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District Manager  
American Fork, Utah

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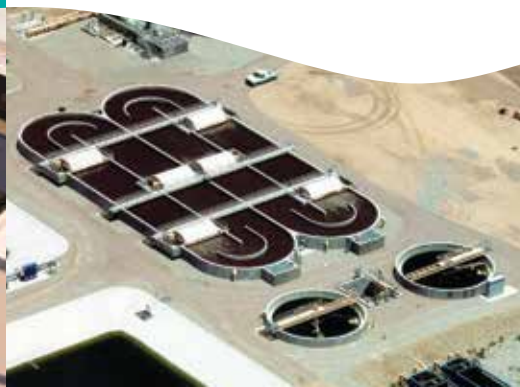
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let's be clear

## Have You Observed Quiet Quitting?

THE TERM EMERGED DURING AND AFTER THE COVID PANDEMIC. EXPERTS SAY IT'S NOT AN INDICTMENT OF EMPLOYEES. IT'S A SYMPTOM OF THINGS OUT OF BALANCE IN THE WORKPLACE.

By Ted J. Rulseh, Editor



The term “quiet quitting” has become a buzzword lately. I think an older synonym was “retiring in place.” Anyway, it’s what happens when someone loses all motivation for a job but stays around doing only the minimum, essentially just enough not to get fired.

Have you ever felt symptoms of quiet quitting in yourself? Or have you seen them in people on your team? They aren’t hard to identify. You lose interest in work, never stay late, stop speaking up or showing up for meetings, avoid volunteering for projects and so on.

### UNHAPPY DAYS

I experienced some of these myself for a few miserable months in the middle of my career. I had made a job change that I was excited about, but the new workplace turned out to be a bad fit. I found the management style deflating, and I didn’t mesh well with my co-workers.

Worst of all, there was too little to do. I was used to fast-paced, strenuous days. Now I was in the doldrums. To me the hardest, most exhausting days on the job are when there isn’t enough work to fill the hours. After a couple of months I woke up each day in dread of reporting to the office.

Looking back I don’t blame the company or the people I worked with. I had simply joined a business where the culture and the nature of the work didn’t suit my personality. I found myself just slogging through, sitting in my office, unhappy with my responsibilities, less than enthused about the clients I was supposed to be serving.

I was, I guess, in danger of quietly quitting. Instead, I asked my previous employer if I could go back. They enthusiastically said yes (I had been careful on leaving to help them transition to my successor and to avoid burning bridges). With the invitation to return in hand, I walked into my manager’s office and politely resigned.

### CAUSES AND SOLUTIONS

I’ve done some reading on this subject, mainly about reasons for quiet quitting (or less severe forms of lost motivation) and how to combat it, in oneself and others. Quiet quitting, some experts say, is not the same as burnout, which is essentially a case of fatigue after being loaded with too much work for too long a time.

Observers say quiet quitting is not a failing to be blamed on team members; it is a symptom of things gone awry in the workplace. The term came into vogue in the onset of the COVID pandemic, during which people in various roles were overstressed and began to revisit the importance of balancing work and family life. People tend to disengage if they feel they:

- Are not being fairly compensated or recognized for their effort
- Get insufficient support from their managers
- Have too little autonomy to make decisions
- Have poor communication with leadership
- Feel stuck in a role with little or no chance to move up

(Continued on page 8)



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## BRINGING THE ENERGY BACK

*(Continued from page 6)*

One effective way to get team members re-engaged is to involve them in a new and challenging endeavor. In one of my previous jobs with a small company, a time came when morale went into a ditch. That just happened to coincide with a time when business was slow. The owners took the position that nothing boosts morale quite like a flush of new business. Sure enough, they were right. The acquisition of a couple of new clients put things right back on track.

One effective way to get team members re-engaged is to involve them in a new and challenging endeavor.









So, if you see team members' enthusiasm flagging (or even if not), a positive step might be to instigate one or more special projects. It might not be something as involved as a complete plant upgrade. Maybe it's an initiative to solve once and for all a nagging process problem. Or to take equipment maintenance to a new level. Or to write a new set of standard operating procedures. Or to investigate new technologies for some aspect of treatment.

