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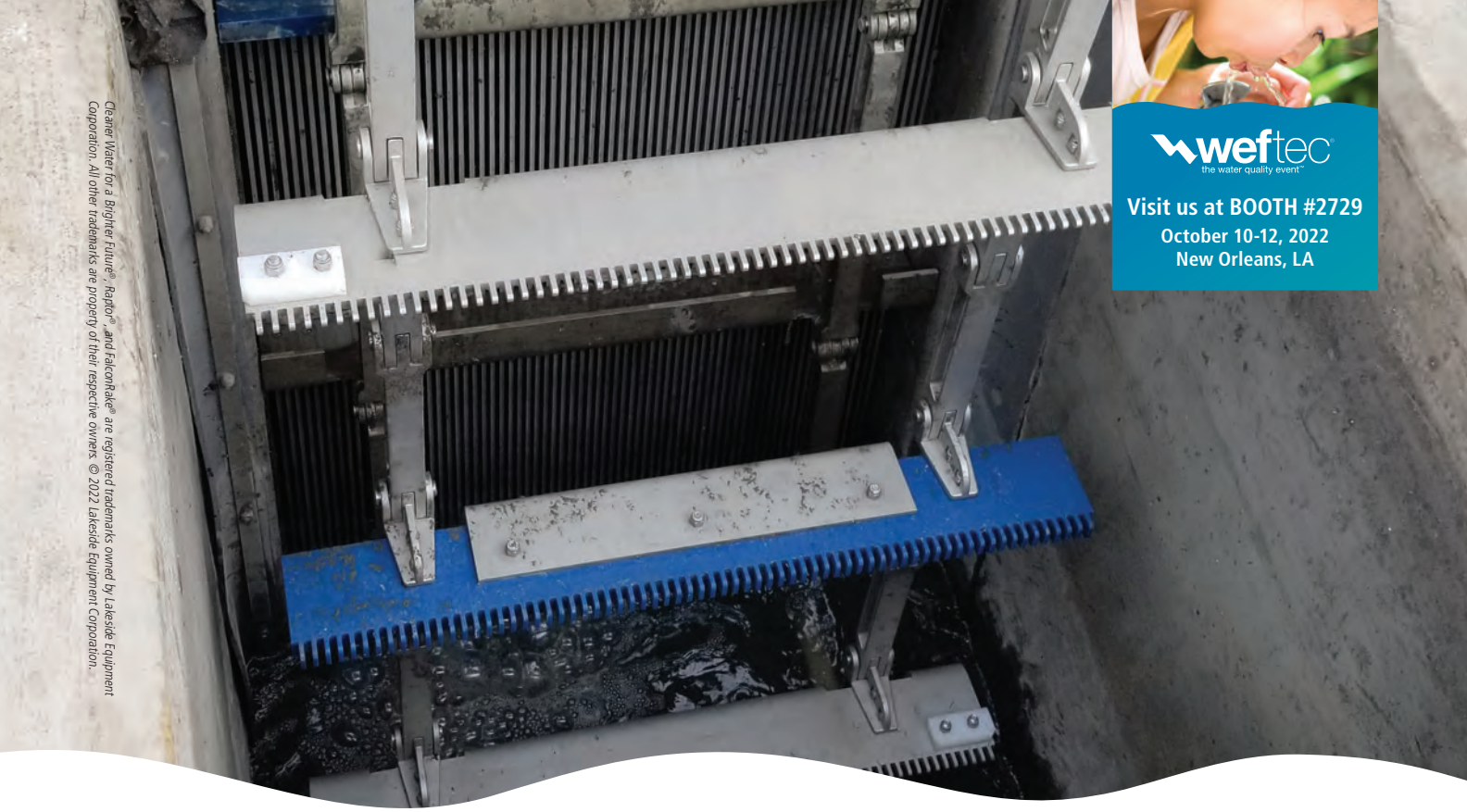

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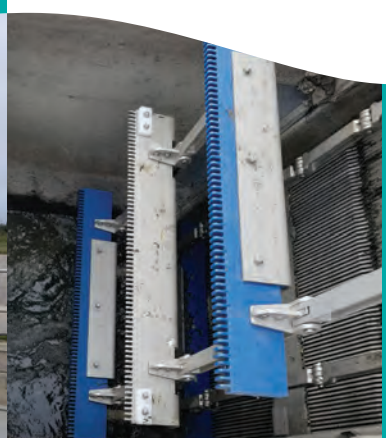

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CSWEA/WEF News

Section News

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Connecting New Ideas

By Tracy Hodel

By the time you are reading this, fall will have started. Bring on the pumpkin everything, crockpots, sweatshirts, and bonfires. It is the time of year where many families start a new school year and the daily routine changes dramatically compared to the summer months. This year will be quite different for the Hodel Family. We are sending our firstborn off to college. He was accepted to the University of Minnesota's College of Biological Sciences, Twin Cities campus. Our middle son is going to be a junior in high school and has decided to do a post-secondary education program and will be starting college at St. Cloud State University. The hustle and bustle of the beginning of the school year will be different… still busy and hectic, but different.

As I think about one of our key focus areas for our organization this year, **mentoring and engaging our emerging leaders**, I think about my own two sons' entering the college world and what opportunities we have to connect with these students, their classmates, and professors. This is one of our goals that we established during our 2022 Central States Exchange (CSX) event that was held the end of July in Wisconsin Dells this year.

CSX saw an incredible group of attendees this year. We had such a great time connecting and brainstorming ideas on the focus areas for our organization. Thank you to all the members that came and to those that sent or brought an emerging leader with them. For those that have not attended a CSX yet, I would highly recommend it. It is a laid-back event that allows the opportunity to share ideas on how to continue to make our organization the best MA ever. It is typically hosted at the Kalahari Resort in the Wisconsin Dells, and many of the attendees bring their loved ones with them. It is an absolute honor and pleasure to meet everyone's family and friends.

> "As I think about one of our key focus areas for our organization this year, mentoring and engaging our emerging leaders."

During CSX, we spent a lot of time talking about what we could do to further engage and mentor emerging leaders. Below are just a few of the ideas and goals identified during our small group discussions.

1) Engage, inform, and identify key drivers of the association, what makes CSWEA unique.
2) Additional engagement of mentors and professionals for the Student Design Competition.
3) Increase the amount of service projects available.
4) Increase the level of operator involvement in the association.
5) Increase the number of young professionals and emerging leaders on the CSWEA and State Section committees. Strive to have at least one YP or emerging leader on all committees.

I encourage all of you to look at these goals and help our organization engage more of the young professionals and emerging leaders. What small action can you do today to make progress on these goals?

Other topics we discussed was the 2022 Annual Meeting. We talked about what went well and opportunities for improvement. We received numerous positive comments. Many members really had fun at the social event at the Monona Terrace, where attendees competed in a bean bag tournament. I'd like to do a special shout-out to Rachel Lee for planning and emceeing the event. Another highlight included the Wheel of Fun, which many people said added a great energy and vibe to the Exhibit Hall. The consensus seemed to be that attendees loved the "new" elements to the program and that change is good.

Minnesota is excited to host CSWEA's 2023 Annual Meeting at the St. Paul RiverCentre on May 22-24, 2023. We are taking the lessons learned from the 2022 event to make next year's event a great time for all.

We've talked a lot about the awards at the Annual Meetings. You don't need to wait for the Call for Awards to be issued to nominate someone. Feel free to visit *www.cswea.org* and click on "Recognition," then "Submit Nomination" to identify the great people that are doing amazing things.

WEFTEC is just around the corner! I hope to see many of you there. CS

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David Arnott


Tracy Ekola

By WEF Delegates, David Arnott and Tracy Ekola

Greetings from Tracy and Dave, your WEF delegates from CSWEA. As your delegates we strive to keep you up to date and provide resources and connection to WEF. Our update this quarter provides a recap and highlights of recent WEF events. Each update provides links to more information on each subject. Please reach out to us at *tekola@brwncald.com* or *darnott@ruekert-mielke.com* for more information and check out the links provided below.

WEF STRATEGIC PLAN

It has been 10 years since the last Strategic Planning effort. WEF started a new strategic planning process in 2021 with the goal of completing the work before WEFTEC 2022. Jamie Eichenberger, WEF President, provided an overview of WEF's Strategic Planning effort at the WEFMAX virtual meeting held in July as well as WEF's August townhall meeting. Learn more about the WEF Strategic Plan here: *https://bit.ly/3Ph6WVY*.

What you will find: The WEF three-year strategy map, WEF Mission, WEF Vision, three-year goals, and three-year metrics. Stay tuned for more to come on this effort regarding purpose and belonging, outcomes vs. outputs, and form follows function.

WEFMAX RECAP

WEFMAX means WEF Member Association (MA) Exchange. The WEFMAX mission is to offer a forum to share successes and lessons learned to strengthen MAs and WEF. Visit *www.wef.org/membership/wef-member-associations/wefmax*.

WEFMAX Hawaii: Focus on Water Communications
Opportunity and Purpose: Sharing great ideas across Member Associations and WEF to elevate industry communications on water issues.

What you will find: *Best Management Practices* for social media, luncheons, newsletters, email blasts, webinars, branding, presentations.

WEFMAX South Carolina: Focus on Emerging Leaders
Opportunity and Purpose: Continue to grow through engagement and advancement of new leaders.

What you will find: identification of engagement barriers, creating awareness and pathways, and developing resources.

WEFMAX North Dakota:
Focus on Diversity, Equity, and Inclusion (DEI)
Opportunity and Purpose: Understanding DE&I, why it is important, and how to leverage DEI in your MA.

What you will find: DE&I Toolkit - Interactive DE&I activities including goal setting, issue identification, action plan, and DEI initiative implementation (*www.wef.org/dei*).

All CSWEA members are encouraged to review the WEFMAX notes, presentations, and recordings in the **WEFMAX Library** at *www.wef.org/membership/wef-member-associations/wefmax* to learn more about each topic mentioned above. In addition, we encourage you to consider attending WEFMAX 2023.

HOUSE OF DELEGATES (HOD) WORKGROUPS

HOD efforts in our workgroups are wrapping up to provide final reports at WEFTEC. Dave is working with the Communications and Emerging Leaders workgroups and Tracy is working with the Federal Advocacy workgroup.

The **Federal Advocacy workgroup** is continuing the work from 2020-2021 to assist with amplifying WEF's advocacy priorities related to the federal government regulations and funding. WEF has advocated for more resources for our communities and utilities. This workgroup is focused on extending advocacy efforts to all member associations (MAs). If you haven't already, please consider becoming a Water Advocate (*www.wef.org/water-advocates*).

The **Communications workgroup** aims to help people with a technical background communicate more effectively. Communications is an important discipline within the water sector, just like engineering, project management, and other technical areas. As technical people, communications is often overlooked or discounted. The goal of our workgroup is to learn communication best practices from key leaders and share them with WEF and the MAs. The workgroup has broken up into two subgroups. The first subgroup is focusing on messaging methods. This subgroup will look at various forms of communication such as written, digital, videos and how these forms are used to reach specific audiences. The second subgroup is looking specifically at social media and researching effective forms of digital communication. The deliverable from this workgroup will be a presentation where communication best practices are summarized.

The **Emerging Leaders workgroup** stresses the need for engagement and advancement of new leaders at the MA and WEF levels. Our people are our most important resource. The deliverable from this group will be an infographic to identify pathways to WEF involvement, present engagement hurdles and identify ways to overcome them, and to share leader engagement stories to inspire others.

Stay tuned for these workgroups final roll out at WEFTEC and in the next CSWEA magazine!

