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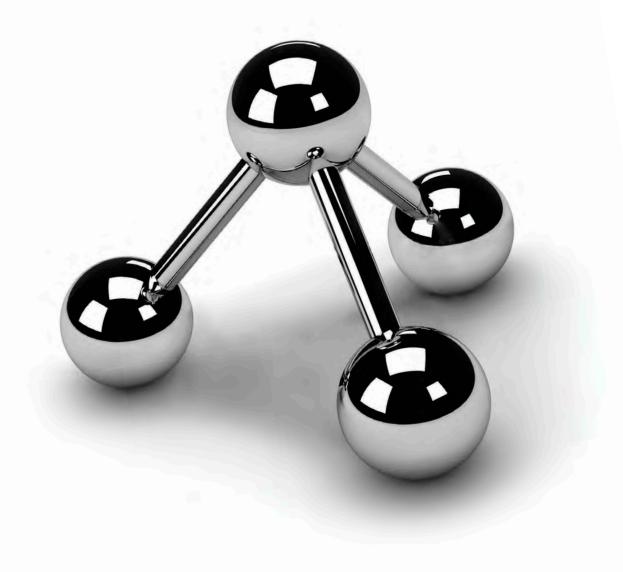
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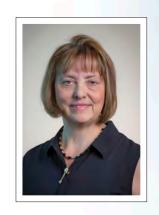
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Utilities of the Future – Flavor of the Month or New Direction?



By Pat Oates

his is my first President's message and I am truly honored and excited about my term, and serving CSWEA. I am thankful for the support that the members of this organization have provided to me not only as professionals, but in friendship as well.

Our profession has successfully met many challenges and our next one will be to find our path to become the Utilities of

the Future.

We've been hearing a lot about the Utilities of the Future.

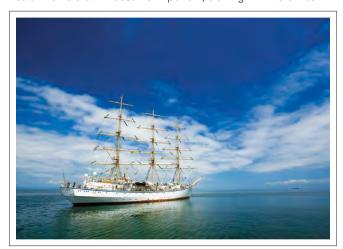
When I hear a term like this, like many of you, I have to ask;
Is this just the next new buzz word, that is, the latest flavor of the month? Or, is this something I'm going to have to do something about. If so, how much work is it going to require, and will it be

worth the effort?

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I actually think whether we want it to or not, the Utilities of the Future is going to find us and that will be okay. Because during the 30-plus years that I've been working in this profession, I've been inspired by how members of this organization have met the many challenges that have come our way. From removal of total suspended solids and BOD, to energy optimization and resource recovery. Our profession, which includes all of you, has done outstanding work in meeting these challenges.

So we have to ask why the Utilities of the Future and why now? Our profession is facing even more challenges, and we will need to find different and creative ways to meet them if we are to continue on a successful path. There are many reasons why the Utilities of the Future will become important, starting with water itself.



We have been experiencing extreme conditions in the water environment, severe droughts and floods have become more common; and as water becomes even more valuable, we will need to develop better ways to manage and allocate it. Another driver for the Utilities of the Future is enhanced resource recovery, which is the ultimate recycling opportunity. As the concept of scarcity becomes a reality, resource recovery will become more critical. From energy and nutrients to fibers and plastics, there is a lot of good "stuff" in used water which we will no longer be able to waste, as these things will eventually become valuable commodities that are going to help us pay the bills.

In this new era, partnerships are going to become even more important because as effluent limits continue to be squeezed to lower and lower levels, new partnerships will allow us to find non-traditional approaches to meeting these stringent limits. These new approaches will give us more bang for our "water dollar," which will ensure a sustainable future for water.

A first step we can take on the path to the Utilities of the Future is to tell our amazing story as we can no longer afford to be the silent utility. We can use outreach programs to engage with our customers, so they understand our contributions to protecting public health, and our broader role in protecting the environment. This understanding is what will encourage them to support our efforts. Please see another article on outreach programs in this issue.

These are exciting and challenging times for water and Central States is here to help us navigate our way to becoming the Utilities of the Future. We are truly stronger when we are connected as a network of water professionals, rather than individuals solving problems on our own, as a group we learn from each other, and develop better solutions to the new challenges that will surely find us.

As we continue on this journey to the Utilities of the Future, I encourage you to not only participate in *Central States* events, but to volunteer for a committee and to contribute your energy and your ideas. I also encourage you to bring your young professionals along and help them develop a passion for water. As food for thought, I will leave you with two quotes:

We do need to set our course for the future because "If a man does not know to what port he is steering; no wind is favorable to him." – Seneca

and

"Water is the driving force of all nature." – Leonardo Da Vinci CS

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Summer 2016 | CSWEA

Kids Say the Darndest Things The Perks of Public Outreach

By Pat Oates

THANKS FOR THE TURER?

s effluent limits and water quality standards get more stringent, we need to keep building stronger connections with our communities to help them gain a better understanding of what we do. This, in turn, will help them support our efforts with their actions and finances.

Public outreach programs can include newsletters, participation in community events, facility tours and providing speakers. All of these programs play an important role in educating our



customers. But my personal favorites are leading tours and speaking at schools. I try to lead or go on at least one tour a year, because when I answer a student's basic questions about wastewater treatment, and see them gain an understanding of the importance of our work; it reminds me that our purpose is not going to meetings or tending multitude of daily tasks that come up, but it is to protect the public health and the environment.

The added bonus of tours or being a community speaker is the fact that you never know what is going to happen. Plant tours can be more entertaining than anything you will see on television these days. I had one such experience recently with young Michael Lee, when he and his classmates toured a treatment plant with me. Once he learned what happens in a treatment plant, he solemnly promised to "not flush his Hot Wheels cars down the toilet anymore." These tours often inspire interesting thank you notes, like

the one Michael sent us which opens with "Thanks for the Turer"? He proceeded to tell me he liked the plant the bugs and that . . . I was "pretty smart for a girl." I received that note 20 years ago and it is still laminated and hanging in my office. Another gem came from little Samantha, who wrote that "nothing at the treatment plant was as gross as her brothers!"

Do you have any memorable public outreach moments? Thank you letters, photos, good stories? Please share them with me (patricia.oates@metc.state.mn.us) so we can publish them in a future issue of Central States Water magazine. You might help us get a laugh for the day, or you might inspire someone else to start their own public outreach program. (\$\infty\$

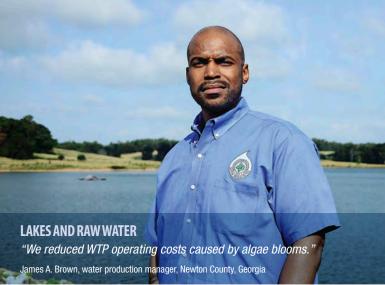














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Transitions

By Eric Lecuyer and Doug Henrichsen





his is the final contribution of outgoing WEF Delegate Eric Lecuyer. With that, here are some thoughts on a lifetime of service to CSWEA and WEF. The role of a WEF Delegate has evolved tremendously over the course of my time with Central States. I first served as a "WEF Director" on what was called the WEF Board of Control from 1995 to 1998 in the role of PWOD Zone Representative. WEF had only just changed its name from the Water Pollution Control Federation to the Water Environment Federation and in keeping with the theme of "change", renamed the Board of Control to the Board of Directors. I guess someone thought it would be cute to name the group BOD₅ in what was then a primarily wastewater organization. During my term as a PWOD WEF Director we took the bold step of eliminating the shadow governance of PWO Zone Representatives, expecting Operators to be a fully integral part of member associations, represented equally by the regular MA Directors. Basically, I voted my job on the BOD out of existence, which may be the smartest thing I've done during my many years within the organizations. The BOD ran the business of WEF, voted on all business items, such as the budget, strategic direction, employment, payment of bills, etc. Oh, did I mention that the BOD included over 100 members that met formally twice per year? It was literally impossible to get anything done.



With the governance change that came about with WEF several years ago, the HOD was replaced by a Board of Trustees, which included the WEF officers and a small number of WEF Trustees, for a group of around 10-12 people who took on the leadership role of WEF. The Board of Trustees approves the budget, sets the strategic plan, appoints the WEF Executive Director and oversees the business of WEF.

WEF's Board of Trustees set policy and the Executive Director is responsible for executing that policy. Which leaves what is now called the House of Delegates (HOD), that group intended to represent all of WEF's MA's, a role described as the "deliberative body" of WEF. Read, no authority, no responsibility and little impact on WEF governance. The HOD, through the Speaker of the House, provides input to the Board of Trustees

and has a non-voting role on the Board of Trustees. Much of the work completed by HOD standing committees and various work groups have added value to WEF. Examples include the work that our own WEF Delegate Doug Henrichsen, has led on the budget committee and stormwater work group. Often these committees and workgroups are used to confirm the level of buy in that MAs have to WEF's strategic plan, budget and business plan. Unfortunately, just as often work groups have completed a great deal of work that can best be described as "busy work", well intended to provide guidance to MAs or others, but lost in the shuffle of the year to year transition of HOD members, committee and work group assignments.

WEF's current governance model is far superior to the former body upon which I served and CSWEA is fortunate to currently have two members, Joan Hawley and Lynn Broaddus serving on the WEF Board of Trustees. CSWEA has rarely had representation at the highest levels of WEF, Bob Krokoff served as WEF Treasure many years ago and much more recently, Scott Trotter served on the Board of Trustees. This governance model has led to a clear strategic plan, backed up by a business plan that puts resources where they are needed to achieve WEF's goals, on a multi-year basis. We no longer see WEF heading in a different direction with each new president as had often occurred in the past. What a great step forward for all of us.

WEF Delegates remain the "official" connection to WEF Staff and in that role I have helped to bring issues related to the relationship of WEF and CSWEA (and many other MAs) to the attention of WEF and I have faith that positive outcomes will be achieved. As with any term of this nature, the best one can hope for is to move the ball forward and pass it along to a worthy successor to push it further toward a goal. Eric Lynne will succeed me at WEFTEC in late September and I am pleased that new blood will be representing CSWEA. Eric will do a great job, and along with Doug, will be great representatives of CSWEA.

Next time you see Eric, please thank him for a job well done!

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Thank You Lecuyers!

Eric Lecuyer and CSWEA go hand in hand and for very good reason. Eric's tenure on the Executive Committee has been for 23 years, starting with his appointment as the PWO Representative in 1993. Eric served in numerous roles throughout the association and became president from 2002-2003. After his presidency, he took on the challenging position of Executive Director, replacing Al Rae, in 2003. He would stay on as the Executive Director until 2012, transitioning off to let Dan Lynch take his place. Six months later, he would have the additional task of training yet another Executive Director when I came on board. To continue to provide some historical context to the Executive Committee, he took on the responsibility of being a WEF Delegate in 2013 and remained on the board. With his term for WEF Delegate ending in 2016, this will mark the first time that Eric is no longer on the Executive Committee.

Many of the things that make CSWEA great are because of the hard and tireless work that Eric and Anne Lecuyer have put into this association, many times at the expense of time they could have spent with their wonderful daughters or pursuing Eric's passion for amateur racing. I know that in the last few years, I've counted on Eric's input on numerous occasions and he has not wasted a second in providing me with great advice and guidance. He's been remarkable and I'm very nervous about him leaving the Executive Committee. That's the value that he brings to the association and I'm quite sad to see him leave.

At this past Annual Meeting, Amy and I got many compliments on the progress the association and the annual meeting has made in the last few years. While we certainly appreciate all of this, I think it is misguided. You know.... it's quite easy to tweak things and make them better. A little change here and a slight change there and all of sudden, you have numbers that make you and your efforts look good. But the reality is that without a foundation or base to build from, your tweaks are useless. Eric and Anne provided that base and foundation and I for one, would like to thank them for that. As they say, their hard work makes the rest of us look good. So for that, Eric and Anne, a big THANK YOU.