That aside, Here are a few approaches that experts suggest to keep team members from slipping into quiet quitting, or to pull them back out of it:

- Avoid the pitfalls of the "hustle culture": Keep expectations of team members reasonable
- Celebrate the accomplishments of individuals, teams and the facility as a whole
- Keep lines of communication open. Address problems promptly and forthrightly
- Respect team members' need for personal and family time
- Offer and promote opportunities for professional development
- Foster coaching relationships between managers and team members

A healthy workplace atmosphere goes a long way to keeping team members happy and enthusiastic about their jobs. **tpo**

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# From the Bottom Up

BRIAN BOSWELL DIDN'T DREAM OF A WASTEWATER CAREER, BUT ONCE HE FOUND IT, HE GRABBED ON TO BECOME AN AWARD-WINNING WASTEWATER SUPERINTENDENT

STORY: **Stormy Shafer and Suzan Chin-Taylor** | PHOTOGRAPHY: **Matt Odom**



Brian Boswell, superintendent of the South Columbus (Georgia) Water Resource Facility, received a 2022 William D. Hatfield Award from the Georgia Association of Water Professionals.

**Y**ou'd never guess today that Brian Boswell more or less stumbled into wastewater management. Now as superintendent of wastewater for Columbus (Georgia) Water Works, he oversees two combined sewer overflow water treatment facilities along with the South Columbus Water Resource Facility. For his 18 years of industry excellence, Boswell received a 2022 William D. Hatfield Award from the Georgia Association of Water Professionals.

## HUMBLE ORIGINS

After 15 years at various jobs in area companies, Boswell realized by the mid-2000s that companies in the area were closing up or moving away. "I knew that I wasn't on a good career path," he recalls. So he signed on with a temporary agency and got placed at the water treatment plant at what was then the Fort Benning Army Base (now Fort Moore).

"I was driving the tank and well routes, testing wells and filling water tanks," he says. "When I wasn't doing that, I was actually operating, making clean drinking water. The position was what we call a process control specialist now."

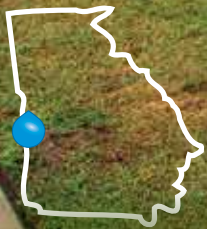
After six months, he transferred to the 90 mgd North Columbus Water Treatment Plant. A year and a half later, in 2007, Boswell went to work full-time at the Uptown Park CSO facility as a process control specialist apprentice.

He found the work pleasantly challenging: "It was a lot more interesting, and a lot harder. It had a retirement plan, great benefits, pretty good pay and it was kind of recession-proof." Deciding he liked the industry enough to stay, he received his first wastewater license in 2008.



Boswell and his crew are prepared for variable flows as the water resource facility sits in a floodplain.

“Columbus Water Works is full of people who want you to succeed.”  
**BRIAN BOSWELL**



## Brian Boswell, South Columbus (Georgia) Water Resource Facility

**POSITION:**  
Superintendent of Wastewater

**DUTIES:**  
Manage two CSO treatment facilities and one wastewater treatment facility

**EXPERIENCE:**  
16 years in the wastewater industry

**CERTIFICATIONS:**  
Class I (highest) wastewater operator

**AWARDS:**  
2022 William D. Hatfield Award, Georgia Association of Water Professionals

**GOALS:**  
Build the plant team, empower team members, help talented people advance



In 2008, Boswell transferred to the 73 mgd South Commons CSO treatment facility. The variety of work appealed to him. “Those jobs are a little bit of everything,” he says. “It’s about environmental compliance, but also a lot of maintenance, a lot of going underground. Real interesting.”

### MOVING ON UP

After two and a half years another process control specialist position opened up at the 42 mgd South Columbus Wastewater Resource Facility. Eleven months later he had his Class II Operator license and five months after that his Class I: “It definitely turned some heads. I was recognized for it.”

Over the next couple years Boswell became an expert and took the newly created position of lead operator. He continued rising through the ranks and took his present role as the only team member who had operated all the water works facilities.