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

Tell a Story to Get Your Message Across

By Jacqueline Strait

I attended CSX this past July in Wisconsin Dells. It was my first CSX experience and I loved it. A fantastic group of attendees were there representing each state, and each group was full of energizing ideas to share across the two-day event. The discussions centered on the three focus areas for this year, as well as each section's updates. The three focus areas this year are:

- Mentoring and Engaging Our Emerging Leaders
- Think Big, Have Bold Ideas, and Be Brave Enough to Implement Them
- Take Action and Don't Underestimate the Impact of Small Actions

We broke out into small groups and discussed ideas for each of these focus areas and then developed one or two goals that could be implemented. Later, we returned to the large group to share each small group's ideas and goals, which led to an engaging discussion for the whole group. During this process, one idea stood out to me: tell a story. It's not a new concept, but sometimes it can be hard for us engineer-minded and technical-focused people to remember to do this do when trying to convey a message. With social media and technology at our fingertips, it is becoming increasingly hard to get and keep someone's attention. Additionally, during the past two years, we have all been blasted with virtual webinars and meetings, which has not helped to improve our attention span. We need to go back to our roots and tell the story authentically, including the ups and downs. I think if we can all remember to tell a story and if possible, to tell it in person, we will have more success in getting our messages across. By authentically, I mean telling some of the toughest frustrations and challenges, and even some of the funny realities behind the story. Telling a story allows you to grab and keep your listeners attention and helps the listener understand and remember the message you are trying to convey.

In addition to attending the CSX meetings, we also attended the Thursday family night pizza party. It was wonderful to meet everyone's loved ones and learn a bit about their lives outside of work. One of my personal highlights was watching how my son, Cole, thoroughly enjoyed running around with Joe's two-year-old son, which was a win-win for the parents because these two tired each other out.

In addition to the CSX event, our section's YP group hosted a tour of MN DOT's I-35W stormwater storage construction site on August 2. MN DOT is in the middle of the construction of a 14.7 acre-ft (4.79 million gallons) stormwater detention storage though a series of six interconnected diaphragm walls (46 ft in diameter by 80 ft deep). All this storage is contained within the ROW, making for tight construction limits while maintaining the regular heavy I-35W traffic flow. After large rain events the water will be slowly pumped back into the storm sewer.

Upcoming events include the 2022 Winter Collections Workshop with MWOA on September 28 in Duluth. More information on the agenda and registration can be found on the CSWEA website. Additionally, the 2022 MN Conference on the Environment will be in person this year on November 10 in Minneapolis. The Call for Abstracts is open and can be submitted though the CSWEA website. There will also be a virtual stormwater webinar held Nov 17.

Planning for the annual meeting is underway, but you can still get involved in the process by joining the Local Arrangements Committee. Our first kickoff meeting was August 19. If you are interested in helping or curious what the committee is responsible for planning, reach out to Liz Kramer at *elizabeth.kramer@ci.stcloud.mn.us*.

Hope everyone had a great summer and wishing everyone a happy fall season! CS

The YP group from tours MN DOT's I-35W stormwater storage construction site on August 2.

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Cultivating Our Emerging Leaders

By Jillian Kiss

In July, I had the privilege of attending the Central States Exchange, and met with members from Minnesota, Wisconsin, and Illinois to talk about the direction that CSWEA is moving in. This is an annual event, which gives the three sections that make up Central States an opportunity to get together and talk about the organization and what our different sections are doing through the year. As we worked through the agenda and shared thoughts and ideas, I noticed a common thread in our methods over the years I've been involved with Central States. All of us recognize the value of engaging emerging leaders.

Looking back at my own experience, I was immediately plugged in to the YP and Local Arrangement Committees upon becoming a member. By doing so I made connections with people in the organization and felt I was contributing to its success. I believe this engagement was a big part in establishing a solid and stable relationship with the organization and all it had to offer to me as an engineer, as well as the other professionals in the industry. I'm sure many of you have similar stories.

As destiny would have it (or not), President Tracy Hodel's focus areas this year include mentoring and engaging emerging leaders, so we spent a decent amount of time discussing this at CSX. So, I'd like to share some of the outcomes from our discussion on the topic, particularly:

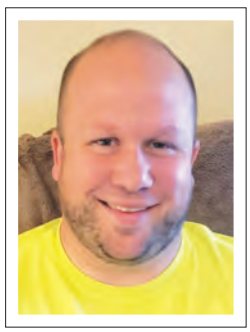
- Starting communication and engagement with student groups early on. Historically we've focused on schools with engineering departments (this coming from and engineer), but we should also focus on life sciences and environmental studies to showcase other aspects of the water industry. The biggest hurdle is establishing a contact with a school staff member or professor who will advocate for the water industry.
- Plugging YPs into other committees as liaisons before having them report back to the YP members to share what the other committees are up to. This somewhat mimics a mentorship program and invites YPs to the party.

Overall, I left this year's meeting being very inspired by the work being done by the members of our organization and the dedication so many of you have to achieving great things. I'm hoping these takeaways spur discussion about how we can grow to be the section we want to be and support the emerging leaders within our group and within the industry. I'm excited to hear from our members on how we can implement this more within the Illinois Section. Our member's different experiences will help implement some practices sustainably and hopefully lead to success in our engagement efforts.

While summer has passed, pumpkin spice season and WEFTEC are just around the corner. Hopefully you are able to visit New Orleans and participate in the conference, network, and bring home some valuable information. I hope that during our warm summer all of you were able to enjoy our clean waters; whether swimming, boating, fishing, or simply enjoying a view – rewards of your tireless efforts preserving our environment, while also protecting the health of the greater public. Good work. CS

Where Did Summer Go?

By Jake Becken



Summer is flying by – and for me it seems faster than ever. I know that everyone says once you have a kid, the days feel long but the weeks sail by but now I know they are not joking! Our little boy is already four months old and he is outgrowing some of his clothes!

I was able to attend CSWEA CSX for the first time and it proved to be quite valuable. For those that don't know, CSX is a CSWEA wide strategic planning event that takes place yearly, anyone is welcome to join. This year, we discussed the annual conference, membership recruitment, supporting young professionals (YPs), and continuing to strengthen utility engagement throughout the organization. I left feeling somewhat overwhelmed with all the ideas we reviewed during the event. It can be hard to take the big ideas and package them into something achievable but after some deliberation, I think we have pulled some ideas forward that could really benefit everyone.

One specific action-item that I believe is critical, was strengthening communication with our technical schools and colleges. Working for a utility myself, I know how essential YPs are to future success. It is critical that we are proactive by reaching out to YPs and supporting YP programs, which will fill future positions throughout the industry. In the near term, I will be working with the Public Education and Awareness Committee and the Operations Committee to reach out to colleges throughout the state to remind everyone about CSWEA and the industry. The goal is to continue to cherish and grow the relationships between the industry and the schools. Everyone can help with this by working with local colleges and supporting them in any way possible (like offering internships, providing tours, and assisting in class content). The more awareness and teamwork that we can build, the more people we will get interested in the industry.

I was also able to attend the Young Professionals Brewers Outing. What a great outing. It's always so awesome to talk with everyone and to see "seasoned professionals" at these events as well! Thanks to those that organized the event – it was excellent.

I know I hit on this quite a bit in my last writing, but I do want to mention that we are looking for some passionate people to join a few of our committees. Specifically, we are looking for some folks that might have interest in the Industrial Pretreatment Committee, Public Education and Awareness Committee, and the Government Affairs Committee. Below is more detail on what is involved in each committee:

Public Education Committee: Supports the Stockholm Junior Water and the Water's Worth It Essay Contest. They also develop various social media campaigns and find ways to support CSWEA initiatives and activities.

Industrial Pretreatment Committee: Provides information to members on pretreatment requirements for industries and municipalities. The committee has also recently supported a seminar each year to provide information on various pretreatment topics.

Government Affairs Committee: Keeps Wisconsin membership updated on upcoming regulatory and compliance issues. They also advocate, on a nonpartisan basis, for the environment and wastewater profession with our elected officials.

If you are intrigued, feel free to join some of the committee meetings to listen in, prior to fully committing. If you want more info on any of our committees, please contact Autumn Fisher or I. We would be happy to point you in the right direction.

On another note, it's that time of year! Please consider nominating someone for a CSWEA or WEF award. Steps to nominate for CSWEA or WEF award are below:

1. Go to the CSWEA website.
2. Select the Recognition/Awards Dropdown under the CSWEA tab. You will be able to see the awards available with a brief description of each.
3. Easily and quickly fill out the nomination form. It is all online and easy to complete.

Before I close, I would like to thank Jon Butt for being the Section Treasurer since 2017. He has always been so supportive of CSWEA and his efforts as Treasurer proved no different. With that, I hope you all can enjoy what is left of the summer weather – until next time.

As always, please contact me with any questions, concerns, or ideas at *jbecken@newwater.us* or 920-438-1004. CS

Excellent Turnout at the YP Brewer Outing

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New Award for the Wisconsin Section

By Jon Butt and Matt Seib, Co-Chairs WI Section Energy and Resource Recovery Committee, and Lindsey Busch, WI Section Energy and Resource Recovery Committee Member

The Wisconsin Section of CSWEA started the Energy and Resource Recovery Committee several years ago. One of the committee's main roles is to give out a new annual award, patterned off the WEF energy and resource recovery initiative with the goal of helping to promote projects that members undertake with long term financial and environmental sustainability goals. The new award is called the Renewable Energy, Energy Efficiency, and Resource Recovery (3R3E) award. This award is to be given to an individual or organization that has implemented an outstanding, novel, or otherwise especially impactful project to increase renewable energy generation, energy efficiency, and/or resource recovery from industrial, agricultural, municipal, domestic wastewater, or wastewater residuals.

The committee was thrilled to receive three high-quality submissions as part of the inaugural award review in 2021. A blind scoring process was used that resulted in a tie. Instead of breaking the tie, the committee elected to select two winners and announced the award winners at the Fall 2021 CSWEA Operations seminar. Each winner received a plaque commemorating their selection for the 3R3E award. Congratulations to the winners.

One award was given to New Water for their Resource Recovery and Electrical Energy (R2E2) project. The first project involved a completely redesigned biosolids processing facility that coupled anaerobic digestion and fluid bed incineration. The recoverable biogas is used to power two electrical generators with a capacity of 4 MW. Heat recovered from incinerator flue gas and the engine generators is used for building heat, sludge drying, and digester heating. This project achieved a gold-level LEED building certification. This project has proved capable of producing over 40% of the facility electrical needs and saved approximately $2,000,000 a year in avoided energy costs. The project also reduced greenhouse gas emissions by approximately 22,000 metric tons CO2e per year.

The other award was given to Steven's Point for their sludge drying project that utilizes biogas as a renewable fuel source. The sludge dryer was needed because of the loss of agricultural land for liquid sludge disposal. To create space for the new treatment process, non-wastewater department vehicles were moved to a new building. The new building and the accompanying office space were heated and cooled using a geothermal system that used clean wastewater effluent. A solar array on the roof provides electricity for the geothermal system producing 150% of the power consumption. The heat load for this space is nearly completely offset. Using biogas to heat the dryer saved the treatment plant 90% of the natural gas cost, an equivalent of $300,000 per year. Drying the sludge eliminated the need for liquid sludge storage tanks. These tanks could be repurposed as digesters, fail-safe storage or nutrient rich flow equalization.

Nominations are now being accepted for the 2022 3R3E award. If interested, please email *matts@madsewer.org* for a nomination form. The committee looks forward to your nomination! CS

INTRODUCING CSWEA'S

2022-2023 SECTION OFFICERS

The Central States Water Environment Association is made possible by member volunteers, who take help make the CSWEA mission statement possible. Thank you to all the members taking on roles in the upcoming term.

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Plant Profile – City of Medford, WI Wastewater Treatment Facility

Written by Brian Wilson, News Editor, Central Wisconsin News, Eric Lynne, PE, Donohue & Associates, Inc., and Brooke Klingbeil, Laboratory Director, Medford Wastewater Treatment Facility

Occupying a footprint of about four acres along the Black River in the heart of the city's industrial area, the City of Medford, WI Wastewater Treatment Facility is small but mighty.