In February of this year, I spent a week with Eric in Costa Rica as we worked on making more progress with Global Water Stewardship down there. Eric and I spent one day fishing in the Golfo Dulce, one of the major bodies of water that our work on sanitation will protect. During that trip, Eric caught a near recordbreaking Roosterfish. It was a great day and I'm glad Eric was able to enjoy that moment. What a treat. Eric and Anne, may your future be full of great days, great moments and great memories. Thank you for all you both have done in making our association truly remarkable.

Mohammed Hague



Change is Happening, Be a Part of it



By Mohammed Haque

very year seems to go by faster and accomplishments seem to be happening quicker. If the last few months are any indication of how quickly change can happen, then we are in for a whirlwind. Within CSWEA, our younger leaders are the sparks for that change. I for one am sold on the generation. Their level of passion often makes me feel like the old man who is constantly putting a wrench in their plans. Where we see liability, they see opportunity. Where we see risk, they see areas to explore. Where we see clutter, they see a great challenge.



On April 14-15, Maureen Durkin and I worked with Greg Flynn and Jenny Poth, both students from the University of Notre Dame to present Global Water Stewardship (GWS) in the McCloskey Business Plan Competition. While we made it to the semi-final round, we were not able to get to the final round. It was not from a lack of effort. I cannot be prouder of the work that we put in to the competition and in creating a worldclass business plan for GWS. On April 15th, we received the surprise that we had the best Financials in a Business Plan. It was the first time that a Non-Profit received this award. A big thank you to First State Bank for the

prize money of \$2,000

and for Jenny Poth for

her amazing financial

statements.



"Within CSWEA, our younger leaders are the sparks for change.

I for one am sold on the generation. Where we see liability, they see opportunity.

Where we see risk, they see areas to explore.

Where we see clutter, they see a great challenge."

On April 18th we judged nineteen (19) students that entered into the CSWEA Student Design Competition who were passionate about their problem statements and chosen designs for water/wastewater issues. Thirteen of those students chose to tackle the GWS problem statement, designing a sewer collection and treatment system for the small village of Bahia Ballena, Costa Rica. Their designs and the support they received from Professors Doug Nelson (MSOE) and Michael Penn (UW-Platteville) were really remarkable. It was a record turnout for the design competition with six (6) teams competing. To add to that change, was a very new and active group of volunteer judges. All in all, we had eleven (11) judges. Thanks to all of the judges (Patti Craddock, Mike Holland, Amanda Heller, Matt Streicher, Eric Lecuyer, Eider Alvarez-Puras, Liz Bohne, Alan Phelps, Muhammad Akbar and yours truly), as well as our guest Fernando Vilchez Rojas.

Fernando Vilchez Rojas was a special guest from Costa Rica, invited by GWS, to observe the Student Design Competition and attend the Education Seminar. He is the Director of Local Water/Wastewater Systems (ASADAs) for the national Costa Rica Water/Wastewater Agency called AyA (Acueductos y Alcantarillados). Fernando is a critical part of the approval and funding process for the work of GWS and his involvement is both welcome and extremely appreciated. It's great to see that countries like Costa Rica realize the need for wastewater treatment and can work with us to provide technical expertise to implement wastewater solutions. Fernando was impressed with CSWEA, our student design competition as well as all the work we are doing in recovering resources in our industry.





Following the Education Seminar, the Annual Meeting provided us an opportunity to break many records by making a few changes. We hope that attendees enjoyed the new operators track, continued focus on leadership and ethics and the record attendance of nearly 500 for Wisconsin. We also had a record 80 exhibitors and for the first time. we had a conference app that appears to have been useful for attendees. The Annual Meeting brought another change that many of us were not expecting. The 89th Annual Meeting saw the transfer of the Influent Integrator role from Jim Shaw to Beth Vogt. It was

really hard to see Jim Shaw step down from this role. I'm not sure whom else I commiserate with regarding our height, so Jim's leaving is quite upsetting to me. I'm sure Beth will do an awesome job with the new role, and we are all very excited to be entertained next year by our new fearless leader.

GWS also had an amazing presence at the conference and wherever there was a GWS activity, there were many enthusiastic water professionals. Many new faces were present at the Annual Meeting because of the draw of this new group. GWS volunteers need to be commended. I have never seen a harder working group of volunteers. **Alex Knicker** did an outstanding job of coordinating booth duty and of organizing the raffle. We are so lucky to have Alex on our team! The most touching event was at the first GWS meeting at the CSWEA annual meeting.



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During that meeting, an impromptu discussion occurred with over 20 people telling their reasons to get involved with GWS. It was so heartwarming to hear their reasons that when it came time for me to say my reasons, I was at a loss of words. I've never experienced such a wonderful group of people that want to do good in the world with our blessed skills.

A lot of props need to go to **Amanda Heller**, **Maureen Durkin**, **Manuel de los Santos** and **Matt Streicher**. In the last two years, they have worked tirelessly to take GWS to a level that I could not have ever imagined. I owe them, especially Amanda, much gratitude and while every once in a while I may seem like a bit of a curmudgeon, I hope they realize that they are really remarkable in every which way. And to everyone that has also stepped up and put in tireless time and effort for GWS, you are in good company and your work is making an impact on the lives of many people. There are too many of you to list. You know who you are, and it is your own humbleness that makes you exceptional. Thank you for all that you do to help create a world where sanitation is no longer a problem that affects one out of every three people.

So I leave you with the understanding that change is happening, sometimes faster than we can keep track of. In a hyperlinked world with passionate individuals, change is quick and boundaries are artificial. Be a part of that change and let your guard down a little to enjoy the ride. I'm right there with you on the journey. (S



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Global Water Stewardship

GLOBAL WATER SUMMER UPDATE

his month, I took a step back and looked at how this organization has progressed in a very short 10 months. In less than one year, we went from less than five active members to over 25 participating on our last conference call. With so many active members, contributing everything they can, GWS can help improve the quality of life for thousands of people living with inadequate sanitation. We, as a group, have increased awareness of the issue of improper sanitation amongst our peers and those in the developing world; provided public education on proper sanitation practices to those who knew no different; opened the eyes of students to the quality of life in different areas of the world; and most importantly, begun the transformation of an entire community into one that knows, understands, and appreciates proper sanitation.

This May, at the Central States Water Environment Association Annual Meeting, professionals in the water/wastewater industry came together and collaborated on several different topics. GWS participated in the conference in a variety of ways. We had a donated Exhibitor Booth to promote our work to conference attendees, we presented during a technical session on the sanitation issue and our ongoing work, and had several raffles with donated prizes to help gain funding for the two Costa Rican projects we are currently involved with.

A huge thank you to our members who organized and executed GWS's participation in the conference. We had members signed up for booth duty so that there was always someone to talk to, we had raffle ticket sales day and night, and a presentation with a full room. I'm certain the way GWS members covered the floor, there was not a conference attendee who did not know about our mission. This is also shown in the amount of funds we received from all of our efforts over the week – more than \$4,000!

Those funds will be used to help the design, permitting, and data collection for ongoing and future projects, such as Piedras Blancas and Bahia Ballena. Throughout the remainder of the summer, GWS members will continue communication with the ASADAs in Piedras Blancas to finalize the design and permits to begin construction, potentially as early as this fall. We will also be working with the students who won the Student Design competition to provide the Costa Rican engineers with a final design for the Bahia Ballena project. The competition ended in a tie, so a team from UW Platteville and one from MSOE will be traveling with CSWEA and GWS to both WEFTEC in New Orleans, as well as to the project site in Bahia Ballena, Costa Rica.

At the Annual Meeting, GWS held its first election of Chairs since becoming a group in 2013. We have created a few positions that will help create organization

while advancing the work and opportunities for GWS. Positions and roles are subject to change as the group is an evolving entity, however, we have a start and many willing members to take on these roles!

By Amanda Heller

When volunteers and nominations were originally requested for Chair positions, there were many nominations and many people volunteering to take on the role. When I asked those nominees/volunteers for a short description of why they felt they would be the best candidate for the Chair. how they plan to grow GWS, and their expertise for the position, the responses were overwhelming! The majority of the short descriptions I received were nearly a full page in length! It was very exciting to see the amount of enthusiasm from our members and their eagerness to move GWS forward. Below are the results from the voting that took place at the GWS meeting during the CSWEA Annual Meeting:

Amanda Heller – Chair
Maureen Durkin – Vice-Chair
Matt Streicher – Treasurer
Liz Bohne – Marketing
Mike Holland – Fundraising
Alan Phelps – Student Design
Paige Peters – Research &
Development
Manuel de los Santos – QA/QC
Alexandra Knicker – Social Media

Congratulations to the new Chairs; GWS is eager to kick-off the summer! S



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Education Seminar

By Rachel Lee and Dr. Patrick McNamara

hank you to all of those who attended the CSWEA 2016 Education Seminar. We had our largest turnout in years, and all those who attended certainly left inspired about the future of water resource recovery. Dr. Glen Daigger from the University of Michigan insisted that courage, persistence, and prudence are required to make changes in our industry and move forward. He noted that flexibility and adaptability are key for sustainable water resource recovery facilities of the future. In his keynote presentation referencing the tragedy in Flint, MI, he highlighted that, if we don't speak up as professionals in the industry and say what should be done, other people outside of the water world will do it for us.

Dr. Bruce Rittman from Arizona State University provided a keynote presentation on the bountiful resources in our used water. He noted that we should "congratulate on activated sludge, but it's time to graduate." He reminded us that wastewater is resources reborn and highlighted emerging technologies that will transform our field. Dr. Daniel Zitomer, Marguette University, followed this talk with a more detailed look at his research that discovered an operational platform for anaerobic membrane bioreactors to remove BOD, COD, and TSS to below permit levels at room temperature and psychrophilic conditions. By combining AnMBR with ion-exchange he pointed out that we can get BOD removal and

nutrient recovery with lower energy than activated sludge, but he noted that careful engineering is required.

We were then given the distinct pleasure of hearing from the executive directors from the three largest cities in CSWEA, who shared their views on utilities of the future. David St. Pierre from the Metropolitan Water Reclamation District of Greater Chicago observed that technology has changed rapidly in nearly every facet of life around us over the past few decades, but our field has essentially remained the same. It is time for relationships to change, including relationships with funding. In particular, it is time for us to find new funding sources and create value with the products we have. Kevin Shafer from the Milwaukee Metropolitan Sewerage District explained why they renamed their plants as water reclamation facilities. He reiterated that we have one water, it is all reused, and education is key. Our jobs are more than just budget and regulations, they are about people and the environment. Leisa Thompson from Metropolitan Council Environmental Services pointed out how we often operated with separate silos of excellence. We have to learn to connect the silos of excellence because the whole is greater than the sum of our parts. Complex does not have to be complicated, and it can all start with a conversation. We have an opportunity to move beyond providing services and protecting the environment to being valued leaders and partners in water sustainability.

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CSWEA 2016 Education Seminar

To conclude the day, the talks focused on detailed implementation opportunities for energy and product recovery. We heard from Nick Menninga of Downers Grove who highlighted multiple opportunities they took advantage of to obtain energy sustainability. They took advantage of multiple grants and made multiple changes that resulted in big savings, such as implementing energy efficient lighting and new control systems. Finally, Menachem Tabanpour from Nutrient Recovery and Upcycling, LLC, showed us a new way to recover phosphorus as brushite, a product that forms at a lower pH than struvite, and is applicable for acid-phase digestion.

In summary, this was a magnificent collection of speakers that inspired us to be leaders in our field and in the world. We have the opportunity, and the obligation, to recover energy and products from our one water for our one world. CS











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89TH ANNUAL MEETING

he Monona Terrace in Madison is a great venue to host an event such as the CSWEA Annual meeting. Things began to happen on Tuesday morning with an Executive Committee meeting and Leadership Academy of younger professionals with a thirst to learn and jump in with both feet. The annual golf outing was held at Yahara Hills golf course in the afternoon with about 40 so-called golfers in the group. The winning foursome posted a 15 under par score of 57 which was tough to beat. Mulligans and tosses could be purchased for \$10 and the proceeds went to the Global Water Stewardship. Needless to say, we raised a fair amount of money towards the GWS. Many people also took advantage of a tour of the Madison Water Reclamation Facility at Nine Springs. Alan Grooms hosted the event and welcomed the group of wastewater professionals to their plant. To say the folks in Madison take pride in their facility is an understatement. Tuesday evening, we made our way for a social gathering of young and old in the Grand Terrace Room overlooking Lake Monona.