Boswell knows his rapid ascent wasn’t only his doing: “Columbus Water Works is full of people who want you to succeed,” he says. “One person who comes to mind is William Kent, manager of environmental services and GAWP District 4 director. If I was trying to work on or to learn something, he went out of his way to help.

“I got the reputation of someone who is good to work for. Now when we have openings, I get people applying from other departments. That’s a little flattering.”

**BRIAN BOSWELL**



Brian Boswell (right) observes as Mike Davis, process control specialist II, takes a MLSS sample using a Smart Turbo (CEM Corporation). Boswell stays current on technology and practices and serves on the GAWP wastewater committee.

“The same is true of Lynn Campbell, now retired, who was a vice president of Water Resource Operations and Managed Maintenance. Billy Cobb, water works executive vice president, was a mentor when I was running one of our strategic planning teams. Quite a few people were mentors at strategic points.”

### PROGRESSIVE PROCESS

Built in 1964, South Columbus Water Resource Facility is an activated sludge plant that takes influent from a territory that includes a large downtown area with combined sewers. The collection system has 88 lift stations, 1,084 miles of gravity mains, 41 miles of force main. It serves about 250,000 people, including Fort Moore.

Influent enters through four-channel, 4-foot-wide, 5/16-inch bar screens (Headworks), slated for replacement with 6 mm screens in the near future. A pumping station with five 25 mgd-capacity Fairbanks Nijhuis pumps (Pentair) moves influent into vortex grit separators. The water then passes to six primary clarifiers.

The flow continues to six 1.3 million-gallon aeration basins before final clarification chlorine disinfection, dechlorination with sodium bisulfite and discharge to the Chattahoochee River.

### A DAY IN THE LIFE

Boswell’s workday kicks off with an 8 a.m. shift briefing with eight to 12 staff members as the first shift comes on and third shift prepares to leave. They review what has transpired on the previous shift and discuss plans for the new day.

“I have a crazy crew,” Boswell says. “They love to play practical jokes on one another. A lot of times we talk about what we did on the weekend, or a football game. I’ve found that when you have a crew that does that, you get a lot out of them. So I just let them be, or sometimes I participate.”

After the meeting he boots up his computer, reviews emails and then works on special projects, reports or budgeting. His favorite part of the job is problem-solving: “I get energy from it, and I bring other people with me on that little journey. With a plant problem, we’ll figure out what happened and what we need to do about it.” He has a crew of 21:

- Scott Milner, assistant superintendent
- Chris McGruder, lead process control specialist
- Julio Baez, biosolids labor foreman
- Jordan Giordano, CSO lead and operations and maintenance technician, and CSO O&M technicians Phil Layton, Hazen Thompson, Levi Dyer, Demetrius Comer and Sahieem Abney.
- Process control specialists Oscar Gonzalez, Kelvin Thomas, Marc Kubesh, Erika Torres, Lavertis Childres, Chase Cook, Devonte Young, Julia Baez (brother of the aforementioned biosolids foreman) and Danny Jury.
- Chris Pettie, property management technician; and mechanical technicians Melvin Rodgers and Anthony Hull

### FLUCTUATING FLOWS

With the combined sewers, variable flows are a fact of life. The South Columbus facility sits in a floodplain. “Flood risk is actually quite major out here,” Boswell says. “All our buildings have submarine doors. They can be sealed when substantial rain events come through.”

During a flood on Christmas Day 2015, he and his team were on boats inside the plant. Each building has a ladder to access the roof and to get down inside. “So we had all the buildings sealed, going from building to building to do our rounds, pull our samples, the whole nine yards. I would definitely say that’s a challenge.”

Challenges have been many since Boswell became superintendent. “First off, I spent years building up and empowering the team,” he says. “We’ve instituted multiple cross-training programs and helped many people get their licenses. I’ve even helped some very talented people get different jobs if they weren’t enjoying where they were.