Medford is an employment hub for the region, which causes the permanent population of about 4,800 to double during the workday. A major food processor in town further boosts the waste strength due to the production of frozen pizzas. In addition, the plant serves as a major treatment area for the septic haulers from around the surrounding region.

The facility is rated to treat up to 1.45 million gallons of waste per day. Due to successful infiltration and inflow reductions, average flows are about 600,000 gallons per day.

The current postage-stamp-sized site has been revised a few times in the past 80+ years, making excavation ever more interesting than greenfield construction. The original plant, built in 1938 was sophisticated for the era with primary clarifiers, activated sludge, and anaerobic digestion. However, as the sewers started to fail, I&I became a peak flow problem and required changes. The facility was rebuilt in 1983 and in 1991. Since 1991, upgrades focused on ways to improve efficiencies of reduce staff needs. There has been a continual focus to be proactive in addressing regulatory changes putting the plant years ahead of peer communities in such things as biological, low-level phosphorus removal, and ultraviolet disinfection.

Because of its compact size and lack of opportunity to expand, plant operators and engineers have had to be creative in making the space they do have work for their needs both now and into the future.

Left to right: Joe Harris, City Coordinator; Alex Zenner, Wastewater Superintendent; Brooke Klingbeil, Laboratory Director; and Mike Schaaf, Operator.

Subsequent growth in residential, commercial, and industrial areas around the facility have also impacted plant operations over the years.

The plant is staffed by three full-time employees. Alex Zenner is the plant superintendent, Brooke Klingbeil is laboratory director, and Mike Schaaf is the newest utility employee. Like many utilities, employee retention is a concern but the utility has had success recruiting from their public works department for new operators. By working in cooperation with the city's DPW staff, the wastewater treatment facility can keep its staffing levels low. The DPW takes care of routine maintenance of the collection system while the plant staff maintain three lift stations throughout the city.

Advancements in construction equipment and practices has enabled the city to eliminate the need for a lift station, especially when a deeper interceptor sewer could be installed. Aside from the longer asset life with no operational or maintenance cost, a deep sewer also provides more capacity and connections for development. Medford has constructed miles of sewer interceptors and eliminated two large lift stations with these interceptors freeing up time and expense for other projects.

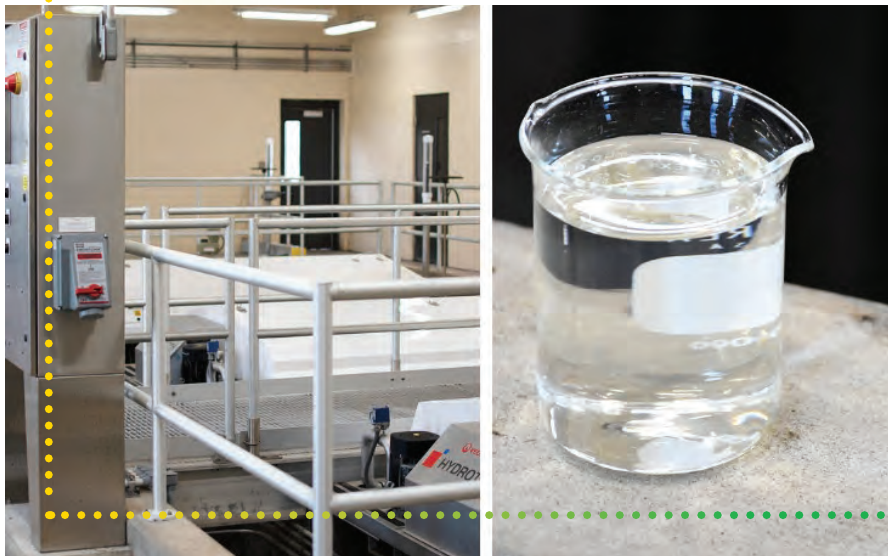
The city also has a jetter truck which is used by DPW staff to do routine cleaning of the collection system. Under the jetter program, one-half of the collection system is cleaned out every other year. Zenner said they are fortunate to be able to keep to this schedule because it prevents minor issues from becoming major headaches. He noted that many smaller utilities do not have access to jetter trucks and that larger communities may not be able to get their entire systems cleaned on a regular basis.

In 2019, Medford was able to achieve an ultra-low level phosphorus designation. The plant selected the Kruger Hydrotech Disc filters from Veolia and worked with engineering firm Donohue and Associates to become the first in the CSWEA region, and among only a few facilities in the county, to use the technology this way. They were able to take out existing tertiary sand filters and retrofitting the new 10-micron filters into the existing building. The elevation of the new system was meticulously positioned to flow through the rapid mix, coagulation, flocculation, and filters and onward to disinfection without the need for the existing tertiary pumps. Zenner noted the sand filters had required additional labor on the part of the staff to keep operational and one of their ongoing goals was to ensure the plant can be managed with a small staff.

Zenner also noted that while someone is always available to respond if there is a situation, they average less than 20 hours a year of call-in time. The plant staff is able to achieve this by staying up with preventative and maintenance work. This is done almost entirely by the facility staff or with the help of the city DPW staff. The plant rarely needs to hire outside subcontractors. Zenner said they are fortunate to have such a good working relationship with the other city departments, this allows them the ability to tackle projects like aeration diffuser replacements without needing to hire additional staff.

In addition to the normal wastewater, the facility takes in about two million gallons of trucked in waste per month (the equivalent of 20-30 trucks per weekday). Included in this is leachate, trucked in from a local paper mill, as well as other concentrated waste. To accommodate these loads, the plant refurbished high strength receiving tanks. The waste is delivered to the tanks and then slowly introduced to the plant. Klingbeil stated that this helps balance the diurnal flows and allows the plant to operate at higher efficiency by maintaining a consistent loading. Zenner estimated 50% of the chemical oxygen demand for the plant is from trucked in waste. The high-carbon loading of the trucked-in waste encourages the deep anaerobic conditions necessary for the biological phosphorus removal processes. Zenner explained that the "bugs" that make the system work well like the high strength waste and that they actively look for loads which are relatively high in volatile acids. The plant regularly receives loads from Price, Marathon, and Lincoln counties in addition to loads from Taylor County. In many cases, Medford is the closest plant that is able and willing to take these higher strength loads. This is a win for haulers by not having to travel large distances, while also being a win for city rate payers and other utility customers by gaining additional revenue to keep rates low and meeting good phosphorus removal. Typical secondary effluent prior to filtration is 0.25 mg/L TP from biological removal only, with the new filter system knocking it down below 0.075 mg/L TP.

The main disadvantage of a large-hauled waste receiving system is keeping up with biosolids handling. The plant recently completed upgrades to its solids handling. As with the other projects, the team creatively repurposed unused space to thicken waste activated sludge in a



Results of the Kruger Hydrotech Disc filters from Veolia.

The Huber S-Disc thickener from Energetics, which provides 4% TS to the aerobic/anoxic digester.

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Huber S-Disc thickener. This device has been working very well and provides 4% TS to the aerobic/anoxic digester. After digestion, solids are dewatered on a belt filter press, stored, and land-applied.

With its location on the Black River, water quality of effluent is of primary importance to support recreation and aquatic life. Effluent from the plant during low flow times accounts for 72% of the downriver flow of the Black River south of Medford. Through long-term studies of water quality of the upstream river water and the effluent, staff note that water discharged into the river is significantly cleaner than the water in the river itself.

One of the things that sets Medford apart from other facilities is the hands-on involvement staff has in working with outside engineering firms in planning and implementing facility upgrades. This level of hands-on interest has helped the facility develop processes that help improve workflow and efficiency and reduces engineering fees. The routine construction observation during recent projects was performed by the city.

In addition to being proactive in water treatment processes, Medford has also been aggressive in upholding its laboratory staff, testing processes, and methods. Having a highly skilled lab in-house is priceless to provide instant feedback on any process adjustments. The Medford facility operates as a certified commercial laboratory and municipal laboratory able to test water samples for private companies such as well-drillers and contractors as well as providing testing services for five other municipal wastewater treatment plants in addition to their own daily wastewater sampling needs. Klingbeil said they recently took over the Taylor County Health Department's drinking water testing program. This has been a major benefit for area residents who are able to drop water samples off to the plant to be tested rather than sending them to labs outside the area where there may be delays in getting the results back or having the tests done without exceeding the required hold times. The nearest lab to Medford is over an hour drive away. Klingbeil noted this saves the city money by being able to do its testing internally as well as bringing in outside revenue from the other municipalities and private contractors. As the utility is not for profit, the testing services provide a valuable community service to the region.

Brooke Klingbeil working in City of Medford WTF's lab.

Klingbeil stated that with the city having the equipment and certifications in place for their own testing, expanding to offering it to others made sense since doing the actual testing does not take a significant amount of additional time.

With a small staff and a facility that operates 365 days a year, cross-training is essential to its continued smooth operation. "Everybody is capable of doing everyone's job," Klingbeil said, noting that everyone is cross-trained in doing all the lab work or checking on the processes. Zenner stated there are a lot of treatment facilities smaller than Medford that have much larger staff, but through their integrated leadership and cooperation that are able to keep things running smoothly. He explained that each team member normally serves a core area of operations, but they all work together to achieve their goals. Zenner took over as superintendent in winter of 2022 and has already found a few ways to streamline the mundane tasks without disrupting a well-run facility.

"We have handled [leadership] changes and kept working together," Zenner said. One thing that observers note is the relatively young age of all the facility staff, all of whom are under 40 years old. Zenner noted that compared to the stereotypical image of plant operators "there are a bunch of kids operating this plant." Despite being young, the staff hold training and certifications in high regard and encourage other young operators to step into new opportunities when able.

"It is a really rewarding career," Klingbeil said. "At the end of the day you can say you did something good for the community and for the good of the environment." CS

Emerging Technologies: Water Meters, AMI, Fiber Optics and 5G

By Dave Zelenok, Senior Municipal Services Engineer at HR Green
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> Many utility managers are now viewing these new telecommunications networks as either incredible – or missed – opportunities.

Few new technologies have gotten the attention that 5G is earning – for better or worse, it's well understood the applications of 5G – in other words, the "things it will do" will be in many ways revolutionary – our cell phones will soon become incredibly powerful micro workstations as billions of connected devices will soon be offering unprecedented capabilities.

A "Nice Problem to Have?"

With the arrival of the first wireless 5G services, we're now officially on the highway to adoption. Offering a significant step-up from today's 4G networks, 5G can deliver "gigabit" speeds – often more than 100 times faster than today's 4G networks, and with reductions in latency (or "lag") to near real-time. Many professionals estimate more than 100 5G transmitters will be needed per square mile, *so even a small or mid-sized city can expect literally thousands of new 5G transmitters.*

Merging and Emerging Technologies

What's not well understood is virtually all the thousands of 5G transmitters in your town will require a fiber optic connection, which may be shared with your water/wastewater system if you're strategic in your approach.

City of Centennial Illustration

At the same time, with the passage of the *Infrastructure Investment and Jobs Act* (IIJA), the nation is now investing heavily in getting fiber optic cables to everyone (roughly $1 billion per state), often installing them only inches from water meters using a decades-old RF system providing only minimal data which may be anything but real-time necessary to better manage flows in both the water and wastewater systems. Many utility managers are now viewing these new telecommunications networks as either incredible – or missed – opportunities.

By understanding some of the basics of these merging and emerging

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technologies, you'll be able to "lean into" this tsunami coming soon to your community and not only save millions in costs, but partner with the other public agencies and the private sector to create a truly "future-proofed" telecommunications network.

Many water professionals are saying that combining the power of fiber to the premise (FTTP) – your water/wastewater system will be able to go well beyond AMR and AMI in terms of its capabilities. Even more surprisingly, a fiber optic-based water metering and management system may not only cost less, but can also generate millions in new revenues for your agency.