The annual meeting kicked off with Keynote speakers Patrick Elliott and Nadia Bogue of Milwaukee speaking about an upcoming \$220-million renovation of the KK River in Milwaukee. Following the keynote, there were 17 different technical tracks over a two-day period of time providing information on ethics, storm water and wastewater concerns. In all, 48 technical papers were selected out of 128 papers that were submitted. The technical program committee members did a great job in reviewing the papers submitted. In addition to the papers that were presented, 23 posters were allowed to be displayed and their authors were able to explain them to interested participants.

About 80 exhibitors attended, to show off their wares. Box lunches were served in the Exhibit Hall each day, along with a social gathering at the conclusion of the first day of exhibits. A silent auction was also held in the Exhibit Hall that raised over \$2,000 for the Global Water Stewardship. The Wednesday night social event featured dueling pianos at a local establishment called the Ivory Room Piano Bar. The event was still going strong at midnight. Thursday morning started out with the state section breakfasts. This was followed by technical sessions and a luncheon where unsuspecting members received induction into the 7S Society and the Golden Manhole Society.

Lynn Broaddus, our visiting WEF trustee, gave us a rundown of what was happening at WEF at the national level. Jim Shaw stepped down as PH-7, the Influent Integrator, and Beth Vogt was appointed the new PH-7. Rumors of a tiara or sash may debut in 2017 for the induction ceremony. The evening awards banquet was well attended and many deserving members, young and not-so-young were presented awards. Student scholarships were given out to talented young engineers/students from seven different institutions in Wisconsin.

In closing, a huge thank you to our exhibitors and sponsors who provided some financial support to make the event cost-effective and successful. Also, our gratitude to those members that served on the Local Arrangements Team, and provided assistance and support to make the event a success for the 500 registrants in Madison. We look forward to another successful event in St Paul, MN in 2017.

Discover Your Passion

If you attended the 89th Annual Meeting in Madison this past May, I hope it provided the opportunities you were seeking. Our organization appreciates your support of our mission to "... provide for the exchange of water quality knowledge and experiences among its members and the public and to foster a greater awareness of water quality achievements and challenges."

We look to you "to provide bold leadership, drive innovation, raise public awareness, and leverage our knowledge" – as we pursue the strategic directives of WEF. We strive to keep the topics and technical sessions fresh and interesting for our members. The annual meeting is a heroic effort of a team of volunteers. Listed below is the amazing team that made this year's meeting run smoothly.

- Mary-Frances Klimek, Racine WWTP–
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- Jeremy Cramer, Fond du lac WWTP Technical Program Chair
- Tom Mulcahy, Mulcahy Shaw Water— Exhibits Chair, Sponsorships, Silent Auction
- Mike Holland, DeKalb SD Leadership Academy Workshop
- Nora Erlandson, Racine WWTP Catering
- Alan Grooms, MMSD Nine Springs Plant Tour
- Nick Bartelerio, Strand Associates Golf Outing
- Jennifer Hurlebus, MMSD Registration
- Glenn Tranowski, Strand Associates 5K Fun Run/Walk
- Greg Gunderson, MSA Signage

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Larry Rogacki, Metropolitan Council – Environmental Services, MN

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Thomas Murphy, Liberty Paper



Steve Reusser, Alan Grooms, Aaron Dose Madison Metropolitan Sewerage District

Award Winners



Glenbard Wastewater Authority, Erik Lanphier and Matt Streicher



Dr. Jeremy Guest, University of Illinois at Urbana-Champaign



Patti Craddock, Short Elliott Hendrickson



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Sarah Beam and Josh Koopman

Congratulations

to all our 2016 award winners pictured here, as well as those who could not join us: Jason Benson, Bryce Corrigan, and Erik Osterdyk.



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CSWEA Leadership Academy

By Mike Holland

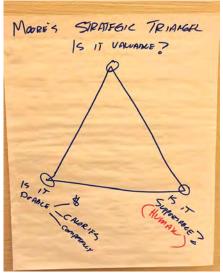
entral States WEA held its Sixth Annual Leadership Academy on the morning of May 17, prior to the golf outing and plant tour at the Annual Conference in Madison, WI. The seminar had 14 participants from various backgrounds ranging from young professionals attending their first annual conference, to experienced professionals looking to hone their leadership skills.

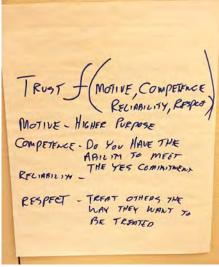
This year's goal was to keep the technical presentations with the conference agenda and stay focused on leadership topics. Mike Holland started off the Academy with a riveting presentation titled My Journey: The Life and Times of a CSWEA 'Volunteer.' However, the real goal of this was to answer some of the questions about CSWEA that he had when he first got involved, like "What's with those shovels I keep seeing people wearing?" or "How much does it cost to run CSWEA?" During this time the Executive Committee also paid a visit to introduce themselves and explain their responsibilities.

After everyone was all worked up into a frenzy of excitement from Mike's presentation we went right into speed networking. This gave everyone a chance to have a 3-4-minute, one-on-one conversation with the other attendees before the bell rang to rotate to the next person. It was a great ice breaker and an easy way to meet new people.

After the break there were two leadership-focused presentations. First up was Michael Mucha from the Madison Metropolitan Sewerage District, with his presentation Sustainable Leadership and Decision Making. Michael spoke to the group about what are the drivers for why some decisions are successful and some fail. The discussion on Trust being a function of Motive, Competence, Reliability and Respect was especially applicable to the engineers in the audience, who regularly







need to earn the trust of coworkers on a project, or the public when discussing why a project is necessary.

Our final presenter was Rachel Lee with Ostara Nutrient Recovery whose discussion topic was How to Say Anything to Anyone. This discussion was based on the book by the same name, written by Shari Harley, which was distributed to the group. Rachel gave us all tips on how to make our workplace more productive and less tense by practicing direct communication.

It was a great talk given by a great presenter and left everyone with some important ideas on how to better communicate in the workplace.

Special thanks goes out to the presenters again for their time and effort, and to Mary-Frances Klimek, LAC Chair, for helping plan the event. In its sixth year running, the Leadership Academy is still going strong as a beneficial event to those interested in developing their leadership skills. So we're looking forward to another areat event next year in Minnesota.



5K Fun Run/Walk

By Glenn Tranowski

leven runners and walkers gathered early Wednesday morning to run or walk a 5.4-kilometer circuit along the Lake Monona bike path. The course started at the Monona Terrace and looped to Olin Park, and featured a beautiful view of the Capitol from across the lake. Each participant provided a prediction of how long it would take to complete the course, with prizes awarded to those who finished closest to their prediction. Jay Kemp (Black & Veatch) finished within one second of his prediction! In second and third places, John Boll (Carus Corporation) and Matt Larson (Carollo Engineers) finished within 20 and 22 seconds of their predicted times. Special thanks to the fun run/walk sponsor, Centrisys Corporation. CS





One-Two Punch: A Presidential Kick-Off and an Inspirational Keynote

fter the intrepid souls completed the morning 5K Fun Run/Walk, CSWEA President Keith Haas opened the 89th Annual Meeting, before introducing this year's keynote presenters: Patrick Elliott of MMSD and Nadia Bogue from Milwaukee's Sixteenth Street Community Center.

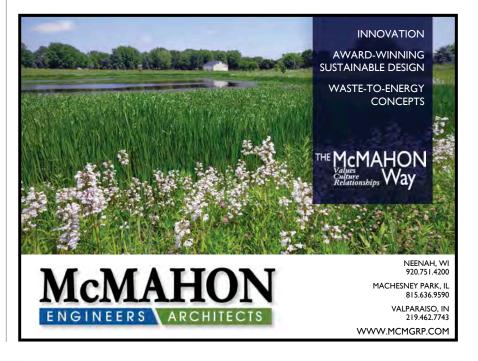
Patrick and Nadia presented on their joint efforts to revitalize Milwaukee neighborhoods along the Kinnikinnick River. This \$22-million initiative will restore channelized floodways into urban park enhancements, and educate the general public and neighborhood residents about storm water issues in their community. (S











The Passing of the Shovel





ames Shaw, our 7S Influent Integrator, retired this year and handed over the role to our first Woman Influent Integrator, Beth Vogt. Beth is also the first person to hold the position from Illinois. Thank you, Jim, welcome to the role, Beth, and congratulations to this year's 7S and Golden Manhole Society honorees, pictured below.

7S Society (bottom left)

Back row from left: Erik Lanphier, Alan Grooms, Jillian Kiss, Carol Mordorski, Tracy Ekola, Matt Allen, Steve Dye, Lynn Broaddus. Front and center: Influent Integrator, Emeritus, James G. Shaw

Golden Manhole Society

Aaron Berry, Mike Holland, Lynn Broaddus and Steve Dye CS



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Congrats, honorees!



2016 Annual Meeting: GWS Recap

By Alexandra Knicker

he Global Water Stewardship had a presence once again at this year's Annual Meeting, presenting organization updates to members and hosting a social at the Ivory Piano Bar. GWS was formed in 2013 by CSWEA to address sanitation issues globally. CSWEA has graciously continued its support of the group and the enthusiasm was clear. We were proud to meet new and passionate individuals, all of whom were happy to see that their fellow water professionals are using their expertise to address this problem. As fundraising is critical to complete work through GWS, this year again saw a silent auction, as well as multiple raffles during the day and at the Wednesday night social. We are thrilled to have raised over \$4,000 towards making GWS projects a reality. Thank you to Amanda Heller, Matt Streicher, Mike Holland, and Muhammed Akbar for your efforts towards events at this meeting. GWS also awarded the Water Stewardship Award to Manuel de los Santos. This award, now granted to two individuals, recognizes those who have made significant humanitarian contributions to improving and sustaining our global water environment.

GWS is excited to continue work in Piedras Blancas and Bahia Ballena from August 13-20, as well as gather data for assisting a new community. With the support of CSWEA and the participation of dedicated individuals, GWS has grown immensely in the past year. We have focused efforts on marketing, fundraising, and developing a model for how the organization will run effectively in the future. We strive to always emphasize the vital need for sustainable sanitation solutions, and that this is not something the organization can do alone. It is a mighty endeavor that will take continual funding, teamwork, and community education. The reality

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remains that 2.4 billion people still lack access to proper sanitation, and it is only worsening public health and opportunities for education and development. We thank those who took the time to learn about GWS at this year's meeting, and those who provided financial support to the cause. Together we can save lives. CS













Golf Outing

By Nick Bartolerio

he 2016 CSWEA annual golf scramble was held on Tuesday afternoon. We played the Yahara Hills Golf Course on a beautiful and sunny spring day. The winners of the event with the lowest overall score of 57 were Jim Jolly, Mike Vana, Adam Shelton, and Steve Kuhn, Jim Johnson, Brandon Koltz, Rusty Schroedel, and Darrell Harris received the second-to-highest score prize with an overall score of 72. Skill prizes for longest drive, longest putt, and closest to the pin were won by Adam Shelton, Dave Broihahn, and Steve Peterson. A special thanks to our golfers for their donations to the Global Water Stewardship, and to all of our event sponsors! (S

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Nine Springs WWTF Tour

By Alan Grooms



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adison Metropolitan Sewerage District was pleased to host the plant tour for the 89th Annual Central States Water Environment Association conference. Around 25 people visited the Nine Springs Wastewater Treatment Facility on the afternoon of Tuesday May 17th. A quick orientation was held in the District's new maintenance facility conference room area before the tour commenced. The new maintenance facility replaces an aged shop area – which was converted from a pump house – with new office and maintenance spaces that are purpose-built for the needs of the staff. This facility is in the process of LEED certification, and incorporates features such as daylighting and heat exchangers that extract heat from plant effluent.