“They were working in operations, even working for me. One of them now is running a TV truck. He’s on the crew that televises the underground lines. He’s a great employee; operations just wasn’t for him. So I got the reputation of someone who is good to work for. Now when we have openings, I get people applying from other departments. That’s a little flattering.”

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### STREAMLINED PROCESSES

Boswell believes technical and administrative abilities also put him in line for recognition. *(continued)*





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Solids from the primary and secondary clarifiers are sent to one thermophilic and two mesophilic anaerobic digesters, resulting in a 90-95% pathogen reduction. The digested material is dewatered to 18% solids on two Winkle Press 2-meter belt presses (Alfa Laval).

An innovative Process to Further Reduce Pathogens (or PFRP, as coined by the U.S. EPA) in development will cost-effectively produce a Class A product. The process has been validated in bench-scale studies at the University of North Carolina-Chapel Hill, and in a prototype unit at the Columbus treatment plant. The patent has been donated to the Water Environment Research Foundation.

The project will further enhance the Columbus Water Works' options for biosolids management. Primary and secondary sludges will be combined in a 60-40 mix before gravity belt thickening Enviroquip (Ovivo) to 6.5% solids.

The material will then be sent through a series of heat exchangers to raise the temperature to 131 degrees F. The heated solids then will travel to a 1.3 million-gallon thermophilic digester.

As it passes through, it will overflow the digester into a pumping system to be sent to plug-flow reactors for extended retention time.

These units, also known as tubular reactors, consist of cylindrical pipe with openings on each end for reactants and products to flow through. From there the material will be pumped back into the heat exchanger system for cooling to mesophilic levels, about 98 degrees F. That flow will then be delivered to two 1.3 million-gallon mesophilic digesters for final volatile solids reduction before being sent to storage to await dewatering and land application.

The thermophilic digester and a biogas-fueled cogeneration system were put in place in 2010. The facility has a storage dome able to contain 210,000 cubic feet of biogas, which is used to power two Cummins 1.75 MW generators used for peak shaving.

His facilities use the Claros Water Intelligence System (Hach) for instrument, data and process management. He believes in centralized, digital data, "But you have to build all that. I spent years and built all our operational reports into it. Then I trained the staff on how it works, on the math, so they could really understand what it was doing behind the scenes.

"So the operators are in the field, doing their checks, running their numbers, running their samples. They can plug their results into the database, tell it to calculate and it spits out all this information. I took the time to explain why we do all that so they could actually start tracking plant efficiency.

"It has made a huge impact on things like the amount of chemicals we use, even the power sometimes. One day we were able to dewater sludge at 5 cents per thousand gallons, where a couple of days before that it was 12 cents. When you build all that and show your people how it works, they start using it. It helps them diagnose problems. Efficiency skyrockets."

### STAYING CURRENT

Operating a nearly 60-year-old physical plant has its share of problems. "I've resurrected a good bit of it," Boswell says. "We've invested a lot in the infrastructure, but it is at its peak performance. We average 98% removal across the board. The operators run it to the hilt, but the infrastructure is nearing the end of its useful life."



Boswell checks that the flocculation basins are operating properly (Rotork actuator).

Knowing he'll soon have to replace that infrastructure, Boswell stays current on new technology and practices. He serves on the GAWP wastewater committee and presents at some of its yearly conferences. He also attends some Water Environment Federation events.

He's active with a combined heat and power group that meets quarterly with leaders from around the country. "It's through those activities that you stay up to date," he says "That stuff changes constantly. In 18 years, I've networked with a lot of consultants and other superintendents. Everyone in this industry is always learning."

“I take time out of my day, when I have the time, to fire up a grill and throw on some burgers.”

**BRIAN BOSWELL**

### THE HUMAN SIDE

One thing Boswell has learned is that it helps to have an employer that is open to new ideas. Columbus Water Works has a track record of innovation, but ultimately, it's about the people who operate the plants.