Today's Technology

Currently, there are three main ways to read water meters:

- A meter reader that directly checks each meter
- Automated Meter Reading (AMR) in which, most often, a meter reader can check the usage by driving by and receiving a faint RF signal from a battery powered device
- Advance Metering Infrastructure (AMI) in which low-data usage is transmitted to a central location (and sometimes utilizing two-way communications)

Exciting New Applications

AMI meter technology currently offers some important capabilities which can have significant impacts in communities that choose to deploy them. Additionally, as the functionality develops even further, the impacts have the possibility of solving important problems that we face today.

AMR, AMI, or Now Fiber

At the most basic level, AMI water metering can offer noticeable improvement opportunities for the utility (which can be passed on the customers). These include:

- *Cost savings* – Meter reading becomes less expensive; they can also reduce truck rolls and windshield time as they communicate specific issues and locations.
- *Labor* – In a very tight labor market, AMI meters require far less direct labor.
- *More accurate reading* – As water meters age, they become less accurate at expected rates. Changing the meters provides a more accurate reading of water usage.
- Some meters offer *two-way communication*, which also reduces costs of truck rolls.

Photo demonstrates how public agencies should be dropping low-cost conduits into their water line jobs. (Photo: Dave Zelenok)

Through portals, AMI meters can also offer greatly enhanced, secure information sharing between the utility and customers. Customers can see usage patterns and the impacts of the water related decisions they make.

This visibility and communication can also be one of the greatest and potentially most important functions of AMI meters (particularly in certain areas): Water conservation. With the ability for customers and the utility to have regular data (usually daily readings), if there is a leak, it can be detected and dealt with quickly. In areas that have water shortages, the impacts of this can be hard

> "In thinking through the data transmission path, it is important to think through your community's specific needs and opportunities.

to measure. When the customer and the utility can work together to conserve water, the opportunity is available for some of the most significant improvements in water resource protection.

There are several ways to transmit usage data from the customer to the utility. The most typical communication channels are:

- Radio Frequency (RF) networks
- Cellular network transmission
- Fiber optic cables

Meter manufacturers often sell their own proprietary RF systems, so it is important for a utility to explore the options to determine what communication network is best for your community. These systems require setting up an independent RF network that requires an up-front cost and monthly payments. Typically, the network provider performs an analysis to see if there are any other networks that would be disrupted by this new RF network. This is a critical step that the provider needs to do and pay for. If not, current RF systems and the new meter data transmission network could negatively impact each other.

Cellular requires some up-front equipment and set up costs, then has monthly charges.

Fiber should be an important consideration in the analysis your utility does in determining the best network to transmit data. Fiber can be utilized in a couple of ways. If a community already has its own fiber network, collectors can be added throughout the community and the AMI meters can send their data to those collectors to go into the fiber for the rest of the way to the utility office. Collectors are a common network asset, with several vendors able to provide options that fit your network.

If you do not have community-owned fiber, an AMI project could help pay for a new fiber network. A communication system will have to be put in place (RF, cellular, or fiber). Fiber will likely be more expensive than the other two options, but if the AMI project is one part of paying for the fiber and it could have other uses (which could also help pay for it), the community might be able to deploy an asset that could provide many current and future opportunities.

There are some meter companies who have started to provide a way to have fiber go all the way to the meter. This probably only makes sense if there are grants for the meter project or if there are other uses for the fiber that the customer is willing to pay for. Examples of those services could be retail telecommunications services, security, video, etc. Also, if fiber to the meter is being considered, it is important to ensure that there is a fiber extension to every premise.

In thinking through the data transmission path, it is important to think through your community's specific needs and opportunities. Is the best network another independent RF network? Is the best option to commit to recurring costs for using an RF system or a cellular system? Or could an AMI project help make the business and use case for fiber for it and other opportunities?

Some communities have residents with concerns about the safety of AMI systems. Two safety concerns often cited are increased radio waves and increased risks of fires occurring at the meter.

The FCC has established thresholds of emissions that have been shown to be save over multiple decades. If an RF system is being considered, it is important to have documentation that the AMI system will not exceed those limits (either independently or cumulatively with other networks). Fiber alleviates many of those concerns with either having the signal put directly into fiber (fiber to the meter) or at a collector.

There have been meter fires in a small number of AMI meter installations. Our research has shown that the vast majority of the small number of fires have been traced to the meter installation itself. What investigations have most often shown is the fires were in deployments with a lot of meters in which the installers were subcontractors (typically paid by the numbers of meters installed). Because of that formula, installers were incentivized to changeout meters as quickly as they could. If a utility can use their own installers and/or have a good inspection process, the risk is lowered dramatically.

Simple Collars

To spread the costs of meter changeouts over a longer period of time, some water utilities have utilized collars on the water meters. These can dramatically reduce the up-front cost of developing an AMI system through having the collar function as the communications system. In this type of deployment, meters can be brought onto the network at a dramatically reduced cost. Then, the utility can changeout meters as they have time and money.

Fiber as the Sensor Itself

Another new technology is using fiber optic cables *not* for their incredible telecommunications capabilities but by using the fiber *as the sensor itself*. In the last few years, hardware has been developed to measure miniscule variations in the length of the fiber strands.

What's exciting about this technology for a water or wastewater agency is by burying a fiber optic cable over a water or wastewater pipe, and attaching a

(Photo: Colorado Department of Transportation)

Photo demonstrates how public agencies should be dropping low-cost conduits into their water line jobs. (Photo: Dave Zelenok)

(Photo: Colorado Department of Transportation)

> A feasibility study can be a useful tool for a utility to explore their options, costs, risks, and likely revenue generation.

"box" at the end, should the pipe break (or simply shift), these tiny movements are detectable 24-7 and a crew can be dispatched precisely to the location of the break or shift before any damage occurs. Many petroleum pipelines are now using this technology and water/wastewater agencies are considering their benefits and costs as well.

Bottom line: be sure you drop a fiber cable into our next trench over a water/wastewater pipe so you'll be able to apply this technology in the future. The cost per linear foot for a fiber optic cable is only about $1/LF, so a mile of fiber over a water line can not only be inexpensive, but is the leasable to those 5G and fiber companies as a new revenue source for your agency!

Planning for the Future

As easy and simple as it may sound, there are some technical nuances which should be addressed in advance. For example, how many strands are laid out into, for example, a cul-de-sac, and the system design or "architecture" can mean the difference between a system which is valuable for only reading meters, but could also be priceless in "getting grandma her streaming videos" over the same fiber optic cables.

A feasibility study can be a useful tool for a utility to explore their options, costs, risks, and likely revenue generation. Most studies are done a matter of weeks and can easily tell the utility what options are available for your circumstances and what opportunities, costs, and risks the different options can provide.

The Way Ahead: Do Nothing or Lean into It?

There is a definite risk to taking a "let us see how it plays out" approach from a city or water agency perspective. A well-coordinated response can help you address some of the key challenges mentioned above. By creating an integrated fiber optic plan, ideally with other city agencies – and fiber optic cables to every major public facility, you can enable your broader community goals – like economic development, remote working and enhanced wireless and wireline telecommunications to every citizen.

Now, with the roughly $1 billion per state headed your way, most states are setting up broadband offices to coordinate the flow of money to providers and usually "extra credit" is given to smaller, rural agencies who have plan and would like to embrace partnering with ither agencies and the private sector. In very rough terms, many cities will see hundreds or perhaps a thousand dollars per home flowing to bring fiber to the premise. We can't over-emphasize how strongly we encourage you to be at the table as funding plans are being developed.

At a minimum, we encourage water and wastewater agencies to develop a vision for fiber in your area, strive to recover your costs, and when possible, partner with the intent of generating new revenues.

The real key to proactive management of your water/wastewater infrastructure is to encourage communities to have these plans in place before the "tsunami waves" of billions in federal fiber dollars either hits – or bypasses your community. CS

Special thanks** to **Tim Korby** for his assistance in bringing this **article together.

The INNOVATION & TECHNOLOGY COMMITTEE regularly solicits articles for publication in the *Central States Water* magazine regarding new water technologies and innovation in the water field and will help promote innovation within the industry. Look for these articles in future issues.

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GLOBAL WATER STEWARDSHIP

GWS Update

AUGUST TRIP PLANNING/2023 COMPETITION IN BIJAGUA

By Liz Heise

Rio Celeste river near Bijagua, Costa Rica.

I am writing this article while waiting to board my flight to Costa Rica for the 2022 August Service Trip. This year, GWS is traveling with a group of 10 professionals from the US and our four Marquette Student Design Competition Winners to Costa Rica for a packed week of site visits, data collection, biogarden construction, and a bit of fun. While in Costa Rica, we will meet up with our in-country partners Laura Torres (AyA) and Alejandro Quiros (AyA). We will also be joined by student competition participants from both TEC and UCR universities in Costa Rica. The plan is for the group to arrive in San Jose on Sunday, August 21. Then, we will travel from San Jose to Bijagua that evening.

Bijagua is in the center of the country, surrounded by rainforest. On Monday, the first stop will be the Rio Celeste Waterfall early in the morning to get everyone in the Pura Vida spirit. After that, we will meet with the ASADA Bijagua to discuss their water system and vision for their future wastewater system. Bijagua will be the site for the 2023 GWS Student Design Competition. The Student Design Competition problem statement for the 2023 competition will also be created with the help of the local ASADA. The GWS Community Design committee has already received some of the data from the ASADA and has been working on a draft problem statement. This statement will be reviewed with the ASADA while we are visiting. On Tuesday, we will visit the potential sites for the wastewater plant, as well as the schools that are options for the biogarden construction for next August. All this information will be used to finalize the problem statement, compose a survey request of the community, and design the biogarden.

On Wednesday morning, the group will leave Bijagua and drive about five hours to the Nicoya Peninsula to Montezuma. Montezuma is the

community for the 2022 Student Design Competition. For this part of the trip, GWS and AyA members will be joined by students from both TEC and UCR. On Wednesday evening we will have meetings with the community to discuss the wastewater project. On Thursday, the group will be split into two groups. The student groups will have the chance to present their designs to the ASADA and AyA members. They will then hand over their final reports, which the ASADA will review and use to move forward in the next step of implementation of a centralized wastewater system.

Following this, the GWS volunteers will head over to Escuela Montezuma and get started on the biogarden construction. They will also work with the students at the school to teach them about the biogarden and why it is important. It will be the school's responsibility to maintain the biogarden, so it is important for the teachers and students to be involved in the construction. Once the university groups are finished with their presentations, they will join the GWS volunteers to work on the biogarden construction. This will be a long, hot day, but one of the best days of the trip.

Finally, on Friday, the group will return to the school to button up the biogarden and perform a final training with the school. We will make our way over to the beach for a beach clean-up. We have partnered with local organizations and volunteers to walk the beach and collect as much debris as possible in one day. Every little bit counts. That day, a small group of GWS volunteers will head out early to go to La Fortuna. La Fortuna was the student design community in 2020. After completion of the GWS design, the community proceeded with a preliminary design based on the data collected during the student design competition. This preliminary design was completed with help from GiZ, a German NGO that is working on environmental improvement in Costa Rica. A meeting is being held on Friday to present the preliminary design. GWS has been asked to present with AyA on our contribution to the project, and our continued committed to partnership with AyA. This is a VERY exciting meeting for us, as this is the first project that we have initiated that is continuing toward implementation. GWS was the catalyst for this project, and part of our partnership and commitment to each community we work with is to continue working with them throughout design, construction, and start-up. We are very excited to see the next steps for where this project will go.