It even uses recovered heat energy from plant engines and boilers to provide heat to the garage floor if needed.

After leaving the maintenance facility, the tour groups enjoyed a nice afternoon on a long walking tour of the plant. They stopped by the struvite recovery facility, the new WAS thickening facilities, and the bio-gas conditioning system, seeing the liquid treatment processes. They also stopped by the effluent building where the tour groups saw the ultraviolet disinfection system, the effluent pumps that pump all effluent to our two discharge locations, and then passed by the cake biosolids storage and the liquid biosolids storage tanks, while observing the hustle of tanker trucks completing our spring haul out of liquid biosolids to local farms and fields. CS



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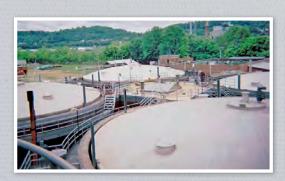




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CSWEA Student Design Competition

Designing for the Real World

he Student Design Competition is intended to promote "real world and hands on" design experience for students interested in pursuing an education and/or career in water/wastewater engineering and sciences field. There have traditionally been two levels of competition: conventional wastewater design, which includes traditional wastewater design project; and environmental design, which would include contemporary engineering design topics like sustainability, water reuse, wetland construction and Engineers Without Borders projects. This year we created a third level of the competition, specifically for the Global Water Stewardship project. The CSWEA design competition was held on April 18 at the Monona Terrace in Madison. From the competition, the following teams were determined to be this year's winners:

GLOBAL WATER/WASTEWATER DESIGN:

University of Wisconsin, Platteville Jordan Fure, Titus Rubietta, Gaga Thompson, Zack Wallin

Gage Thompson, Zack Wallin Global Water Stewardship – Bahia Ballena, Costa Rica

Milwaukee School of Engineering

Jill Vande Boom Global Water Stewardship – Bahia Ballena, Costa Rica

ENVIRONMENTAL DESIGN: University of Minnesota – Twin Cities

Maria Garcia-Serrana, Zeinab Takbiri, Abby Tomasek, Anne Wilkinson A New Approach for Retrieval of Harmful Algae Bloom Concentrations Using Satellite Observations

Congratulations to the winning students and good luck at WEFTEC in New Orleans!



Thank you to our panel of judges

www.cswea.org



GLOBAL WATER DESIGN WINNERUW-Platteville
Titus Rubietta, Zack Wallin, Gage Thompson, Jordan Fure

As part of winning CSWEA's student competition, the competing students' expenses for attending WEFTEC in New Orleans will be covered by CSWEA and they will be given the chance to enter their design projects in WEF's competition, representing CSWEA. Additionally, the Global Water Stewardship Design team will be involved in the implementation of the Global Water Stewardship project with the opportunity to go to Costa Rica. Congratulations to the winning students and good luck at WEFTEC in New Orleans! CS



ENVIRONMENTAL DESIGN WINNER
University of Minnesota - Twin Cities; Zeinab Takbiri,
Maria Garcia-Serrana, Anne A. Wilkinson, Abigail Tomasek



GLOBAL WATER DESIGN WINNER Milwaukee School of Engineering Professor Doug Nelson and Jill Vande Boom

Click HERE to return to Table of Contents Summer 2016 | CSWEA 35

Congratulations to the runner-ups for a job well done!



UIUC, David Litwin and Sarah Wenzel



UIUC, Megan Fox, Theodore Chan, George Gunter, Nick Domalewski



UW-Platteville, Professor Mike Penn, Marcus Hellenbrand, Matthew Sieracki, Allison Hackner, Hannah Molitor



Global Water Stewardship / Wastewater Design

Global Water Stewardship -Bahia Ballena, Costa Rica

n April 18th a team of one from the Milwaukee School of Engineering (MSOE) competed in the CSWEA Student Design Competition at the Monona Terrace Convention Center in Madison, WI. The competition was to design and present a collection and wastewater treatment system for Bahia Ballena, Costa Rica. The team consisted of Jill Vande Boom, a civil engineering student. Douglas Nelson served as the civil engineer advisor for the project.

CONCERN

Bahia Ballena is a community in the southern part of Costa Rica, which is directly located off the Pacific Ocean. The community is a tourist area comprised of restaurants, homes, and tourist businesses that utilize the ocean with whale watching, boat tours, surfing and other marine activities. The main source of employment is the tourist industry, therefore the main focus of the community is tourists who pay to eat, lodge, and visit the federally protected marine parks.



FIGURE 1: STUDENT SAMPLING PIEDRAS BLANCAS RIVER (CREDIT TO CASE WESTERN RESERVE UNIVERSITY)



FIGURE 2: WWTF POTENTIAL LOCATIONS

Due to the still-growing community, which has several large developments currently planned to be built, there are concerns relating to water quality and transportation of wastewater which have been identified. Since the community is populated by tourists five months of the year this causes an increase in wastewater flow by 30 to 50%.

After review of microbial contamination of two locations in Bahia Ballena, and one location in Piedras Blancas, a team from Case Western Reserve University

recommended treating the wastewater entering the water bodies. Therefore, a preliminary design of a subsurface constructed wetland centralized treatment facility was reviewed to improve the environment of Bahia Ballena for the residents and the tourists.

Currently the community is using septic tank and leach fields to remove the contaminents from the wastewater, but due to the poor design of the systems in regard to the community's environmental conditions these systems

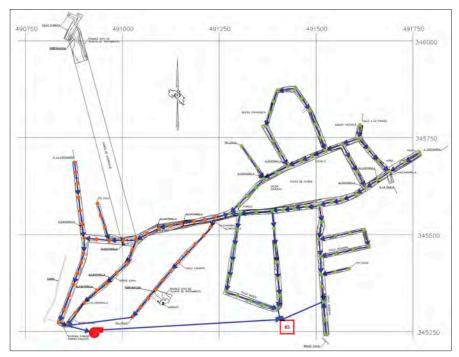


FIGURE 3: SEWER COLLECTION SYSTEM

Flow Rate	Average L/d GPD	Peak L/d GPD
2016	200,000 52,834	300,000 79,252
2026	800,000 211,338	1,200,000 317,006

TABLE 1: DESIGN CAPACITY

are not ideal. Currently the grey water and settled wastewater is being routed over the yards and into drainage ditches causing major health concerns for the community. The contaminents discovered in the Bahia Ballena canal included fecal coliforms, which usually may not cause disease themselves, but are indicators of fecal matter, which can contain disease causing organisms.

The peak flow is based on an average precipitation (3,900 mm/yr) and a water usage design flow rate of 200 L/person/day. Due to the tourist season (November to May) being opposite of the wet season (June to October), the peak design factor to account for the peak flow only took the worst case into consideration. Instead of a factor of 2.0, 30 to 50% increase during tourist season and 50% increase during the wet season. Therefore, the peak design factor was determined to be 1.5. A hydraulic retention time (HRT) of six days to account for the peak flow rate of the system is used.

Operational cost is of great concern for the community. Therefore, the amount of mechanical equipment needed in the system was minimized. For the constructed wetlands design, the only equipment required will be three pumps used to vary the flow to the three trains in the system.

Therefore, if a pump needs to be taken out of service for maintenance or repair, the other two trains will be able to operate with one train out of service.

The system is designed to be primarily self-operating. Annual maintenance and operation may include harvesting or selective replanting of the plants to ensure the system is at peak operation, and observing the system for pump failure. Otherwise, there is minimum operational assistance required to assure the system is performing correctly. A small generator will cover electrical outages.

Sewer Main Design

The sewer main will be an 8-inch polyethylene (PVC) pipe in most areas with service connections being 4-inch PVC. The slope for the system will be at minimum 0.40% to 0.70% slope. The average depth of the pipe is between one meter and three meters assuming that the houses are located at an elevation lower than the roadway.

The bedding, haunching, and initial backfill for the pipe will be sand.

The excavated material will be used for final backfill, if non-cohesive. If the native materials consist of suitable sandy material, no select backfill will need to be used.

Based on project site topography, the main collection system will be a gravity collection system which reduces the possibility of wastewater backups due to power outage. In the southwest portion of the project site, the flow will need to be conveyed through a pump station.

The manhole spacing throughout the system will be at a maximum of 121 meters. Manholes will also be placed at all intersections and locations where the pipe will branch off to a side road or will change directions. By placing manholes at these locations the system will be able to be maintained more easily.

Centralized Treatment Facility

A subsurface constructed wetland will be designed to serve the residents and tourists of Bahia Ballena. By constructing an ecosystem, the natural habitat benefits of biological reactions are used to improve the activity of microorganisms attaching to the available submerged substrate surfaces. The microorganisms from the plants remove the BOD, TSS, metals and some priority pollutant organics. The main function for the plants will be used to absorb the phosphate, nitrate and ammonium from the water.

Mosquitoes and similar insects' vectors will not be a concern if the system is operating properly since the water will be treated in the subsurface. Risk of children and pets contacting the partially treated wastewater will be controlled by fencing and water level control.

The facility will have three trains, with a volume of 3,200,000 L each. The location is next to a proposed subdivision, which will allow easy connection of these new homes. A subsurface constructed wetland presents advantages such as prevention of mosquitoes and odors, and elimination of the risk of public contact with the partially treated wastewater.

Each train will be 115 m long by 29 m wide with a bed depth of 1.2 m. The train will be built up from the ground, assuming a high water table (nearly to the surface) in the coastal area. This will assist in preventing contamination with

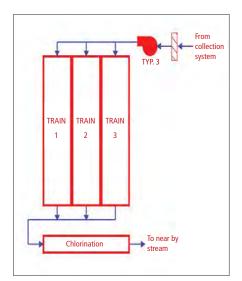


FIGURE 4: TREATMENT FACILITY LAYOUT (CREDIT TO JILL VANDE BOOM)

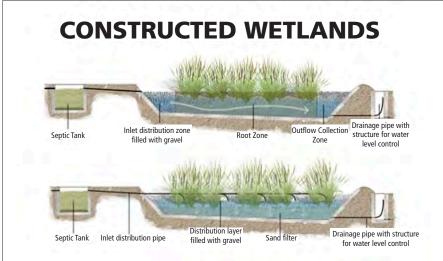


FIGURE 5: CONSTRUCTION WETLANDS
(CREDIT TO http://www.Slideshare.Net/gustavomoura6/constructed)

groundwater during the system process. Within each train an impermeable liner, i.e. a layer of compacted marine clay, will be used to prevent containments from seeping into the ground. Therefore, the overall footprint of the treatment facility will be three acres, including a pump station for three pumps to vary the flow into the trains to assist during fluctuation periods.

By designing the system with three trains, expandability is already included in the design. Under current conditions the three trains will be used at minimum volume and alternate to assure proper maintenance of the biological components of the system. The pumps will alternate between the trains, so at any one moment one train is being used consistently, with two used at high flow periods. Alternating pumps will assure that all are in operating condition when needed.

Once the wastewater has gone through the trains there will be a disinfection process to remove pathogenic organisms through chlorination. The effluent of the trains will be piped to a concrete channel downstream of the trains. A gravity feed chlorine drip system will be connected to the channel to disinfect the water before being transferred to the nearby stream.

The nearby stream will then discharge the treated effluent into the Pacific Ocean. The elevation of the treatment facility is upstream of the stream by approximately one meter allowing the discharge to be by gravity. Therefore, the elevation difference between the ocean and the discharge stream near the site is approximately eight meters above sea

level. By discharging at a higher elevation than sea level the discharge can be transported to the ocean by gravity and no further pumping will be needed. (S





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2016 WATER WEEK NATIONAL WATER POLICY FORUM, FLY-IN AND EXPO

EF, NACWA, WERF and WateReuse have collaborated for several years to organize Water Week in Washington DC. This year's meeting was held from April 11–13. The purpose of the event is to provide an opportunity for clean water professionals and organizations to interface directly with legislators and regulators to inform and advocate for water. Equipment manufacturers that represent water technological advances and innovations also set up an exposition in the foyer of the Rayburn House Office Building, which

further illustrated in person advances through research and development.