Boswell knows the value of team building and morale maintenance: "I take time out of my day, when I have the time, to fire up a grill and throw on some burgers. These guys are out there working on this equipment, getting it running. When they smell burgers cooking, they know it's going to be a good day." **tpo**

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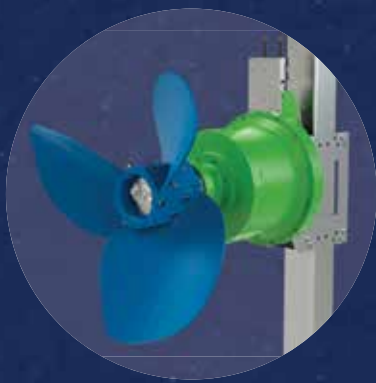
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# ‘Working. Living.’

PHYSICAL LIMITATIONS DIDN'T KEEP ALVIN RUCKER FROM LEADING A TEAM AND OVERSEEING PROJECTS TO PROTECT WATER QUALITY IN HIS CHILDHOOD RIVER

STORY: **Jim Force**

PHOTOGRAPHY: **Kevin Blackburn**

***Editor's note:** Alvin Lynn Rucker passed away unexpectedly on August 26. Rucker was born on Sept. 25, 1960, in Lynchburg, Virginia. He was married to high school sweetheart, Deborah Mason (Debbie) Rucker, for 42 years. She survives him, as does daughter Jessica Lynne Rucker Johnson, along with many relatives. Rucker was a deacon, usher and mentor at Randolph Memorial Baptist Church. His obituary stated, “Alvin was loved by all and never met a stranger. Everyone that knew him, was fair game for his good-natured teasing, pranks and jokes and were often subject to a good belly laugh.” This article was researched and written before Rucker’s passing. TPO is publishing it as a tribute to Rucker’s career and his many years of service to the clean-water professions.*

For nearly all his life, Alvin Rucker has been committed to cleaning up the James River and preserving its quality for future generations.

He recalls swimming and fishing in the river as a boy growing up in Amherst County, Virginia, above the polluted areas downstream from a dam and paper mill.

Now, 50 years later, as he retires as superintendent at the Lynchburg Water Resource Recovery Facility, he has overseen treatment improvements that produce clean effluent flowing into the James. “When I took over, we were basically treating for TSS and BOD,” he recalls. “Now we’re removing ammonia, phosphorus and nitrogen. In addition, the city has improved management of combined sewer overflows.”

Rucker attributes the progress to a doubling of the number of treatment processes at the plant, the addition of stormwater holding basins, and automation that includes high-end Ignition SCADA (Inductive Automation), increased use of Allen-Bradley PLCs (Rockwell Automation), and mobile applications. He should also credit his own perseverance in continuing to work despite the loss of both legs below the knee due to diabetes.



Alvin Rucker, superintendent, and Elizabeth Jensen, shift supervisor, reviewed recent lab numbers at the Lynchburg Water Resource Recovery Facility.

## MULTIPLE UPGRADES

The Lynchburg treatment facility covers 27 acres along the James River and treats 13 mgd on average (peak capacity 80 mgd). It serves Lynchburg along with the counties of Amherst, Bedford, and Campbell, a total population of about 100,000.

Upgraded several times since it was constructed in the 1970s, the plant includes a headworks with Kusters mechanical screens, rakes, and a PISTA grit removal system (Smith & Loveless). Primary clarifiers are followed by several aeration basins with fine-bubble diffusers (Sanitaire, a Xylem brand).

Rucker likes to talk about the process improvements he has seen: “We’ve moved from a complete mix to a step feed process.



“ You could call him any time of day or night and he would always come up with a solution to your problem or situation.”

THOMAS SMITH



## KEEP ON GOING

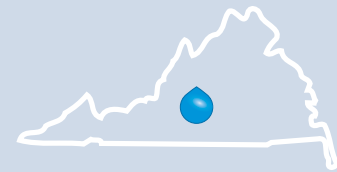
Alvin Rucker personifies the adage, “You can’t keep a good man down.”

Rucker, superintendent of the Lynchburg Water Resource Recovery Facility, is a bilateral amputee. Diabetes took both legs below the knee, and Rucker uses prosthetics to walk and, until his recent retirement, carry out his leadership responsibilities.