On Saturday, the group will return to San Jose to ensure that we can make our early morning flights home the next day. It seems like each year, we manage to pack more and more into the schedule, and we expect it to be a very productive but also very enjoyable, week of Pura Vida. By the time this is published, we will have returned from the trip. If you want to learn how it went or get involved in any of the GWS initiatives, please reach out to Liz Heise and Joe Lapastora at *chair@globalwaterstewardship.org*. Pura Vida! CS

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MIDWEST STUDENT DESIGN WINNER –

GWS CATEGORY (OVERALL): MARQUETTE UNIVERSITY

On April 11, four students from Marquette University competed in the GWS category of the CSWEA Design competition in Madison, WI. The students were tasked with designing a wastewater treatment facility (WWTF) and centralized collection system for the growing coastal community of Montezuma, Costa Rica. The team consisted of Faviola Perez-Mercado, Shayden Harvey, Alondra Gonzalez, and Alondra Rodriguez, all in their final year studying Civil Engineering with concentrations varying between civil, environmental, and transportation. The students were advised and mentored by professionals from MSA Professional Services, Inc: Matt Castillo, PE, a Project Manager, and MacKenzie Phillips, EIT, an Environmental Engineer.

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WASTEWATER TREATMENT & CENTRALIZED COLLECTION SYSTEM DESIGN

BY SHAYDEN HARVEY, FAVIOLA PEREZ-MERCADO, ALONDRA RODRIGUEZ, AND ALONDRA GONZALEZ

PROBLEM STATEMENT

The growing, tourist-heavy, coastal community of Montezuma, Costa Rica is seeking a long-term solution to treat their wastewater. In this city, and in many rural areas across Costa Rica, sewage is treated via private septic tanks. These tanks are rarely kept up to standards and inevitably discharge greywater and sludge into the community rather than transporting it to the correct disposal site. Tourism and other features in Montezuma are a key contributor to the local economy, thus it is essential to mitigate this sanitary issue to keep the community intact. There were approximately 1,015 residents and 100,000 tourists visiting Montezuma in the year 2021; after this year population and tourism are expected to increase by 1.3% and 2% each year, respectively. Tourism season is between November to June; therefore, it is estimated that ¾ of the total annual tourists visit between this timeframe. In the community, there are currently 317 residential and commercial facilities that will require connection to the system. Two hotels currently have on-site treatment and will not require connection to the facility. Per the high tourism rates, and the general well-being of the residents, it is crucial the design limit potential odors to the community.

During the off season, Montezuma experiences heavy rainfall with an average of 2500 centimeters (cm) of rainfall annually. Due to the varying tourist season and heavy rainfalls the facility must take into consideration and have the ability to handle these varying loads. Because this is a developing community, there are few individuals trained in wastewater management and cost is of utmost importance to the residents. Therefore, the design must be simplistic, with consideration taken to ease of operation and maintenance (O&M) and energy consumption, and is expected to be relatively self-operational.

The Marquette Team (L-R): Shayden Harvey, Faviola Perez-Mercado, Alondra Rodriguez, and Alondra Gonzalez.

Figure 1: Montezuma, Costa Rica community extents.

OBJECTIVE

The goals of this project were to determine three potential locations for the facility and three potential treatment options, further develop and design one treatment option on one site, and design a centralized collection system. The project was designed to begin operations in 2041 and have a 20-year design life; therefore, the system must be able to accommodate the anticipated flowrates based on population projections 40 years from the beginning of preliminary design.

DESIGN CONSTRAINTS

The largest constraints of this design revolve around low O&M and energy consumption and the location of the facility. As previously stated, there are few wastewater-trained individuals in the community thus the facility is expected to be relatively self-operational. Additionally, the community experiences frequent power outages and has a relatively low-capacity energy grid; therefore, the collection system and treatment design must have low energy consumption for the current energy grid to handle the new addition. Another constraint requires a monthly user cost of no more than 5,000 colones due to the socioeconomic status of the community. Meeting the constraints of low O&M and low energy consumption directly impacts the ability to meet the cost constraint.

The location of the facility is another important constraint of this project. The beaches in this community are home to sea turtle nesting habitats and the surrounding areas are commonly trekked hiking locations for locals and tourists. Accordingly, the community places high importance on the preservation of its flora and fauna. As a result, the facility location must be carefully selected to have minimal impact on the environment as possible. Geotechnical reports show impenetrable oceanic rock approximately two meters below grade which greatly inhibits design of the collection system and where the system can outfall waste to.

POPULATION PROJECTIONS AND DESIGN FLOWRATES

The population projections for residents and tourists were calculated at the start and close of the facility. The inflow to the system was then calculated using the projections, the given average water usage, and the given estimate that 80% of water usage returns to the system as wastewater. As previously stated, two hotels in the community have private, onsite, wastewater treatment methods; however, specifics regarding the two hotels (such as their capacities and average occupancy) were identified. Because of this, the hotel treatment facilities were neglected to avoid unnecessary assumptions such as hotel capacities or if the hotel is always operating at full capacity, and to keep the design as conservative as possible in the event the hotels' facilities went offline and needed to transport their wastewater to this newly designed facility. It was also expected the facility will accumulate additional inflow from precipitation infiltration due to the high average precipitation rate. A ratio was provided that for every kilometer of PVC pipe, there would be an additional 0.25 L/second added into the system. With precipitation infiltration added to the system, it was estimated that the peak inflows to the system are 2,724 cubic meters per day (m^3/day) at the open of the facility (2041) and 5,880 m^3/day at the close of the facility (2061). Moving forward in design the inflow of 5,880 m^3/day was used for all calculations to ensure that the facility can manage peak inflows. It is assumed the facility will be able to manage the fluctuations in tourism and rainfall because each of these occurs during opposite seasons. Tourism is at its peak during drier months and at its lowest during rainier months.

SITE LOCATIONS

The community encompasses 0.11 km^2, a satellite image from Google Earth provided by CSWEA is referenced in Figure 1. The community is bordered by the ocean on one side and dense forested area surrounding the other three sides. The Montezuma River cuts through the community on the southern extents. On the northern extent of the community there is a small plot of land set to be donated to the community by the government for use on any wastewater treatment projects. With the inability to visit the community, the project team operated under the assumption that any inhabited land (via photographic images from Google Earth and Google Maps) is a location that could potentially be acquired for use of this facility. Qualities looked for in potential facility sites were open areas of land, proximity to a water source, distance to community, and level of forestation.

Per requirement by the CSWEA, one of the potential locations analyzed was the government site (Site 1), which is set to be donated. Site 2 is located on the southern extent of the community near the Montezuma River and Site 3 is located on the far northern extent of

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Figure 2: Satellite image of potential site locations for WWTF

the community (see Figure 2). Site 1 and 3 both require discharge to the beach, which is unfavorable due to the presence of sea turtle nesting grounds in this location. Additionally, when collection system design began, it was found that community elevations presented challenges conveying the wastewater to the north end of the community (to Sites 1 and 3) rather than to the southern end (Site 2). Site 2 is also situated near already established roads, so only extensions of existing road would need to be designed rather than the entire roads. Through a decision matrix, Site 2 was determined to be the recommended site for the purpose of this design.

TREATMENT OPTIONS

After research, three effective wastewater treatment methods were considered: activated sludge, stabilization ponds, and wetlands. A pros and cons decision matrix was rendered to evaluate these three alternatives and choose the best option for this project. Although activated sludge is the most efficient treatment method, it is the most costly, requires the most energy, and has the highest operation and maintenance (O&M) out of the three options. Wetlands would be the most aesthetically pleasing in terms of odor control and has a low O&M; however, it is the least efficient treatment method at treating all the parameters. Stabilization ponds require a large amount of land use and has the potential for displeasing aesthetics, odor; however, the odor can be mitigated through adequate the sizing of the ponds in the design process. Additionally, the stabilization ponds are efficient with most parameters, and has the lowest O&M of the three options. Through evaluating the pros and cons it was determined to pursue stabilization ponds on the final design. Another contributing factor to this recommendation is a source titled *Domestic Wastewater Treatment in Developing Countries* that recommended stabilization ponds as the best wastewater treatment method in these developing communities, such as Montezuma (Duncan).

> THE **GOALS** OF THIS **PROJECT** WERE TO DETERMINE **THREE POTENTIAL** LOCATIONS FOR THE FACILITY AND **THREE POTENTIAL TREATMENT OPTIONS**, FURTHER DEVELOP AND **DESIGN** ONE T**REATMENT OPTION** ON ONE SITE, AND **DESIGN A CENTRALIZED COLLECTION SYSTEM.**

Through additional research it was found that total suspended solids, TSS, mitigation measures needed to be added to the design in order to control TSS coming into and exiting from the facility.

COLLECTION SYSTEM DESIGN

A skeletal outline of the system was rendered in Autodesk Civil 3D with satellite map data turned on and using the survey data provided by CSWEA. Not enough survey data points were provided to render an existing surface; however, survey points were positioned along the roadway. Pipes were set along the existing roadway of the community, as this is where the survey points were, and using prior engineering experience, this is where sanitary lines are typically laid. It is assumed the sanitary lines would be laid on the opposite side of the roadway, as the potable water system to ensure no intrusion occurs. The skeletal outline was then exported to Autodesk Storm and Sanitary Analysis for in-depth design of pipe-sizing, inverts, and conveyance type. A gravity system was used in every instance where possible; where a gravity system wasn't feasible, pumps had to be used. The location of these pumps required a lift station. Utilization of pumps and lift stations were only used where absolutely needed as they increased electricity costs to the community and aren't reliable due to the frequent power outages the community faces.

As previously discussed, this contributed to the site location determination as more pumps would be required conveying to the north side of the community rather than conveying to the south. The final design of the collection system consists of 15 manholes, 14 pipes, and two pumps/lift stations. All pipes are PVC and are 20 cm (8 in) in diameter. The total length of pipe equates to 1.85 km of pipe. See Figure 3 for an overall schematic of the system. All aspects of the system were designed considering the following Wisconsin codes: NR 110.13(3)(d) "The minimum diameter of manholes shall be 1.1 m (42 in);" NR 110.13(3)(b)1 "the manholes could not be spaced more than 120 meters apart;" NR 110.13(2)(a)1 "Conventional gravity sewer may not be less than 20 centimeters (8 inches) in diameter;" and NR 110.13(2)(c) "Slopes less than 0.4% may be permitted for 20 centimeter (8 inch) sewers. In such cases, however, the slope may not be less than 0.3%. The department will approve these sewers only when the owner demonstrates that physical circumstances warrant the lesser slope."

Figure 3: Schematic of collection system in Autodesk Storm and Sanitary Analysis}}}

PUMP DESIGN

The capacity of the pumps were sized using Figure 5.22 in *The Fundamentals of Hydraulic Engineering 4th Edition* textbook and elevations from the collection system (Houghtalen, Akan, and Hwang). The first pump station connects the lateral on the northern extent to the northern portion of the mainline, and pumps from an elevation of 10 to 28 m. This pump was estimated to have a peak inflow of 1,175 m^3/day – this inflow is estimated by assumed area flowing to this pump is approximately 1/5 of the community, thus 1/5 of the total peak inflow of 5,880 m^3/day is 1,175 m^3/day. Therefore, this pump must be rated to produce up to five horsepower. The second pump connects the collection system to the wastewater treatment facility pumping from elevation 9 m to approximately 30 m. This pump will receive the same peak flows the facility will receive which is 5,880 m^3/day. The pump/lift station will be located at the base of the facility on land bought for this project. Pump two is expected to produce up to twelve horsepower. A secondary pump will be located at each lift station in the event the primary pump malfunctions or goes offline due to the frequent power outages experienced by the community.