What does this mean and why is it needed? Clean water policy is often poorly understood and funding has been declining and given a lower priority over the many other issues facing legislators. In person dialogue with regulators and legislators and demonstrations helps to advance the understanding of water infrastructure needs, particularly when its investment value can be related to the importance it has in each state and legislative district.

Brandon Koltz, Michael Mucha, Senator Baldwin, Kevin Shafer, Tom Sigmund, Rachel Lee







FORUM HIGHLIGHTS

The forum kicked off with National Policy perspectives provided by Amy Walter/Cook Political Report, Joel Beauvais/US EPA Deputy Administrator Water, and former US Representative Jim Moran/ VA. Each stated the difficulty in gaining general consensus, which includes water and other environmental issues. But, it was stressed certain funding issues can gain bipartisan agreement because of local needs.

A Congressional Staff
roundtable of Minority and majority
staff for the Senate Environment and
Public Works Committee, and the
House Transportation and Infrastructure
Committee on Water Resources and
the Environment presented their
views on funding and other potential

environmental legislation. They urged attendees to be precise about what is being asked, and suggested that it was not a good time to modify environmental legislation.

Another high profile featured forum speaker was John Sullivan/Chief Engineer for Boston Water & Sewer Commission. He was retained by USEPA to provide an independent evaluation of the current Flint water situation. Mr. Sullivan discussed that the majority of the crisis in Flint was a result of issues with the Michigan DEQ and the appointed City administrator. He noted that he was informed by municipal operators that the water plant built in 1967 and used after the water source was changed hadn't been tested, there was no operational experience, and there was no pilot testing.

US Senator Al Franken (D-MN) with John Friel PE - April 13, 2016







The only experience with the emergency service plant was when it was operated annually to test the equipment. And what made matters worse was that there was a significant deficit for the utility of \$35 million, despite the fact that residents had the highest water rates in the US, \$164/ month. Loss of large industrial customers, and use of water funds for general municipal purposes caused the deficit. Additionally, the customers were not informed of the problems, and a \$40,000 monthly savings resulted in about a billion dollars of liability. This crisis, which is very unfortunate, serves as a critical example of the value of water infrastructure and investment needed to protect public health and what can happen when it is ignored.

US Representative Kildee from Michigan spoke, stating that the Flint situation was easily preventable. Once the problem was identified, it was not communicated or corrected. He also stated that the USEPA should have acted more quickly and effectively.

US Representative Calvert from California discussed water supply/ shortage as a bigger issue. He stated that protection of endangered species is preventing flexibility in managing water supply in California. He agrees on the need for increased funding for water infrastructure.

A second Congressional staff roundtable discussion

indicated general support for water resources funding, support for source water protection, an understanding of the energy-water nexus, a desire to improve the lead and copper rules, and increased transparency.

A session on USEPA water **priorities** were discussed by USEPA Office Representatives. Benita Wong/ Office of wetlands, Oceans, & Watersheds listed priorities as TMDLs and nutrient management strategies including working with USDA to direct funding for impaired watersheds. Jeff Lape/Office of Science and Technology stated his office is working on cyanobacteria criteria. Copper, cadmium and selenium criteria updates are in progress. They are looking at improved nutrient criteria. For some states and tribes, USEPA issues water quality criteria. He noted the recently issued steam and electric rules and water intake standards. Office of Science and



Technology is also examining if there would be problems with discharging fracking water into POTWs. Peter Gravett/Office of Ground Water and Drinking Water (Office of Water) noted the staying power of the Flint story, and noted that there are 52,000 community water systems, over half serving less than 5,000 people.

USEPA Headquarters directors and senior personnel led multiple roundtable discussions on key topics of concern with all attendees participating to gather input and feedback for regulators.

One of the roundtables, attended by Brandon Koltz, included a Stormwater discussion led by Chris Kloss/USEPA Water Permits Division. Discussion points included the relationship between MEP (equivalent to BACT) and water quality requirements. The effect of episodic inputs versus continuous discharges needs to be better understood, particularly elevated TSS discharges to macroinvertebrates. Might stream restoration with reduced bank erosion qualify as a BMP or

qualify as green infrastructure? The effect of road salt runoff is a concern. It is recognized that stormwater management programs take time to be effective and adaptive management, maybe over a 20-year period may be required. Training is needed for state personnel with stormwater permitting and management responsibilities.

Another one of the roundtables, attended by John Friel, focused on Innovation, Utility of the Future, and the Status of Recovered Resources. This roundtable was moderated by Jeff Lape, USEPA Deputy Director - Office of Science and Technology with assistance by Adriane Koenig, USEPA Office of Water. The discussions touched on the emergence of sensor technology with respect to NPDES compliance sampling, the internet of things and cloud based management tools, and the transformation of smart cities. Also the need to market resources recovered from wastewater as something other than wastewater byproducts, drivers of innovation, and the development of

a new WERF test bed network and the WERF LIFT technology scan process were discussed.

Other roundtable discussions with USEPA officials included Blending/
Combined Sewer Overflows/Sanitary
Sewer Overflows/Wet Weather
Management; Water Utility Finance/
Affordability/State Revolving Fund; Direct
Potable Reuse/Safe Drinking Water Clean Water Act Overlap; and Waters
of the US and the Role of USEPA in
Mississippi River TMDLs.

Part of the agenda for the Fly–In involves meetings with Representatives and Senators on Capitol Hill. Meetings are generally with congressional staff with the expectation that the information will be communicated to the legislators. Having a common message is important so water speaks with a common voice. This year, as in the past, a package was assembled to leave with the legislative aides. This year's WEF/NACWA/WERF/WateReuse package noted the following benefits for investment in water/wastewater infrastructure:

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 - \$1 invested in water/wastewater infrastructure increases the longterm GDP by \$6.35 and provides \$23.00 in public health benefit
 - 1 job created in water/wastewater leads to 3.68 jobs in the national economy
 - A recent WEF study was verbally related noting that 70% of tax dollars put into SRF come back to the Treasury through increased economic activity

It was noted for our discussions that reauthorization of the SRF program is contained in the current Water Resources Development Act and seems to have bipartisan support.

The package also asked for:

- \$35 million for the Water Infrastructure Finance and Innovation Act
- \$24 million for the Bureau of Reclamation's water reuse and recycling program
- \$6.5 million for Integrated Water Resources Planning
- Continued full tax exempt status for municipal bonds (the budget

- proposal would reduce or eliminate the tax-exempt status for high income buyers, the majority of bonds are purchased by high income earners)
- Funding for research and development
- Legislation to ensure low-income ratepayers have access to safe and clean water
- Modernization of the Clean Water Act

As with the last few budgets, the President's proposed budget will reduce capitalization of the State Revolving Fund from previous levels. WEF asked that the Clean Water Fund be increased to \$2.0 billion versus the requested \$0.980 billion, which was a decrease of \$500 million from last year's appropriation.

It was noted from the meetings that Legislators and staff are aware of the importance of water from the communication efforts that the Fly-In provides. Legislative staff noted that they remember the discussions from past years and continue to appreciate further discussions. Many noted that communicating local benefits from water and wastewater investment particularly resonate with staff and legislators. Also noted was that the newer legislators and staff appear to be informed of water issues and needs. The staffers also noted that visits to congressional offices by clean water professionals from within that congressional district are most effective.

Finally, the four sponsoring organizations honored those legislators that have been water advocates in Congress. Those honored this year were Representatives Earl Blumenauer (OR), Bob Gibbs (OH), Jared Huffman (CA), Sheila Jackson Lee (TX), Paul Tonko (NY) and Senator Tammy Baldwin (WI).

Providing information and educating congressional members for funding and legislation that benefits our industry is important for the progress toward sustainable clean water facilities and practices. Wisconsin and Minnesota were represented this year by Central States members. Continued involvement and support in this Fly-In event and meeting in coming years is considered invaluable to raising awareness and delivering our message of supporting clean water infrastructure directly to Congress in Washington, DC. CS



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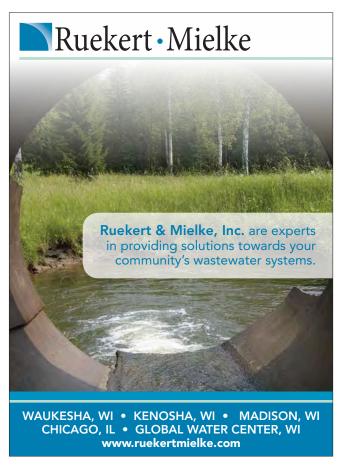
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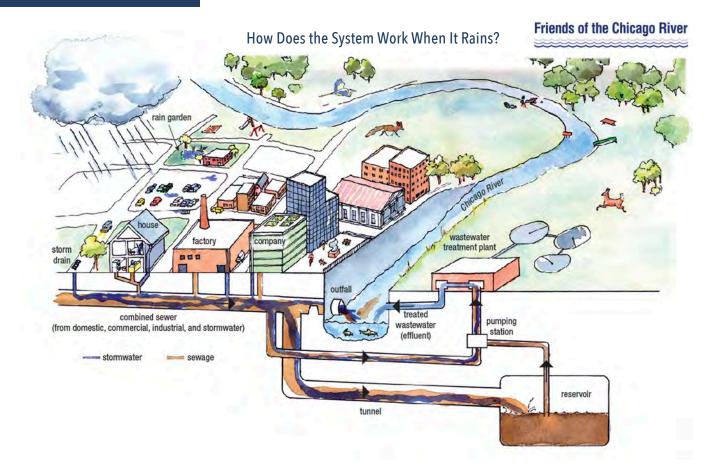


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RINSE, LATHER, DO NOTREPEAT

t comes as a surprise to many people that conserving water in the water abundant Chicago metropolitan area can have an important impact on our environment. Yet, in fact, water conservation can play an enormous role in protecting our local rivers and, sometimes, even Lake Michigan.

Every day, millions of gallons of water and sewage from our homes and commercial and industrial waste flow through our sewer system for treatment then release into the Chicago River system. When it rains, stormwater and water from our homes mixes with sewage and industrial waste and the sewer system fills

to capacity. Imagine huge volumes of water trying to go to the same place at once, like a full bathtub emptying slowly, the pipes in our sewer system can only handle a certain volume of water. See the illustration "How the System Works When It is Wet" to understand what happens when it rains and our system is overloaded. This excess water is called a combined sewer overflow (CSO) and includes sewage, pollutants, and litter.

In 1972, the Metropolitan Water Reclamation District (MWRD) adopted the Tunnel and Reservoir Plan (TARP or Deep Tunnel) to address this problem and improve the water quality in our rivers, protect Lake Michigan, and provide an outlet for floodwaters. TARP construction began in 1975 and today the 109 miles of tunnels and two reservoirs which are complete have made a significant dent in the problem. In 2017, the last reservoir, McCook, will add 3.5 billion gallons of storage, but TARP won't be totally finished until 2029. And even with TARP complete,

it may still be inadequate in the face of severe weather and increased precipitation due to climate change. Last year there were 41 CSOs and MWRD research shows that as little as .3 inches of rain can trigger one at any number of the more than 300 outfalls that flow directly into the Chicago River and the Little Calumet.

"This spring, as you pay attention to rain forecasts in your area, Friends of the Chicago River and its partners, will be issuing alerts for Overflow Action Days to gently remind people that collectively conserving water at home can have a positive impact on our river system."