“I lost the first leg about 13 years ago,” he says. But with a prosthetic, he was up and around within a month and a half, using a cane when necessary. The disease advanced, and Rucker lost the other leg about a year ago.

“I have some balance issues,” he says. But the cane, his faith, and the support of his wife Debbie enabled him to keep going: “I was encouraged to go on disability, but the city allowed me to keep working and supported me very well.

“You want to keep going, to keep pushing. It’s good to get up every morning and go to work. I couldn’t see myself just staying home and hanging it up. Working. Living. That was my best life.”



### Alvin Rucker, Lynchburg (Virginia) Water Resource Recovery Facility

TITLE:  
**Superintendent (retired)**

EDUCATION:  
**Associate degree, Applied Science in Civil Engineering Technology**

EXPERIENCE:  
**42 years in wastewater treatment**

CERTIFICATION:  
**Virginia Class I Wastewater Operator**

AWARD:  
**2012 William D. Hatfield Award, Virginia WEA**

GOAL:  
**Enjoy life with family and friends**

Rucker (right), shown with Thomas Smith, operations supervisor, took pride in improvements he and his team made at the Lynchburg facility.



plant staff as a trainee. “Originally, I was interested in hospital work, science and math,” he remembers. “But I switched to engineering technology. I applied first at the water plant, but jobs were scarce and I wasn’t hired. So, I applied at the wastewater plant. They were moving from traditional drafting to the CAD system.”

As a trainee, he learned the lab procedures along with operations and maintenance. He was a good enough apprentice to move up to management positions including plant supervisor in 1991. He was named superintendent in 1993. In 2012, the Virginia WEA honored Rucker with its William D. Hatfield Award: “That was a very special moment for me.”

### SOURCES OF PRIDE

After four decades in the clean water field, Rucker has many accom-

plishments to be proud of and a career’s worth of wisdom to share. Completing the city’s CSO project is one of his most significant achievements.

That has enabled us to achieve biological removal of ammonia, nitrogen and phosphorus.”  
Water then passes to secondary clarifiers, is disinfected with chlorine and dechlorinated with sodium bisulfate, and discharges to the James River. The improvements enabled the treatment team to reduce TSS and BOD from nearly 30 mg/L to below 10 mg/L, and often below 5 mg/L.

Polymer is added to biosolids to promote dewatering on Sharples centrifuges (Alfa Laval). The cake is trucked to a regional landfill or to land application sites. The plant used to haul biosolids seven days a week but now is limited to five days. About 30-35% is land-applied. “Our target is to get that amount to 50%,” Rucker says.

“We’ve made a large effort to advise the public on what they should and should not put into the sewer system. They play a part in wastewater collection and treatment.”

ALVIN RUCKER

The plant is staffed 24/7 with 40-45 team members, and some contract workers as needed. Rucker’s direct reports include Steve Dunn, assistant superintendent; Thomas Smith, operations supervisor; Sharon Mills, maintenance supervisor; and Jackie Austin, laboratory manager.

With an advanced SCADA system providing real-time monitoring and control, the staff uses about two dozen PLCs to stay connected with plant processes, CSO data, all pumps, safety measures and more. “The nice

### REWARDING CAREER

thing about our SCADA and mobile apps is we all have access to information,” says Rucker. “We used to have to go to the control room and push a button. Now it’s all on our PCs.”

Improved control is just one of the changes Rucker has seen over his 42-year career. “Processes have changed,” he says, noting that the industry has gone from trickling filters and rotating bio-contactors to processes like the biological nutrient removal technology his plant uses today. “BNR technology wasn’t even on the horizon when I started,” he says.

That was in the early 1980s, when Rucker earned an engineering technology degree from the local community college and joined the treatment

plant processes, CSO data, all pumps, safety measures and more. “The nice

Closing off CSO overflow ports in the collection system and better managing flows enabled the city to direct more of the wastewater to the treatment plant. Maximum wet-weather flow at the plant increased from 22 mgd to 80-100 mgd. Plant capacity was increased through secondary clarifier baffles and Tow-Bro hydraulic sludge removal system (Evoqua Water Technologies [part of Xylem]) in the clarifiers. New 4 million-gallon storage tanks were installed to capture excess stormwater so it can be released later and blended with wastewater for treatment before discharge. The improvements enabled the city to treat most if not all storm flow and create less hazard for the environment.