WWTF DESIGN

The final design of the WWTF consists of a screening and grit removal tank, four ponds: an anaerobic pond, a facultative pond, and two maturation ponds in series, and a TSS removal tank before it will be discharged into the Montezuma River. The first step of the treatment will take place in a concrete tank which will have a SKUNKTM trap, installed by Upstreaming Technologies. This device is a screen that traps any large objects and garbage that should be flow into the ponds. It is determined that weekly cleaning is needed in order to maintain the tank as well as weekly sludge removal from the bottom of the tank. The tank will incorporate a two-foot manhole in order for the maintenance crew to access it. Following the screening tank, the wastewater will then flow between the four ponds through simple inlet-outlet structures positioned just below the water level to prevent scour. Riprap will also be installed at the base of these structures to prevent erosion. Per Wisconsin Code NR110.255(1)(a)7. the ponds must be separated by 12 ft (3.7 m) to allow for access vehicles. The wastewater will first flow to the anaerobic pond. This pond will have no dissolved oxygen or algae and the main purpose is to treat BOD

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removal and allow the sludge in the water to settle. The depth of this pond is two meters with surface dimensions of 100 m by 37 m. It is designed to have a retention time of one day. The water will then move to a facultative pond, which has a retention time of four days.

The facultative pond is also designed for BOD removal, which is activated by algal photosynthesis that produces the necessary oxygen for consumption by microorganisms naturally present in the system. The algal photosynthesis and consumed oxygen will cause the pH in the pond to rise to approximately 9.4 m, which will rapidly kill most fecal bacteria. The depth of this facultative pond is 1.8 meters and the surface dimensions are 237 m by 64 m. After approximately four days in the facultative pond the water will flow into two maturation ponds in series. These ponds are aerobic due to their depths and are designed for pathogen removal and additional BOD removal.

Both ponds will have identical surface dimensions of 215 m by 54 m and depths of 1.5 m. Each pond will have a residence time of three days before the water moves to the final step of the treatment process. The final step of the treatment process is a SAFL BaffleTM concrete tank. The purpose of this tank is to retain any additional sediment prior to final discharge. All steps in the treatment process are strategically placed to flow downhill so no pumps are required, and the entire system can flow via gravity until it is released into the nearby Montezuma River. An overall schematic of the site layout is depicted in Figure 4.

Calculating the correct size of the ponds was vital to ensuring that the chemical and biological processes function correctly to meet effluent parameters and to reduce excessive odors and overflow. Table 1 shows the effluent values achieved through the design of the water stabilization ponds. As is shown in the table, all effluent conditions were either met or exceeded. Equations from Domestic Wastewater Treatment in Developing Countries and Design Manual for Waste Stabilization Ponds in India were used to size the ponds (Duncan).

CONSTRUCTION

To prevent tourist discomfort during construction, the start date for construction of the WWTF would take place around the end of tourist season in May, 2039 and be completed by November, 2040 right around the start of tourism season. The project

Figure 4: Satellite image of overall site layout with ponds, Tanks, proposed access roads, parking lot, and out-building.

Parameter	Influent Conditions	Required Effluent Conditions	WWTF Effluent Conditions
BOD_5 (mg/L)	280	50	16.4
COD (mg/L)	550	150	32.8
TSS (mg/L)	220	50	44
Nitrogen (mg/L)	50	40	15.0
Phosphorous (mg/L)	20	10	10
Fecal Coliform (MPN/100mL)	$5*10^7$	1000	415

Table 1: Parameters for influent, required effluent, and design effluent conditions for the WWTF

Task Name	Duration	Start	Finish	Predecessors
Project Duration	**396 days**	**Mon 5/16/39**	**Mon 11/19/40**	
Preconstruction Meeting	1 day	Mon 5/16/39	Mon 5/16/39	
Mobilization	15 days	Wed 9/21/39	Tue 10/11/39	9
Start-up/Commisioning/Testing	55 days	Fri 8/31/40	Thu 11/15/49	19
Substantially Complete	1 day	Fri 11/16/40	Fri 11/16/40	4
Final Completion Date	1 day	Mon 11/19/40	Mon 11/19/40	5
Site Work	**338 days**	**Tue 5/17/39**	**Thu 8/30/40**	
Safety Fencing	30 days	Tue 5/17/39	Mon 6/27/39	2
Site Clearing	61 days	Tue 6/28/39	Tue 9/20/39	8
Erosion Control	15 days	Wed 9/21/39	Tue 10/11/39	9
Excavation	60 days	Wed 10/12/39	Tue 1/3/40	10
Dewatering Ponds	60 days	Fri 10/7/39	Thu 12/29/39	
Embankments	30 days	Thu 12/29/39	Wed 2/8/40	
Site Grading	20 days	Thu 2/9/40	Wed 3/7/40	13
Landscaping for Ponds	30 days	Thu 3/8/40	Wed 4/18/40	14
Directional Drilling	50 days	Thu 10/27/39	Wed 1/4/40	
Aggregate for Asphalt Road	4 days	Wed 4/11/40	Mon 4/16/40	
Asphalt Paving Access Road	4 days	Tue 4/17/40	Fri 4/20/40	17
Permanent Fencing	35 days	Fri 7/13/40	Thu 8/30/40	29
Conveyance Systems	**74 days**	**Thu 12/15/39**	**Tue 3/27/40**	
Aggregate for Conveyance	45 days	Thu 12/15/39	Wed 2/15/40	
Conveyance System Pipes	45 days	Thu 1/5/40	Wed 3/7/40	16
Dewatering	48 days	Fri 1/20/40	Tue 3/27/40	
Lift Stations	**141 days**	**Fri 12/30/39**	**Fri 7/13/40**	
Manholes	48 days	Fri 12/30/39	Tue 3/6/40	11
Lift Station Sheds	25 days	Wed 3/7/40	Tue 4/10/40	25
Electrical Work for Pumps	14 days	Wed 4/11/40	Mon 4/30/40	26
Install Precast Lift Station Wells	14 days	Tue 5/1/40	Fri 5/18/40	27
Lift Station Pump Installations	40 days	Mon 5/21/40	Fri 7/13/40	28
Stablization Ponds	**40 days**	**Wed 1/4/40**	**Tue 2/28/40**	
Pond Liner	30 days	Wed 1/4/40	Tue 2/14/40	11
Skunk Trap	7 days	Thu 2/9/40	Fri 2/17/40	13
SAFL Baffle	7 days	Mon 2/20/40	Tue 2/28/40	32

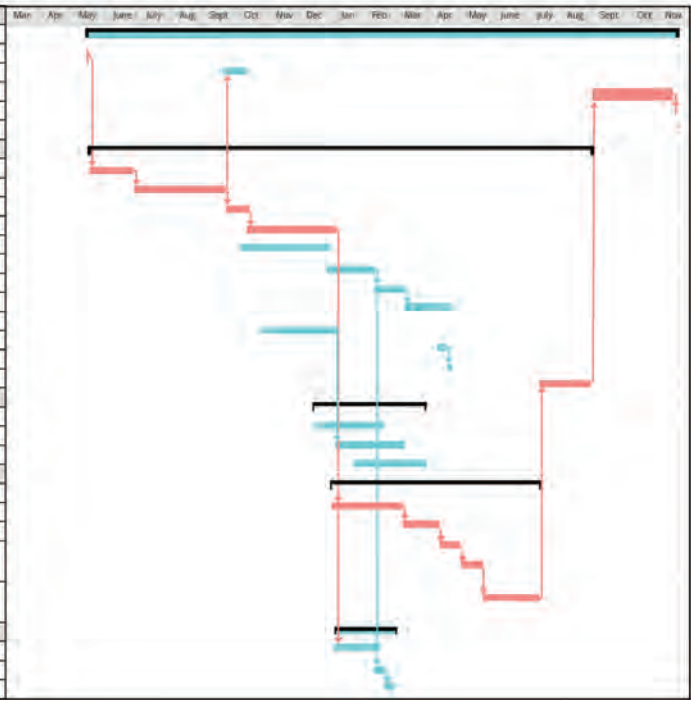

Figure 5: Construction Schedule

duration would take approximately 395 days, with additional working days already included in the task duration for adverse weather. According to Costa Rica Labor Law, the average working hours are 48 hours, Monday through Saturday. Additionally, weekends are not included in the task duration but if delays take place due to the rainy season, then Saturdays would also be considered working days.

Before any construction can be started, safety standards need to be put in place. A temporary safety fence would be placed around the construction site along with warning signs before any site clearing. Although a temporary fence would be set in place, site surveying along with setting the fence post and barbed wire would also be considered for the permanent fencing at the end of the project. It was decided that after site clearing, mobilization can start along with site work. Since Montezuma is a heavily forested area, excavation along with site clearing take a considerate amount of time. CSWEA provided an excavation rate of 60 yd^3/hour, and it was assumed that three excavators would be onsite. As seen in the construction schedule, its critical path is also heavily dependent on the site work along with the lift stations and maintaining on schedule from the start of the project will be necessary. Additionally, there will be constant dewatering due to the rainy seasons, which are also

Item	Unit	Cost (USD)	Quantity	Total (USD)
Labor Rate	Hours	$3.40	5600	$19,056.18
Lab Test	Per Quarter	$260.03	4	$1,040.13
Electrical Rates/day	Per kWh	$0.24		$60.35
Septic Tank Removal	Per Tank	$2407.70	317	$763,242.38
			First-Year Total	**$78,3399.04**

Table 2: First-year operations and maintenance costs.

Item	Units	Unit Cost (USD)	Quantity	Total (USD)
Sanitary Sewer Main	meter	22.47	1240	$27,865.17
Sanitary Sewer Service	meter	9.63	610	$5,874.80
House Connection	home	160.51	317	$50,882.83
Manholes	each	1524.88	15	$22,873.19
Directional Drilling	meter	255.22	1850	$472,150.88
Pumps	each	6500	2	$13,000.00
Pressurized Pipes	per 10 ft of pipe	8.03	98	$789.93
Screening + TSS Removal				$6,880.00
Land Acquirement	acre	6500	13	$81250.00
Asphalt Road	ton	72.23	1460	$105,484.04
Concrete	cubic yard	120.39	9	$1083.47
Excavation & Site Work	excavator hour	64.21	40	$2,568.22
Dewatering	day	46.31	60	$324.16
Stone	cubic meter	28.07	10	$280.74
Liner Material	square meter	2.41	38541	$92,795.35
Erosion Control	square meter	0.21	1500	$313.00
Fencing	linear foot	4.01	1500	$6,019.26
			Total Cost of Construction:	**$99,6031.98**

Table 3: Construction unit and total costs.

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incorporated in the schedule. After the ponds are excavated, the construction of the conveyance system along with the lift stations can start taking place since there will be a clear path of where piping connections can be made. The whole collection system will be constructed via directional drilling as to have minimal interruption to the community during the construction process. Tasks such as embankments and pond liners overlap since pond liners will need to be set while embankments are being formed so the liner can be held in place.

Once the system is all set up, the WWTF will run for a couple of weeks to make sure everything is functioning properly. Along with that, effluent conditions will be tested to make sure that standards are being met while everything else such as O&M and commissioning are being completed. The completion date is set to be before 2041, to allow for any extra time needed in case there is a delay in the critical tasks. The overall construction schedule is depicted in Figure 5.

OPERATIONS AND MAINTENANCE

The stabilization ponds are very easy to maintain and with little energy. The required electricity will be only at the two pumps that are on all year in order to keep the wastewater flowing through the conveyance. The effluent water from the treatment facility meets all standards in order for it to be safe to discharge into waterways. The water can also be repurposed to local farming if this Is of any interest to the local community. Only manpower is needed to clean the screening tank and sludge tank as well as desludging the anaerobic and facultative ponds once a year. The sludge from the ponds will need to be removed via a raft with a sludge pump. The sludge that is collected from the maintenance cleanings will disposed of through the same facility that is currently being used. However, to improve the sustainability for this process, the sludge can be transformed into fertilizer. The overall treatment system must be monitored quarterly for effluent standards and require two employees on site year-round, five days a week, for eight hours a day per Wisconsin standards

COST ANALYSIS

The project team was provided by the CSWEA with cost estimates of the necessary items for the construction of the WWTF, conveyance system, and lift stations. It is assumed that the unit costs for these line items are the expected cost in Costa Rica in the years 2039 and 2040 when construction will take place. This section will refer to Table 3 which displays the line items, units, cost per unit, and totals. The total capital cost for all three components is $996,031.98. The first-year operations and maintenance for the wastewater treatment facility is $783,399.04 according to Table 2. This cost is extremely high due to the septic tank removal that is required in order to install conveyance system. The cost for the septic tank removal for the entire community would be $763,399.04 which would then not be accounted for the following years of the facility being opened. From this first year, a monthly user cost of 1,660.55 colones is calculated while the maximum is 5,000 colones. The cost for the community is well below the maximum and is favorable for the community.