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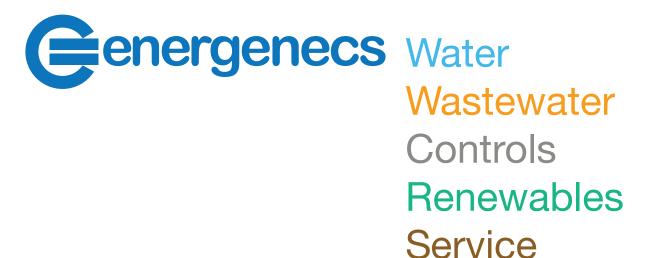
We need to act collectively throughout the metro area to help keep water from entering the water treatment system. To reduce the number of CSOs, Friends of the Chicago River is launching Overflow Action Days to remind the millions of people that they are connected to our rivers and that simple actions can reduce their water input immensely. An Overflow Action Day, like an Ozone Action Day, will remind people to use less water when it rains and to think more about water conservation all the time.

"Five million people using water generates a tremendous amount of sewage flowing through drainage pipes," said MWRD President Mariyana Spyropoulos. "Combined with stormwater, this overwhelms our system. Reducing this flow by turning off the faucets can make a large impact toward protecting Chicago area waterways and preventing basement backups. The MWRD strongly supports the Friends' Overflow Action Days initiative which will encourage Cook County residents to reduce water flow during storm events."

This spring, as you pay attention to rain forecasts in your area, Friends of the Chicago River and its partners, will be issuing alerts for Overflow Action Days to gently remind people that collectively conserving water at home can have a positive impact on our river system. "We are proud to support Friends in this important environmental conservation effort," said Aislinn Gauchay, Assistant Director of Great Lakes and Sustainability at Shedd Aquarium. "With actions as simple as shortening showers and postponing loads of laundry, we're excited to see Chicago come together to preserve our local, natural resources." CS



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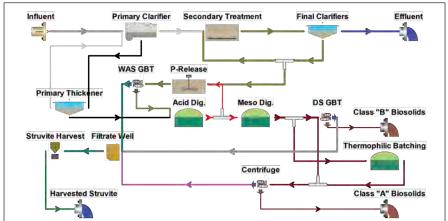
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Steve Reusser¹, Alan Grooms¹, Aaron Dose¹, Ahren Britton², Ram Prasad²

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Figure 1. Overall Nine Springs WWTP Plant Schematic

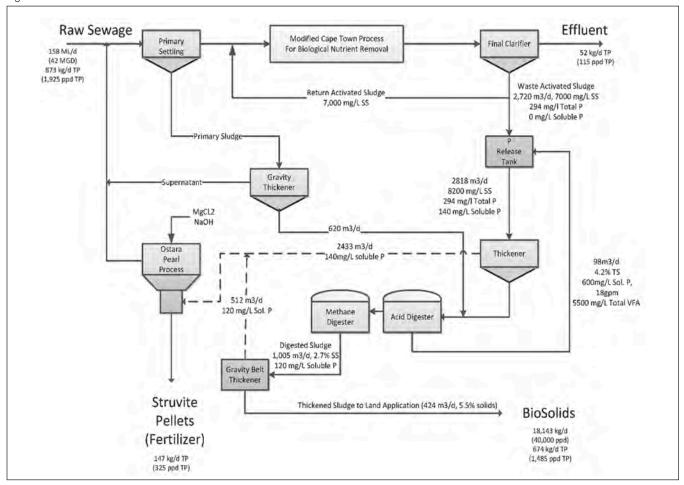


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facilities including: 1) Change from DAF thickening to GBT thickening of waste activated sludge (WAS). 2) Addition of acid phase digestion prior to methane phase. 3) Heating of the thickened WAS with steam injection heating prior to acid phase digestion. 4) Release of phosphorus from the WAS prior to thickening by combining and holding a recirculation stream of acid phase sludge with the WAS. 5) Struvite recovery from the combined filtrate streams generated from digested sludge thickening and WAS thickening. 6) The capability for time/temperature batching of a portion of the digested sludge to produce a Class A Biosolids product. A generalized process diagram is shown in Figure 1. Design loadings and current loadings for the phosphorus harvesting process are shown in Table 1.

Struvite accumulation in the anaerobic digestion process at Madison has been an issue for decades. In the late 1990s, however, when biological phosphorus removal was implemented at the Nine Springs WWTF the struvite problem became more acute. This is because struvite is formed from equal chemical molar ratios of magnesium, ammonium, and phosphate. The source water for Madison is hard groundwater, high in dissolved magnesium, which provides this necessary ingredient. Anaerobic digestion – which Madison Metropolitan Sewerage District has been utilizing since the late 1920's - results in high ammonia levels in the recycle stream from the digester, thus accounting for the second key ingredient. Biological phosphorus removal concentrates phosphorus in the cells that are eventually wasted to anaerobic digestion, and immediate phosphorus release occurs in the digesters. This increases the soluble phosphorus concentration in the digesters, the final key ingredient, resulting in an increase in the overall solubility product of struvite and thus the production of unwanted struvite.

Figure 2: Schematic with mass balance



Conditions conducive to struvite formation thus existed before biological phosphorus removal was adopted into the treatment process, but enhancing the concentration of phosphorus in the cells (and subsequently in the anaerobic digester where these cells were broken down anaerobically) thus enhanced the problem at the District. To combat the operational and maintenance challenges stemming from this increased struvite formation in the digesters, Madison Metropolitan Sewerage District began

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researching projects with the University of Wisconsin-Madison on ways to remove the struvite precipitate in a controlled fashion from the digesters. It was quickly realized that this could also potentially result in a beneficial reuse product, and several research projects sponsored by the District explored these very processes

District that commercial entities were already working on and commercializing

and options. In planning for the 11th Addition project, it came to the attention of the

Table 1. Process design loadings and current operating conditions

Process Design Loadings for the Struc	Current Operating Conditions		
Parameter	Design Loadings (2010)	Future Loadings (2030)	Current(2015)
Combined Filtrate Feed Flow Rate, liters/day	4,432,000	4,735,000	2,560,000
Feed Ammonia Concentration, mg-N/L	175	224	215
Feed Ortho-Phosphate Concentration, mg-P/L	126	163	135
Feed Magnesium, mg-Mg/L	42	44	65

similar processes and ideas, and had already developed relationships with customers that would be needed to handle a beneficial reuse product created from such a process. The District piloted a couple of the technologies before electing to take pre-bid packages for the process, with the intent to integrate the successful vendor and their process into the 11th Addition project and bidding documents. Following submittal of three proposals in early 2010, the District elected to enter into partnership with Ostara Nutrient Recovery Technologies for provision of equipment and product marketing relationships. Design and construction of the 11th Addition actually followed the entering into of this agreement, so the result was that over three years elapsed from the time an agreement was entered into and the actual start-up was ready to commence in late 2013.

The Ostara process for struvite harvesting has been operational on site at Madison since November 2013.

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The District operates and owns the process, with control software, operational parameters, and constant input and advice provided by Ostara operational personnel. Bagged product is sold to Ostara and picked up about every two to three weeks. The soluble phosphorus in the feed is produced mainly by WAS thickening. Phosphorus is released from the cells back into a dissolved form in a pair of large tanks preceding WAS thickening, which we call the phosphorus release or "P-release" tanks. Madison is using a small quantity of digestate from a nearby acid-phase anaerobic digester to combine with the incoming WAS to trigger release of phosphorus from the cells before thickening. The acid phase digestion process has total volatile fatty acid (VFA) concentrations around 5,000 mg/l as acetic for recycling and releasing P from the WAS. The acid phase digestion process also solubilizes phosphorus and magnesium to concentrations of approximately 600 mg/l and 180 mg/l respectively. These concentrations in the recirculation stream also add to concentrations released from the WAS due to the VFA additions. Shown in Figure 2 is an average mass balance for the process from January 2013 through April 2015. This process of using acidphase digestate to trigger phosphorus release has proven fairly stable and effective irrespective of time of year.

As mentioned earlier in the article, ammonia is also needed for the chemical precipitation of struvite. Anaerobic digestion is the source of this ammonia, obtained from the filtrate (and/or centrate, if we are dewatering digested sludge for Class A biosolids production) coming off the post-digestion thickening process. At Madison this post-digestion filtrate stream is combined with the pre-digestion WAS filtrate to create a combined filtrate mixture which is now high in all three necessary ingredients (phosphorus, magnesium, and ammonia, all in dissolved form)—only the pH level (which keeps the mixture below saturation) at this point prevents the formation of struvite in the process. From here the combined filtrate is pumped and fed to the reactors in measured and controlled amounts.

Within the reactors, magnesium chloride is added to the feed stream to further increase the solubility product, and sodium hydroxide is added to increase the pH. Spherical particles of struvite are precipitated and removed from the reactor. The spherical sizes of the struvite "prills" are such that it can be used in similar applications as chemical fertilizer, or combined with other chemical fertilizer constituents.

Anticipated benefits of struvite harvesting have been met in some areas, but operational experience with the system and other process needs

are requiring modifications and research for improving process performance. The following are some process details and notes on changes either implemented or being investigated:

- 1) The soluble P removal in struvite harvesting has met the projected 80 to 85% removal projections.
- 2) Concentrations in the combined feed to the Pearl reactors are approximately 160 mg/l orthophosphate, 80 mg/l magnesium, and 220 mg/l ammonia. These concentrations were increased from design concentrations by pre-thickening approximately 30% of the WAS in the retired DAF thickening process.
- 3) Soluble P concentrations in the digesters have decreased from ~200 mg/l to ~100 mg/l. Evidence supports that this is resulting in significantly less struvite precipitation in the digesters and in digested sludge piping, translating to decreased O&M costs in these areas.
- 4) A comparable decrease in the water extractable phosphorus in the Biosolids has positively impacted land re-application limitations for phosphorus.
- 5) The total phosphorus removal by the struvite harvesting process has been lower than expected due to loss of struvite fines in the reactor effluent and back to the plant. This recycle is increasing the phosphorus loading to the secondary process and may negatively impact biological phosphorus removal if unchecked.
- 6) Elimination of the ferric chloride addition was planned with inclusion of struvite harvesting facilities. Management of H2S levels in the plant's permit for air emissions from engines is necessitating a low dose of ferric chloride to the diaester feed.
- 7) A low ferric chloride dose is also added to the sludge feed to thickening and dewatering processes. The pH elevates in the filtrate and centrate during digested sludge thickening and dewatering. This results in the formation of struvite in the filtrate and centrate in spite of much lower soluble P concentrations in the methane phase digesters. A low ferric chloride dose into the digested sludge feed suppresses the nuisance struvite formation as well as improved thickening and dewatering.

Relative to maintenance, estimates of labor requirements before start-up of the system were made for the process based on experience at other facilities. Because of the tendency for prills at Madison to



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grow beyond optimum size the harvesting down and re-seeding of the reactors has proven to be needed more frequently than anticipated. The struvite product dryers also had a tendency to plug with time as was anticipated, but the cleaning procedure was not labor friendly for the dryers as originally installed. Modifications were made to the dryers in the meantime to facilitate easier access and maintenance, which greatly reduced dryer cleaning time. These modifications have been built into subsequent installations of the process.

Integral in these process investigations is the new paradigm that various unit operations in the treatment plant, such as return sludge, waste sludge, and thickening/dewatering processes, are now quite intertwined with successful operation of struvite harvesting. With those facts considered, an efficiently operating struvite harvesting process with minimal downtime is absolutely necessary to protect the plant biological phosphorus removal process from overloading and upsets. Extensive laboratory work and process monitoring

DUCTILE IRON PIPE



are on-going in a joint effort between Madison Metropolitan and Ostara to find keys to achieving improved performance from the 11th Addition struvite harvesting modifications. While the initial startup and basic operation of the equipment and process went smoothly, the system in Madison has encountered several process challenges not experienced elsewhere to date. The District and

Ostara are continuing to work together to optimize the process performance. Several process modifications have been made and others are currently being investigated.

The full paper can be accessed on the CSWEA website, www.cswea.org. (\$\scrt{S}\$

¹Madison Metropolitan Sewerage District ²Ostara Nutrient Recovery Technologies, Inc.