Multiple plant improvement and expansion projects have occurred on Rucker’s watch. “We’ve had as many as 12 construction projects going on at the same time,” he says. “All of them affected our flow and our various treatment processes. We’ve had to deal with emergency breakdowns as well as issues with power lines, clarifier drives and feeders.”

Steve Dunn, assistant superintendent, remembers Alvin Rucker as “an excellent example of lifelong dedication to preserving the environment through hard work and perseverance.”



Steve Dunn, assistant superintendent, remembers Alvin Rucker as “an excellent example of lifelong dedication to preserving the environment through hard work and perseverance.”



Built-in equipment and power source redundancy, plus temporary reliance on emergency diesel backup engine-generators (Cummins) helped address those issues.

Safety protocols for chemical containment, air monitoring, safety showers and personal protective equipment have advanced significantly. Relationships with the rate-paying public have changed as well.

"When I started, changes in the treatment system were not all that well publicized," says Rucker. "Now, with our construction projects, we seek public input on all phases. We put out much more information to the public, even though I'm not always sure they're paying attention to it. We've made a large effort to advise the public on what they should and should not put into the sewer system. They play a part in wastewater collection and treatment."

### STAFFING CHALLENGES

One of Rucker's challenges is finding team members. "When I first began, people tended to stay a long time," he says. "Now we have a hard time finding people. There's more turnover."

While salaries are the biggest issue, the long training and development period can also work against wastewater utilities.

"One problem with wastewater is it takes two to three years to learn the plant, even longer to get state licensed," Rucker says. "We're looking for people with some education and an interest in mechanical things, or in collecting samples, running tests. Automation plays a big part in our operation now but it requires education in order to operate it."

"If you don't like inside work, be prepared to do repairs. There's a massive shortage of people capable of repairing mechanical or electrical equipment. This is an interesting field. It's not boring or stagnant. There's always something up. Legacy pollutants, for example. There's a need for more and more knowledge. We want people to stay with us."

### STEPPING AWAY

As Rucker hangs it up, his staff members compliment him on his career. Timothy Mitchell and Geoffrey Poff of the city's water resources department cite his knowledge of the Lynchburg facility and his dedication to improving the lives of area citizens.

Maintenance supervisor Mills observes, "Alvin invested time in me. Through his encouragement and support I was inspired to pursue my current position. I will always appreciate his confidence in me."

Smith, operations supervisor, notes, "You could call him any time of day or night and he would always come up with a solution to your problem or situation."

And Dunn, assistant superintendent, says, "Alvin is an excellent example of lifelong dedication to preserving the environment through hard work and perseverance."

As his retirement nears, Rucker plans to spend more time with friends and family and travel a bit. "Nothing long distance," he says. "Stay close to home and see more things in the area."

Maybe he can head down to the James River and watch local folks, including his daughter and son-in-law, canoe and kayak on the water he helped keep clean. **tpo**

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# Ahead of the Curve

THE FLORIDA OPERATORS ASSOCIATION DEVELOPED A VOLUNTARY TRAINING AND CERTIFICATION PROGRAM IN POTABLE REUSE AS THE PRACTICE GROWS AND THE STATE DEVELOPS A NEW CODE

By Ted J. Rulseh

Potable reuse of wastewater is growing nationwide. Florida's operator association is preparing its members for the advanced treatment technologies needed by creating a voluntary training and certification program.

The program consists of an eight-chapter training manual, an 80-hour course to be offered initially online and later in the classroom and a 100-question exam.

The 5,400-member Florida Water and Pollution Control Operators Association was founded in 1941 to provide training and development for professionals working in the state's potable water, wastewater and stormwater operations.

Potable reuse is the latest in a long line of voluntary certifications offered by the association. Others include water distribution, wastewater collection, utility maintenance, stormwater, customer relations, reclaimed water field inspection and backflow prevention. These certifications mostly cover areas where the state at present does not require licensing.

