOPLE, PLACE,
AND PAY.**

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

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Vessel and her handler, Tim Preator, review the Recover leak maps before beginning their search.

Canines and Satellite Team Up to Find Leaking Water in Central Arkansas

BY PAUL GAGLIARDO, Gagliacqua

R

escue dogs are in the spotlight these days with Major, a German Shepherd rescue dog, the first dog from an animal shelter to reside in the White House. Another rescue dog named Vessel, in a shelter in Arkansas, was discovered to have the necessary skills to be trained as a Special Service Dog. At the same time, the CEO of Central

Arkansas Water (CAW) attended a water seminar in Oxford, England, and learned about a UK water utility using dogs to sniff out leaks from the potable water system. A CAW employee put him in touch with a local shelter trainer, and Vessel was selected as a Leak Detector Trainee and sent to training at *On the Nose* Leak Detection School outside Little Rock. Vessel is now a full-time member of the CAW leak detection team!

CAW uses ASTERRA's Utilis technology to pre-locate leaks in the water distribution system with the Recover product. Recover utilizes specialized radar signals from satellites to illuminate the area of interest and collect the resulting reflected signals. These signals are analyzed and processed to identify specific indicators of wet soil saturated with potable water. The result is a map showing Likely Leak Locations (LLs) or Points of Interest (POIs). These results typically encompass 5% of the entire system length. Only those locations where a leak is expected to be found are inspected. This is where Vessel comes in.

CAW started to inspect LLs identified with Recover leak detection in December 2017. The results are consistent with other Recover projects and much better than traditional boots-on-the-ground (TBOTG) methods, as shown in the table below. Recover's performance at CAW is a nine-times improvement over TBOTG in the number of leaks found per mile inspected and three times better on the leaks-per-day metric.

Dogs possess a sense of smell many times more sensitive than even the most advanced man-made instrument. The leak detection team, Vessel and her handler, Tim Preator, are sent out to areas identified by Recover to search for leaks. Vessel is put to work using the command "Find Leak," making a broad sweep of the LLL, and then she pinpoints the leak. She shows a passive alert, lying down and barking when she finds a leak. She is rewarded for her efforts with tennis ball play.



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LEAK DETECTION PERFORMANCE AT CENTRAL ARKANSAS WATER

	LEAKS PER MILE	LEAKS PER DAY
Recover North American Average	2.8	3.6
TBOTG North American Average	0.3	1.2
CAW Results with Recover	2.8	3.3

Vessel has been working in the field since October 2019, and she is more than 90% accurate in detecting leaks. The CAW staff performs conventional acoustic correlation using pinpointing tools to more precisely locate the leak so that crews can dig and repair the pipe. This reduces the number of leaks found per day in the field as Vessel's indications are confirmed with human validation. But as confidence in the efficacy of Vessel's pinpointing ability and the ability of the handler to accurately read her body language continues to grow, the number of leaks pinpointed per day will rise, and overall efficiency will improve. In one case, Vessel found a non-surfacing leak that was between a six-inch valve and the tapping saddle off of a 12-inch cast-iron main under a concrete parking lot. The lot is built over a gravel base, allowing the water to flow directly into a storm drain. This leak alone was costing CAW 2.3 MGD.

Leak detection has evolved from old school divining rods and listening sticks to space-age satellites and now back to basics, using the innate capabilities found in nature. Check out ASTERRA at <https://asterra.io> or email inquiry@asterra.io to bring Recover leak detection and analysis to your community. ●

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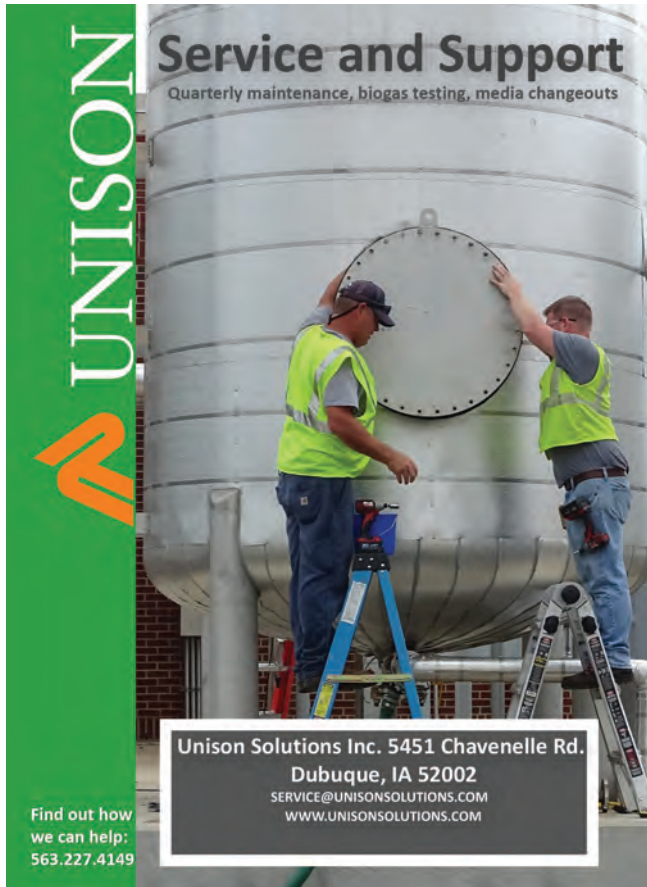
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