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INTERNATIONAL

SPIRALWELD PIPE

STEEL PIPE

FLOW CONTROL

Meet the Wunderkinds of Water Science

THE FUTURE OF WATER PROFESSIONALS STARTS HERE

he Stockholm International Water Institute (SIWI) was established in 1991 to "bridge science, policy, and practice for a water wise world." An ambition so lofty takes partners, so SIWI created a suite of awards to help promote interest in this global endeavor amongst innovators – old and young alike.

One such honor is the Stockholm Junior Water Prize (SJWP), which is presented annual to a young person between the ages of 15 and 20. In 2015, American student Perry Alagappan took home the USD \$15,000 prize for his invention: a filter than can remove more than 99% of heavy metal contaminants from drinking and industrial water. His path to success began back home in Texas where, as in most states, local SJWP competitions, sponsored by WEF, local MAs, and Xylem Inc. are held. Finalists at these events vie for a USD \$10,000 scholarship, and an all-expense paid trip to Stockholm, Sweden for a chance at the international prize. Winners and finalists in two of the CSWEA's member sections (in Ilinois, IWEA handles SJWP) were announced recently, and the first place teams will now challenge for the national award.



The following trio of finalists all hail from Cloquet, MN, and worked with the same advisor: Dr. Cynthia Welsh. Though not yet old enough to vote or buy a case of beer, these bright young men and women prove beyond a doubt that when it comes to earnest, scientific endeavor, age is nothing but a number.

MINNESOTA

It is hard not to crack a smile while reading the title of Jacob Schmidt and Levi Peterson's SJWP-winning project. The Grade 11 students found a possible reuse for the harmful flow-back water that results when hydraulic fracturing is used to extract gas from rock formations, such as shale, which are abundant in the resource. "A Nice Fracking Solution": The Effect of Fracking Water Salts vs Road Salts on the Growth of Lumbriculus variegatus, correctly guessed that flow-back water, solidified into salt, would be no more harmful on worms than road salt, and serve as a "fracking" good, err, environmentally friendly and cost-effect, reuse of this by product.

Christine Neumann, a Grade 12 student, took home second-place honors for her project, which built on work previously done with her peer, Crystal Moynan. "The effect of time, benthic substrate, and location within the St. Louis River Estuary on the invasion of Neogobius Melanostomus in the watershed, and the use of underwater speakers emitting the conspecific male mating call as a possible removal method,"investigated whether varying the types of conditions in the Lake Superior Estuary (the substrate or surface material, the presence or absence of a food source, and the presence or absence of a species-specific mating call) had any effect on the response behaviour of a particular invasive fish species – the Round Goby. The results? Dinner and the prospect of a date (that is bait, and the mating sound) attracted female gobies, and deterred males, better than any other test condition. Using the tone could be a feasible, non-invasive control/removal method for the predatory fish.

Rounding out the top three SJWP projects for Minnesota was Claire Taubman. The Grade 9 student wondered how varying levels of microplastics in a water source might affected eating, egg production, and reproduction rates for a species of zooplankton native in Minnesota water bodies: Daphnia magna. Research has been published on the problems tiny pieces of plastics have been causing in oceans, lakes and rivers, but Claire's question drilled down deeper to discover what, if any, issues were occurring at the base-level of the aquatic food chain (the zooplankton). Claire discovered that the concentration of microplastics had little effect on gut material or egg production, however, it did affect reproduction rates. Under low concentration exposure, reproduction rates decreased significantly. As well, her experiment, titled, "What Effect do Microplastics Have on the Mode of Eating, Egg Production, and Reproduction Rates of Daphnia magna?", demonstrated zooplankton actually avoid microplastics. As the concentration of the particles in the water went up, so too did the aggregation of Daphnia magna.

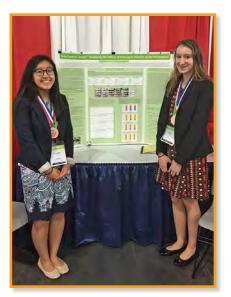
WISCONSIN

The dynamic duo of 15-year-old polymaths Laurel Chen and Riley Olinger, from Brookfield Central High School, claimed SWJP honors in the Badger State. On paper, the pair have wildly different affinities - Claire for visual arts, writing and food; Riley, for history, social activism and painting – but they are bound by a shared love of science. For their award-winning project, titled, "How Green is Green? Assessing the Effects of Detergent Toxicity on the Environment", the students took the manufacturers of "eco-friendly" detergents to task and tried to figure if their claims were legitimate or bogus. The long and the short? Caveat emptor! Some of the so-called "green" detergents were shown to be guite detrimental to the health and wellbeing of the environment.

Central States Water congratulates all the winners and finalists in this year's SWJP competitions, and looks forward to reporting on yet another group of water science wunderkinds in 2017. CS



Jacob Schmidt, Christine Neumann and Levi Peterson



Laurel Chen and Riley Olinger



Claire Taubman

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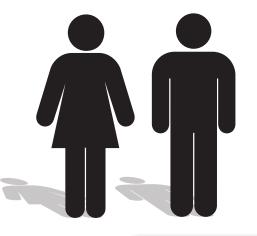
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CSWEA Welcomes Our New Members

March 2016

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Tim Hanson, Rock River WRD

Mark Siefert, City of Crest Hill

April 2016

Karen Sands, MMSD
Tim Edward Korby, Donohue
Keith Richard, Sanitary District of Decatur
Luke Markko, Village of Wauconda
Jacob M Mann, Village of Wauconda
Anna B Kootstra, Village of Wauconda
Humberto Reyes, Village of Wauconda
Dan Fajman, FreshCreek Technologies
Dennis Barnes
Miss Elizabeth Klaesges, Graco Inc.
Joseph Blake
Susan Coyle, MMSD
Elizabeth Bohne, Trotter and Associates
Brittany Hess, MMSD

May 2016

Mr Chris P Dagiantis,

Crawford, Murphy & Tillly, Inc.
Mike Ashenfelter, Springfield Metro SD
John Koch, Xylem, Inc.
Jeremy Stubbs, Thorn Creek Basin SD
Brad Butterfield, Green Bay MSD
Michael Cho, Strand Associates
Stephen Opatik,
Becher-Hoppe Associates
John Sundelius, Heart Of The Valley MSD
Mr Barry Howell, Visu-Sewer, Inc.
Ezra Meyer, Madison MSD
Kaitlin Swanson, S E H

June 2016

Jayme Hoffman, City of Racine
Christopher Baer, Rock River WRD CS

Kevin Michael Regan



On behalf of CSWEA, and its member Sections, we offer sincere condolences to the family and friends of **Kevin Michael Regan**, who died unexpectedly on May 17. Kevin was a long-time member of WEF and CSWEA (Minnesota Section), serving for 12 years on the Local Arrangements Committee, as well as on the Operations Committee. We thank Kevin for his contributions to our profession, and to our organization. And we offer our thoughts and prayers to his family during this difficult time. \$\mathbb{C}\$



As of June 3, 2016

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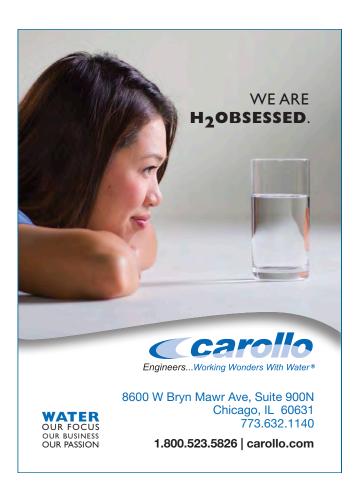




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Grow Yourself by Giving

By Alan Grooms

s some of you may know, once upon a time I served a stint in the United States Navy as a surface line officer. This was my first chance to manage personnel and equipment in a challenging, exciting environment. As a 23-year-old farm kid, fresh out of college, I was fulfilling my childhood desire (while other kids said they wanted to be police officers or astronauts or firemen I told my class I wanted to be a naval officer). After years of school and several summer

training "cruises," I was finally getting to "drive." As a deck officer, "driving" means giving rudder and engine orders to other shipmates who actually execute the instructions that move a 10,000-ton warship through situations as diverse as steaming independently to underway replenishment, in calm seas, and in typhoon conditions.

Over many months of watch-standing, studying requirements, learning complex systems, and passing examination boards, I gradually earned the commanding officer's confidence and transitioned to officer of the deck. This meant additional responsibility, including that of training others and passing along what I had learned, so that the next 23-year-old, newly-minted, officer was properly trained and capable of standing watch and supervising safe and efficient operation of the ship. When I left the Navy at age 27 to return to graduate school, I recall looking back at my ship and saying to my parents that I would likely never have a job or responsibility equal to that, given the cost of the vessel and the lives directly dependent on me doing my job well.

I grew a lot in that period, but one important lesson I learned from this experience was that the act of teaching and training others helps refine and grow your own skills. Coaching a new junior officer of the deck on how to most effectively plot a course to a new station, or the cues to look and listen for when maintaining plane guard station, forced me to recall why I did things a certain way, why I made the decisions I did. It is the same now I find – the stakes are different, the tempo now slower, but teaching and sharing force you to slow down and consider the basis for what you



think, what you know, and how you act. When asked for the reasons why you did something, or how you arrived at a decision or conclusion, you re-examine the basis for actions and decisions. I find that this process actually firms up and improves your own command of the subject.

Bringing this back to Central States, the committees, conferences, and workshop opportunities seem at first to be chances simply to learn, to gain experience and knowledge. But they also represent a chance to teach and pass along to others ideas and

knowledge that you have. This act of teaching and sharing brings notice and often respect, but additionally it also makes you a better practitioner, increasing your value to your organization. I'm somewhat sad to look back and say I was not active in Central States for the early years in my career, but I did draw upon others in Central States for knowledge. Now later in my career, I am more actively participating and sharing, but through that experience I find I'm also developing and growing.

For those new to Central States, I'd encourage you to become actively involved sooner than I myself did. Get engaged with a committee, attend conferences, but find a way to begin forging those connections, developing a network, and drawing upon the experience and knowledge of others who have been practicing longer. In the past few years the younger members have been doing just that already, and we seem to have an influx of talented, smart, eager young professionals itching to get involved – a great thing!

To those a bit more seasoned, if you are engaged please remain so, and if you are not engaged consider becoming so. You have much to share and pass along, but the energy and fresh ideas of the younger professionals will infuse you with newfound passion for our work. There is also the aspect about teaching and sharing what you know, which will grow you and also ensure that your experience is passed along to ensure the next wave of professionals is not re-learning too many past lessons.

I am fortunate as Wisconsin Section Chair to be inheriting a dynamic and well-functioning Section. But that doesn't mean it cannot get better; it can. We just need you. CS

"I am fortunate as Wisconsin Section Chair to be inheriting a dynamic and well-functioning Section. But that doesn't mean it cannot get better; it can. We just need you."

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Illinois, People of Passion

by Matt Streicher

ith recently wrapping up yet another successful Annual Meeting, I welcome everybody to the new year in CSWEA. It is a shame that our Illinois group was not able to continue the tradition of cheering on the Chicago Blackhawks in the playoffs this year, but that is at no fault of our excellent Wisconsin section, who once again provided us with a captivating and well attended conference. I would like to thank Erik Lanphier for providing excellent leadership as the IL

Chair over the past year, and it is with great honor and privilege that I advance into the role.

After advancing to the Chair position, it occurred to me that I would have to write a quarterly article for this great publication. The thought of this intimidated me, as I am not the greatest writer (engineering quality), and I became worried I would not know what to write. While sitting down to prepare this article, it became apparent that there is so much going on in CSWEA and there are so many accomplishments, that I had an overwhelming amount of information at hand. It then became difficult to choose what to write about, since it is all important to our industry, the environment, and public health.