REFERENCES

Costa Rica Labor Law. Law Firm Melendez & Bonilla, 2015. *www.costaricalaborlawyer.com/workhourandovertime.htm*.

Density of Sewage, Sludge. Aqua-Calc,. *www.aqua-calc.com/page/density-table/substance/sewage-coma-and-blank-sludge*.

Houghtalen, RJ, Akan, AO, and Hwang, N. (2010). Fundamentals of Hydraulic Engineering Systems (4th ed.) Pearson.

Mara, D. (2004). *Domestic Wastewater Treatment in Developing Countries*. Earthscan, Sterling, Virginia

US Environmental Protection Agency. *Wastewater Technology Fact Sheet Facultative Lagoons. www3.epa.gov/npdes/pubs/faclagon.pdf.*

Upstreaming Technologies. *SAFL Baffle Design Guide*. 19 November 2020. *www.upstreamtechnologies.us/docs/SAFL-Baffle-Design-Guide.pdf*

Wisconsin State Legislature. *R110.24.* Lagoons. *Department of Natural Resources. www.docs.legis.wisconsin.gov/code/admin_code/nr/100/110/24/4/f/7?down=1*

Wisconsin State Legislature. *SPS 384.25.* PWOTS Holding Components or Treatment Components. Department of Safety and Professional Services. *www.docs.legis.wisconsin.gov/code/admin_code/sps/safety_and_buildings_and_environment/380_387/384/25/6.* CS

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Montville Facility Embraces Septage

Two things are perhaps certain about septage; it is highly variable – and by its very nature (spewing odorous compounds and elements that can cause disease), it is "objectionable."

Or is it?

Endless amounts of grease, grit, hair, and debris – not surprisingly very unpleasant in appearance and odor (hydrogen sulfide, mercaptans, and other organic sulfur compounds), viruses, bacteria, and parasites – mean it's not exactly charm-personified. But according to the Environmental Protection Agency (EPA), septic tanks are used for more than 20% of homes in the US. Some 6,500 businesses employ over 30,000 people in an industry worth $5 billion. Is that still "objectionable?"

The word 'debris' sems to have a large degree of interpretation in the septage industry. For many it simply means small, scattered pieces of trash or loose, natural material. For one septage-receiving wastewater treatment facility in Connecticut just recently, 'debris' meant discovering a large fencepost doing its level best to wreck and block the screen and components of its septage acceptance plant.

Raising more than an eyebrow at the uninvited fencepost were the team at Montville's Water Pollution Control Wastewater Treatment Facility (WPCWWTF), whose key responsibility is to protect the ecosystem of the Thames River.

"Can't say that we've seen a fencepost here before," said Scott Farrington, Operator II at Montville WPCWWTF, "but in the large volumes of septage we receive (approximately 150,000 gallons per week), we see plenty of 'interesting' objects – and on top of everything else we take in, our treatment equipment is constantly put to the test."

In addition to all the typical challenges of today's wastewater treatment facility – including the curse of those supposedly 'flushable' wet wipes, which are arguably more 'objectionable' than septage(!), Montville's two-

million-gallon capacity also includes industrial-strength wastewater from a major packaging factory via a dedicated 2.4-mile pipeline.

According to the Rockland, Massachusetts-based Maher Corporation (established 1970), the leading source of water and wastewater treatment products in New England, very few manufacturers have had long-term success in selling in their equipment to meet those highly variable challenges presented by septage.

'Seriously rugged, for the long-term'

"To be frank, much as we'll always be there for our customers, we don't want to be called back to problems every week (!), so selling, reliable long-lasting equipment for such a tough application as septage is a must," said Fred Croy from Maher Corporation, the company that has provided a wide range of blowers, pumps, pipes, and other equipment for Montville.

He added: "We are very conscious that the septage going into the town's facility has contained no shortage of crushed granite. This shouldn't get sucked up by the hoses when hauliers make their collections, but inevitably, it happens, making it all-the-more reason for us to recommend equipment that is seriously rugged, for the long-term."

Almost 18 years ago, Montville (population 20,000) invested (via Maher Corporation) in a Septage Acceptance Plant (SAP) from Lakeside Equipment Corporation. As the SAP name suggests, it is designed to remove debris and inorganic solids from septage tanks (also for grease traps, sludge, leachate, and industrial waste).

Not surprisingly, septage can have a significant impact on plant operations or performance if receiving facilities are not properly designed and managed. It increases plant operation and maintenance costs, with the handling and disposal cost of residuals (sludge, grit, screenings) often showing the largest increase. No such problems at Montville, however, where generating revenue from highly variable septage is a skilled, delicate, balancing act, that Scott Farrington and the team led by Superintendent Derek Albertson have become masters at. Keeping the Montville process stable continues to set an excellent example, with state permits met very comfortably for parameters such as total suspended solids (TSS) and biological oxygen demand (BOD5), as well as an extremely effective removal of phosphorus. Up to 75% of the treated effluent is recycled for use in a nearby paperboard manufacturer. The remaining clean effluent is discharged to Horton Cove (Thames River).

Processes aside, septage addition to a wastewater treatment plant can also increase administrative tasks associated with record-keeping and billing of haulers and the need to streamline the septage receiving operation, but 10 years ago during a refurbishment Montville (again via Maher Corporation) introduced a Lakeside Raptor Acceptance Control System (RACS), which was integrated with the SAP to allow authorized haulers to unload septage. This security access station, which includes a data management and accounting system, and provides administration capabilities to track and invoice customers.

'The system is incredibly robust'

"We offer very reasonable rates for septage hauliers, so have taken many more on board in recent years, which is fine so long as we continue to manage this proportionally," Montville's Derek Albertson, commented. "We have a constant flow of trucks, but some hauliers think they can bring almost anything in. This is where Lakeside's RACS (control system) is so effective and flexible. There is a learning curve and skill set required as operators, but the system is incredibly robust; it doesn't need very much maintenance at all. The drivers have to sign in with a code, which provides traceability and frees us up. It also gives hauliers the flexibility to call when they need to, without any unnecessary waiting."

The upgrade at Montville a decade ago also included the addition of a Lakeside Raptor Fine Screen in the influent channel. Unlike the existing, conventional bar screen, this new influent screen benefits from a similar type of cylindrical screenings basket as the SAP, with angled installation and screen bars of varied heights to increase removal efficiency and minimize head-loss. The screen's rotating rake teeth fully penetrate the cylindrical screen bars. This prevents plugging and blinding from grease and small debris – thus importantly allowing faster unloading times to generate more revenue. Captured screenings are compacted, dewatered, and washed free of most organic materials to approximately 40% solids. Volume is reduced by 50% and weight by 67%, reducing the cost of disposal.

"The Lakeside Screen (with quarter-inch apertures) has been extremely effective in removing rags and plastics from our process," added Derek Albertson.

'One technology for two applications'

"We never know quite what we're going to get with septage. Over the years, the Lakeside kit has really taken some hits. People have tried their best to kill this equipment, including with that recent fencepost, but despite being our first line of defence at the intake, the Lakeside SAP and its Raptor Screen have been very dependable, with just routine maintenance required," Derek said. "To say that the unit is robust is a big understatement. The equipment also doesn't take up too much space and is very easy to get at and work on. Overall, the SAP and its screen certainly shields our secondary equipment."

He continued: "The consistency in configuration, which effectively has given us one technology for two applications, has also been a big benefit to us. What we have now is so much better for the facility, with an automatic screen compared to the old bar rack that had to be cleaned manually. The Lakeside SAP proved so solid that it gave us every confidence to invest in one of their screens." CS

2022 CSWEA 2023 Buyers' Guide

Welcome to the annual Central States Water Buyers' Guide. When making purchasing decisions about products and services in the wastewater industry throughout the Central States region, please support the companies whose advertising makes Central States Water possible.

OUR CSWEA BUYERS' GUIDE CONSISTS OF TWO SECTIONS:

1. A categorical listing of products and services, including a list of companies which provide them.
2. An alphabetical listing of the companies appearing in the first section. This listing includes name, contact info, website, and more.

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Unison Solutions, Inc.
WaterSurplus

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96TH ANNUAL MEETING

Inspiring Action

MAY 22-24, 2023

This is a request for abstracts of papers to be considered for presentation at the 96th Annual Meeting of the Central States Water Environment Association, Inc., which will be held May 22-24, 2023 at Saint Paul RiverCenter, St. Paul, MN. To receive consideration, abstracts must be submitted online by **November 1, 2022.**

Submittals that will be given highest credit will include:

- Submittals with a focus on day-to-day treatment, by people with hands-on experience at facilities.
- Topics in new emerging concerns.
- Case studies presented from an operations perspective, young professionals, leadership skills, and middle management.
- Research topics and case studies related to new and innovative technologies.
- Submittals focusing on local projects or issues

Two hours of ethics training will be on the program as well for engineers that require this to maintain their license.

Papers on other subjects which you feel may be of interest to members are, of course, always welcome. All written papers submitted are eligible for the Radebaugh Award. Submittals may also include the following topics:

IMPLEMENTATION to OPERATIONS and MAINTENANCE:

- Time management or new process startup
- Efficiency (pumps, motors, lights, UV disinfection, HVAC, etc.)
- Technology/SCADA/Web-Based maintenance programs/GIS applications
- Troubleshooting – Traditional facilities (activated sludge, BNR), new processes (nutrient recovery) etc.
- Case studies of facilities
- Startup case studies
- Optimization

ADVANCEMENTS in LIQUIDS TREATMENT

- Enhanced primary treatment
- Secondary treatment advancements and intensification
- Nutrient removal
- Tertiary treatment
- Alternative disinfectants

WATERSHEDS and STORMWATER MANAGEMENT:

- Implementing new MS4 permit requirements
- Adopt a storm drain, pond etc. program case studies
- Anti-degradation and other regulatory issues
- Using grants and other funding sources to implement stormwater management as part of CIP projects
- Habitat or groundwater protection or restoration
- Non-point pollution source modeling
- Water quality trading and watershed management issues and initiatives, including adaptive management
- Green infrastructure solutions and best management practices
- Total maximum daily loads involving point and non-point sources
- Education and outreach

UTILITY MANAGEMENT:

- Communications
- Employee retention and development
- Succession planning
- Project funding
- Utility rate development and reviews
- The *Infrastructure Investment and Jobs Act*
- Significant industrial users and industrial pretreatment
- Emergency response/repairs

RESOURCE RECOVERY and ENERGY OPTIMIZATION

- Resource recovery – sourcing raw materials, nutrient recovery
- High strength waste and pretreatment programs
- Digester gas production and treatment technologies
- Lessons learnt from co-digestion
- Heat recovery case studies
- Alternative energy use
- Energy management and savings to utility management

COLLECTION SYSTEMS:

- Collection system rehabilitation technologies/methods
- Collection system rehabilitation case studies
- Educating the public on how to protect the system
- CMOM program development and implementation
- Collection system design and operation
- Green infrastructure case studies
- Infiltration/inflow management case studies
- Stormwater and combined sewer overflow management
- Storm water conveyance

RESEARCH and DESIGN:

- New/innovative technology research and application
- Nutrient removal technologies
- Sustainability in design and construction
- Toxics/emerging pollutants monitoring and control

- Treatment design
- Wastewater reuse, applications, technology and regulatory issues
- Wastewater surveillance

RESIDUALS, SOLIDS and BIOSOLIDS:

- Pollutants of Emerging Concern – PFAS
- Environmental management systems – National Biosolids Partnership
- Public education and awareness, case studies
- Fertilizer production – Class A case studies
- Standard or advanced treatment and stabilization

GENERAL:

- Laboratory issues and bench-scale studies
- Pretreatment, industrial treatment, and pollution prevention
- Pollutants of emerging concern – PFAS, chlorides etc.
- Public education to address emerging concerns – chlorides, water softener use, leachate, flushable wipes, etc.
- Regulatory issues
- Security issues
- Engineering ethics training
- Collection system/treatment plant odor control

SOFT SKILLS/LEADERSHIP:

- Leadership skills
- Managing the ill or injured employee
- Generational integration
- Anti-harassment and discrimination training for managers
- Getting the most out of employee performance evaluations
- Union negotiations
- Handling the grievance and arbitration process
- Managing in a union environment
- Labor Law
- Management rights for Managers
- Social media and the workplace

To receive consideration, please submit your abstract via the online submittal process that can be accessed from the CSWEA website. To submit your abstract, please go to *www.cswea.org* and then to the 96th Annual Meeting Abstract Submittal area. Once you start the abstract submittal process using the online form, you cannot come back to it later. It is important to have all materials ready to submit before submitting. As a reminder, an abstract is meant to **summarize** the presentation. The summary should include objectives, scope, and general procedures, as the limited length of the abstract permits. An indication of results or conclusions is required. Submittal of presentations (slides) or a generic product brochure in place of an abstract, will not be considered. Thank you.