First, I want to place recognition where it is tremendously deserved. Several special shout outs I'd like to give are to Shelly Cumbow, Mike Holland, and Sue Baert. Shelly has been the treasurer of the IL Section for over 15 years and has filled that position very well. All of us have enjoyed working with her within the IL Section of CSWEA. She has served her time and passed those duties on to Mike Holland, who I am confident will excel in the role. Mike also deserves special recognition for being nominated for the WEF YP of the Year. Although we don't know yet if he has won, it is still great recognition to

be nominated. Finally,
Sue Baert was the winner of
the 2016 Hatfield Award.
The Hatfield Award is given
for outstanding treatment
plant operations, and is
awarded to only one person
out of the three sections.
We are privileged to have
Sue as part of our IL Section.

The other major players that deserve special recognition are all the active committee members within



our Section. The committees are what make our section strong, and who make CSWEA what it is today – a thriving professional organization. The seminars and conferences that are put together by these committees are the backbone to CSWEA, and provide for excellent learning opportunities through both education and networking. This past year we had several new members become Chairs and rejuvenate our IL committees; Aaron Berry for the Membership Committee, Jillian Kiss as the YP Chair, Karol Giokas for the Safety Committee,

Jason Neighbors as the Operations Chair, Eduardo Gasca for the Pre-Treatment Committee, and recently a new Energy Committee was formed that Mike Harvey volunteered to lead. I would like to point out that several of these Chairs are YPs. It is very encouraging to see YPs become engaged, active members, as this will help ensure that CSWEA continues to thrive for many years to come.

Finally, I could not have published an article without mentioning the Global Water Stewardship (GWS). This is an effort that I am passionate about, and very much a part of. Hopefully you were able to come watch our presentation at the Annual Meeting, see the need for our cause, and the accomplishments we have made. We have come a long way, but still have a long way to go, as there are billions of people in the world that lack adequate sanitation. A beneficial side effect that our work with GWS has incurred is the increase in students becoming involved with our organization. This past April, there were a record amount of teams presenting for the student design competition, many of them presenting a design based on the problem statement derived from GWS's efforts in Costa Rica. This involvement from students is much like that of YPs,

encouraging them to become active early on creates a lasting future for CSWEA.

It is with great excitement that I look forward to another exciting year, with lots of work to be done, and many accomplishments to be made. I am confident there will continue to be more than enough great achievements to report about in the next Chair's report. (S



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Embrace the Messiness

By Christopher Harrington

ike John Muir, I have a personal connection to Hetch Hetchy, though our experiences are very different. Hetch Hetchy is a beautiful valley in Yosemite National Park that includes a dam and a man-made lake. My wife and I first visited the location on our honeymoon, and we will be returning in June to get to know further reaches of wilderness around the lake. To us, the whole area is a gorgeous playground and refuge for people and wildlife that also benefits millions of people in San Francisco by providing them with a renewable power source, flood protection benefits, and un-pumped, high quality drinking water. So high quality in fact, that it is exempt from filtration requirements by the United States Environmental Protection Agency and State

Water Resources Control Board's Division of Drinking Water.

Despite our own positive impression of the lake, it has a well-documented history of controversy. Prior to creation of the lake, John Muir, the founder of the Sierra Club, wrote in 1912: "Hetch Hetchy is a grand landscape garden, one of nature's rarest and most precious mountain temples. As in Yosemite, the sublime rocks of its walls seem to glow with life... while birds, bees, and butterflies help the river and waterfalls to stir all the air into music... These temple destroyers, devotees of ravaging commercialism, seem to have a perfect contempt for Nature, and, instead of lifting their eyes to the God of the mountains, lift them to the Almighty Dollar... Dam Hetch Hetchy! As well dam for water-tanks the people's cathedrals and churches, for no holier temple has ever been consecrated by the heart of man." (John Muir, The Yosemite, Century, 1912, pp. 249-62).

The benefits our water projects bring to society are numerous, but let us keep in mind the "messy" interdisciplinary challenges

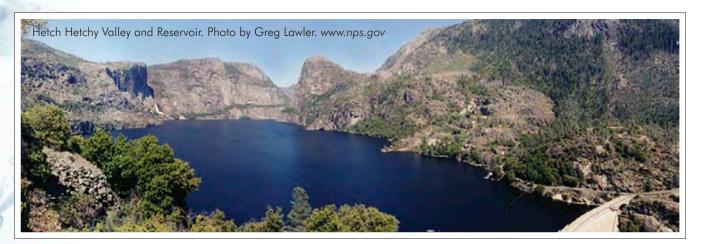


we create in order to obtain the benefits. Our projects can affect people and other life deeply as John Muir's writings attest. As we treat water more and more thoroughly, the operation of our infrastructure requires ever larger amounts of energy. Obtaining that energy requires mining or drilling and combustion which lead to greenhouse gas and pollutant emissions. We also have impacts that resound across generations as groundwater aquifer depletion, and a backlog of deferred infrastructure maintenance, will limit options and constrain financial spending for future generations. The

financial challenges we create are felt at the personal level (via rate increases and several layers of taxation) and at governmental level (as large debt issuance is frequently used to fund projects). And due to the large size of our projects we may need to remove land from other beneficial use in private hands, or when public land is used, we frequently encroach on, and otherwise diminish existing parks.

Despite the challenges, we as a society take these projects on because clean water is so critical to our health and quality of life. So let us embrace the messiness and work together to consider all impacts of our works and refine our abilities to consider multiple perspectives. Let us be as interdisciplinary as we are able, and find the best balanced solutions. I am pleased that the CSWEA Minnesota section is becoming more interdisciplinary as we are kicking off a new stormwater committee this year. And with talk of initiating a resource recovery committee just beginning, I think we are headed in the right direction already.

It is a pleasure to have the opportunity to lead this great group for this year. Thank you for the opportunity, and I look forward to working with you. Please let me know if there is anything I can do to assist you.



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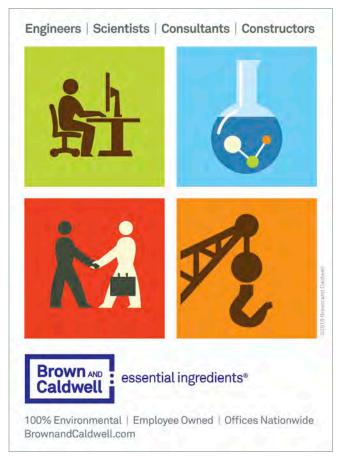
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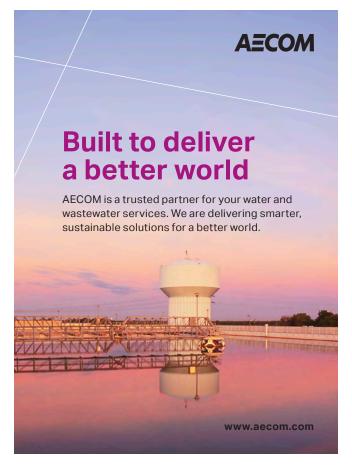
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WI Section Northwoods Collection System Seminar July 21, 2016

Marshfield, WI

CSWEA CSX 2016

July 21-22, 2016 Kalahari Resort Wisconsin Dells, WI

AUGUST

WI Section Management Seminar

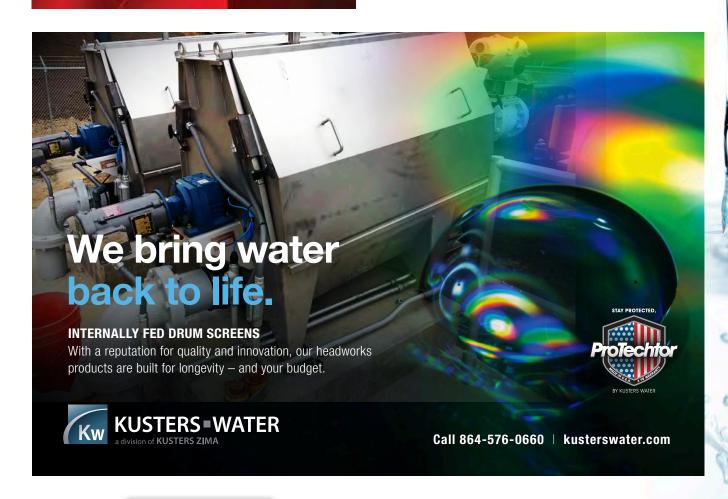
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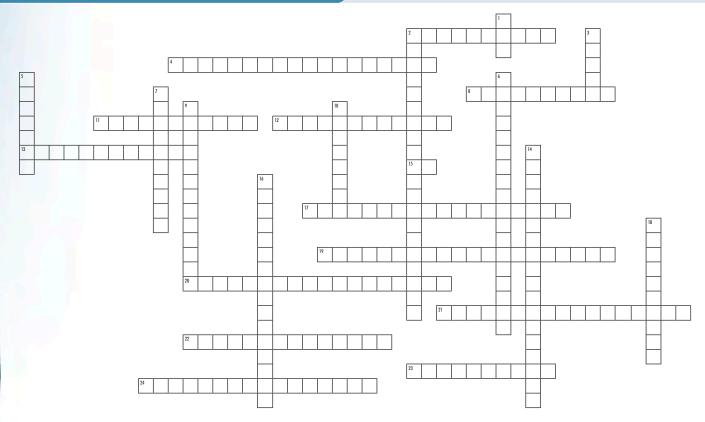


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CROSSWORD



DOWN:

- Biochemical oxygen demand. Is the rate at which organisms, use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions. Its measurements are used as a surrogate measure of the organic strength of waste in water
- Consists of a wet well and a system to provide pressurized air. When a wet well reaches a predetermined level, the influent line is closed and the wet well is pressurized. This pushes the flow out the discharge line.
- Microscopic plants containing chlorophyll that live floating or suspended, in water. They also might attached to structures, rocks, or other submerged surfaces.
- A procedure that measures the rate of oxygen used under controlled conditions of time and temperature. Standard test conditions include dark incubation of 20 degrees C for a specific time, usually five days.
- 6. Sewage.
- A community's used water, and water-carried solids, including used water from industrial processes, that flow to a treatment plant.
- A narrow place in an open channel that allows the quantity of flow to be determined by measuring depth of flow.
- 10. Any substance that is taken in by an organism and promotes growth.
- 14. The combination of sanitary and storm water runoff. It is all transported to the plant in one system
- 16. Designed to remove settleable and floatable solids when wastewater enters a settling tank. The velocity is reduced to approximately 0.5 feet per minute.
- **18**. Bacteria, virsus, cysts, or protozoa that can cause disease in a host, such as a person.

Find the answer key at www.cswea.org

ACROSS:

- Essential to the biological activity, and must be present in at least minimum quantities or the secondary treatment will not perform.
 Excessive amounts can cause stream damage and excessive algal growth. Normal range is 6-20 mg/l.
- 4. Consists of domestic waste and a significant amount of industrial waste, but only if it can be treated without special treatment.
- 8. The collection of storm water runoff; should contain grit and street debris.
- 11. Also known as a lift station, both the force main and gravity system include a pump station as a part of the collection system.
- 12. Where wastewater is collected to a central point and then drawn toward the treatment plant using a vacuum.
- 13. Consists of grease, soap, rubber goods, hair, petroleum products, plastics and filter tips from cigarettes.
- 15. Method of expressing the acid condition of the wastewater.
- 17. Consists of a single component that collects wastewater flow. The centrifugal pumps used in this type of system are submersible pumps, with controls usually located outside or over it.
- 19. COD, is faster than BOD and it measures the amount of oxidizable matter that is present in the sample. The presence of industrial waste can increase this significantly.
- 20. The process by which water vapor is released to the atmosphere from living plants.
- 21. A system that is designed to collect and carry the wastewater to the treatment plant.
- 22. When transport lines are sloped to permit the flow to move through the system without mechanical assistance. Must be sloped enough to carry the wastewater at a rate where settling won't occur.
- 23. A measurement of wastewater capability to neutralize acid.
- **24.** Where wastewater is collected to central points and pumped under pressure to the treatment plant.



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