Colin Fitzgerald
Chair, Technical Program Committee
Jacobs
651-247-5817
colin.fitzgerald@jacobs.com

HMRSQT B SHN MR ENQ SGD RT AL HRRHN M N E @ARSQ@B SR @MC BQHSDQH@ ENQ O@ODQ RDKDB SHN M

The Central States Water Environment Association (CSWEA) Technical Program Committee has the responsibility for technical sessions at the Annual Meeting. Participants in any sector of the water environment field are cordially invited to submit abstracts for evaluation. The basis for selection will be the excellence of the abstracts as judged by the committee.

The abstract should be submitted online at *www.cswea.org*. Through the online submittal process, you will enter the title and abstract, import your credentials, choose your topic area, and select your presentation format. Abstracts must contain a summary of no more than 500 words, with the full abstract (including all tables, figures, and references) not to exceed six (6) pages. Abstracts that are not in the required format will not be given equal credit.

The presenting author(s) of each abstract will be notified in January of the acceptance or rejection of the abstract.

The following should serve as a guide in the preparation of the abstract and will serve as a guide for the reviewers of the abstracts.

1. Originality and status of subject:

The paper should deal with new concepts or with new and novel applications of established concepts (operations and maintenance, collection systems, stormwater, utility management and leadership, research and development etc.). It also may describe substantial improvements of existing theories or present significant data in support or extension of those theories. Studies of incomplete or ill-defined problem situations should be avoided. Previously published data should be introduced only in summary form and for comparative or supportive purpose.

2. Content:

Abstracts can either be technical or non-technical in nature. In either case, it should be evident that the abstract clearly describes the entire content of the paper to be presented. The abstract content should be objective and non-biased towards specific products, approaches, or otherwise. Each abstract should contain clear purpose and impact for conference attendees.

Guidelines for technical abstracts: Where possible, abstracts should include data, figures, and methodology needed to draw proposed conclusions. The abstract should include whether the scale at which the project was completed (desktop, benchtop, pilot study, full-scale implementation, etc.) and at what stage of completion the project is in.

Guidelines for non-technical abstracts: Abstracts do not require data to justify proposed conclusions, but abstract content should present well thought out content, allowing for clear interpretation of the author's intent.

3. Water environment significance:

The paper should relate clearly and significantly to the water environment field. The author should make evident the relationships of the work to a practical problem area or situation in water quality and wastewater control.

4. Adequacy of abstract preparation:

The committee has noted that historically the adequacy of an abstract is often indicative of the quality of the final presentation. As a result, authors are urged to prepare their abstracts with care, following the instructions noted above. As a reminder, an abstract is meant to **summarize** the presentation. The summary should include objectives, scope, and general procedures, as the limited length of the abstract permits. An indication of results or conclusions is required. Submittal of presentations (slides) or a generic product brochure in place of an abstract will not be considered.

Abstracts are due by November 1, 2022
https://bit.ly/3qBkvWu

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96TH ANNUAL MEETING

Inspiring Action

MAY 22-24, 2023

Our role in protecting the public and the environment are often undervalued and invisible to the very public that we protect. Whether in design, academia, equipment manufacture and supply, management, or operations, we all know individuals who have successfully addressed unique and challenging issues. Our awards program offers the opportunity to receive recognition for these deserving professionals.

Each year, one of CSWEA's top priorities is to recognize the efforts of our members and water and wastewater professionals at all levels. We also seek to provide top-quality nominees to the Water Environment Federation (WEF) each year for national level recognition. Don't miss this opportunity to provide recognition to deserving water quality professionals.

It's time to brag a little about the accomplishments of our members. To nominate someone is straightforward: fill out the nomination form at *https://bit.ly/39KRsaE* with as much information as possible and submit it to CSWEA.

In order for you or a deserving colleague to be recognized, please submit a nomination to the Central States Water Environment Association and/or WEF for one of the many awards available.

Below is a listing of the award opportunities. Please carefully review the various awards available and nominate one of our many deserving members. Please note that award submittals need to be made by December 1, 2022 for awards presented by CSWEA to allow distribution to the respective CSWEA or WEF Awards Committees for consideration. CSWEA will present the winners with their awards at the 96th Annual Meeting Awards Banquet.

2023 CSWEA & WEF Award nominations now being accepted

Nominations are now being accepted for the following CSWEA and WEF awards and should you be aware of a worthy nominee we ask that you please nominate them. Note that it is OK to self-nominate. Each award is briefly described below and complete information may be found on *www.cswea.org*.

WEF AWARDS presented at CSWEA Awards Banquet

Arthur Sidney Bedell Award:

The Bedell is a federation award that is given annually to one recipient in recognition of outstanding achievement in the sewerage and wastewater treatment works field, as related particularly to the problems and activities of the member association. The Bedell Award Subcommittee selects the nominations, and the award is presented at the CSWEA Annual Meeting.

William D. Hatfield Award:

The Hatfield Award is a federation award given annually to one recipient in recognition of outstanding operation of a wastewater treatment plant. Each State Section may nominate one person per year and submit it to the Hatfield subcommittee. This award is presented at the CSWEA Annual Meeting.

George W. Burke Safety Award:

The Burke Award is made annually by WEF to a municipal or industrial wastewater facility for promoting an active and effective safety program. Each State Section Committee can nominate a facility and the nominations are then sent to the general awards committee. The winner will be presented with the Burke Safety Award at the CSWEA Annual Meeting.

Lab Analyst Excellence Award:

This is a WEF award that is given annually to one recipient in recognition of outstanding achievement in the area of water quality analysis. Each State Section Laboratory Committee may nominate one person. This award is presented at the CSWEA Annual Meeting.

CSWEA AWARDS presented at CSWEA Awards Banquet

Radebaugh Award:

The Radebaugh Award is given to the author of a deserving paper presented at the previous year's annual meeting. The Radebaugh Award Subcommittee selects the winner and the award is presented at the CSWEA Annual Meeting.

Operations Award:

The Operations Award is a Central States award that is given annually to one recipient in each state. The purpose of this award is to recognize operators of wastewater treatment facilities who are performing their duties in an outstanding manner and are demonstrating distinguished professionalism. The States Sections'

Operations Committee makes the selection and each State Section winner will receive the award at the CSWEA Annual Meeting.

Industrial Water Quality Achievement Award:
The award is given at the CSWEA Annual Meeting to one industry per year in recognition of outstanding contributions in waste minimization, pollution prevention, environmental compliance, and environmental stewardship. Each State Section Industrial Committee may nominate one facility per year.

Bill Boyle Educator of the Year Award:
This award is given to one teacher per year in recognition of outstanding education assistance to students of any level in the study of the water environment. The award is presented at the CSWEA Annual Meeting.

Collection System Award:
This award is given annually to one member from each section in recognition of outstanding contributions in advancing collection system knowledge and direct or indirect improvement in water quality. Each State Section Collection System Committee can nominate one individual per year with the selected candidate receiving the award at the CSWEA Annual Meeting. The recipient of the Association Award shall be nominated annually for the WEF Collection System Award.

Ryan Giefer Outstanding Young Professional Award:
This award is given annually to one member from each state section in recognition of the contributions of young water environment professionals to CSWEA and to the wastewater collection and treatment industry. This award is presented at the CSWEA Annual Meeting.

Academic Excellence Award:
The Academic Excellence Award is given to one student per year from each eligible institution in the state section hosting the Annual Conference. (Minnesota is hosting the next conference.) An eligible institution shall be a college or university having a recognized graduate or under- graduate program in engineering as accredited by the Accreditation Board for Engineering and Technology. The candidate shall be selected by the department chair or other designated person at the eligible institution. Selected candidates are able to attend the CSWEA Annual Meeting with expenses paid, to receive their award and scholarship.

Central State Section Safety Award:
The CSWEA Facility Safety Award is made annually by CSWEA to a municipal or industrial wastewater facility within each State Section in recognition of active and effective safety programs from Burke Award submissions and the awards are presented at the CSWEA Annual Meeting.

Water Stewardship Award: This award recognizes and honors the contributions of an individual for outstanding humanitarian service to improving and sustaining our global water environment.

Sustainability & Green Infrastructure Award:
Established in 2017, this award recognizes and honors the contributions of an individual for projects at their organization that support sustainability in the water environment or make use of green infrastructure in the design of water reclamation facilities or in water treatment processes.

Water Technology Innovator Award:
Established in 2019, this award recognizes individuals or groups that look beyond the traditional water and wastewater operational models and incorporate or advance sustainable principles and cutting-edge practices, with a focus on resource recovery, efficiency, and sustainability.

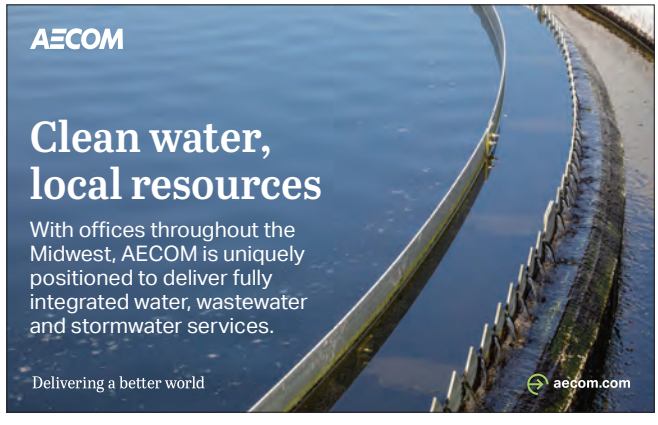
WEF AWARDS presented at WEFTEC

Charles Alvin Emerson Medal:
This award is presented by WEF to an individual whose contributions to the wastewater collection and treatment industry most deserve recognition. Areas of involvement include membership growth, water resource protection, improved techniques of wastewater treatment and fundamental research.

Harry E. Schlenz Medal:
This award is presented by WEF and recognizes the achievements of an individual outside of the water environment profession, who takes up the banner of environmental public education. This person is typically in the journalism, film or video production field.

Richard S. Englebrecht International Activities Service Award:
This award is presented by WEF and recognizes sustained and significant contributions to the furtherance and improvement of the activities of the Water Environment Federation in the international field. CS

Submit your nomination at *https://bit.ly/39KRsa*



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Badger Meter, Inc.	35	800-876-3837	www.badgermeter.com
Baxter & Woodman, Inc.	46	815-459-1260	www.baxterwoodman.com
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