## A GROWING TREND

Indirect and direct potable reuse are increasingly necessary in Florida, notes Patrick Murphy, chief wastewater operator in Plant City and association president. "We're very close to matching the activities in California," Murphy says. "There are a lot of pilot programs in process or starting up."

“Our mission for 80 years has been to train operators and get them certified and knowledgeable.”

PATRICK MURPHY

Casual observers may note that water is abundant in the state, but potable reuse is needed because the resources are under stress, Murphy observes: "The city of Winter Haven, for example, has 100 lakes. It looks like there's lots of water. But when you have 1,000 people moving into the state every day, they're going to be using a billion gallons more water per day in 10 years.

"We have to pull the water from surface sources or an aquifer. We cannot over-pump the underground sources because if we do, we'll collapse the aquifer or enhance saltwater intrusion. If the aquifers are over-pumped, we'll need to go deeper and deeper and use more advanced treatment technologies. The goal of potable reuse is to have a sustainable supply."

As of last fall, the state Department of Environmental Protection was working on a new administrative code chapter spelling out rules, regulations



Microfiltration and reverse osmosis are among advanced treatment processes commonly deployed in direct potable reuse facilities.

and permitting requirements for direct and indirect potable reuse. The association's voluntary certification is designed to make sure operators are prepared as full-scale potable reuse facilities come online.

During the DEP rule-making process, the association quickly saw that direct potable reuse requires operators thoroughly trained in both water and wastewater treatment technologies, and that no Florida training program existed.

Murphy states, "Our mission for 80 years has been to train operators and get them certified and knowledgeable. We will be working hard to help operators be able to treat wastewater effluent, have it be safe and help convince the public that it's a safe and reliable drinking water source."

## TAKING ACTION

Responding to the DEP rule-making, Murphy established a Direct Potable Reuse Operator Training Committee of:

- John O'Brien (chairman), treatment plant operator with Seacoast Utility Authority
- Fred Greiner, purification manager with Jacksonville Electric Authority
- Scott Ruland, consultant and operator with Woodard and Curran.





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“We will be working hard to help operators be able to treat wastewater effluent, have it be safe and help convince the public that it’s a safe and reliable drinking water source.”

**PATRICK MURPHY**

The committee commissioned the ProEdit instructional design firm to help complete the materials by the end of 2023.

The group drew from internal and external sources in gathering information for the manual. They reviewed, condensed and organized technical information from a broad range of public domain resources into a uniquely Florida program.

The direct potable use manual, now complete, incorporates technical training in multiple treatment processes; regulatory, safety and maintenance disciplines; and a brief diagnostic test at the end of each section. The materials also include an instructional PowerPoint presentation and the certification exam questions.

When in final form, the manual will be bound to match the other volumes in the association’s training library and will be ready for presentation in early 2024. The material covers indirect potable reuse, which mainly includes the treatment of wastewater for discharge to surface drinking water sources such as rivers and reservoirs, and potable reuse in which highly treated wastewater is fed to a drinking water treatment plant.

“We want our program to go hand in hand with what the state is developing,” says Darin Bishop, the association’s finance, education and membership coordinator. “We want it to sound like the DEP rule.”

**CHALLENGING PROCESSES**

O’Brien notes that direct potable reuse will entail levels of treatment plant complexity for which many water and wastewater operators are not prepared at present. Processes involved will include different levels of membrane filtration, as well as granular and powdered activated carbon treatment, pre-treatment with ozone or hydrogen peroxide and others.

“They’re going to deal with a number of processes already used in some of the more advanced drinking water plants, but with a multilayer, multi-barrier approach and more degrees of treatment,” O’Brien says. “There will be a burden on the wastewater treatment plant to produce and maintain the necessary effluent quality for that source water.”

The course covers all those treatment processes in a deeper level of detail. “Most operators are not familiar with the complexity of the analyzers that need to be in direct potable reuse systems to measure each parameter,” Greiner says.

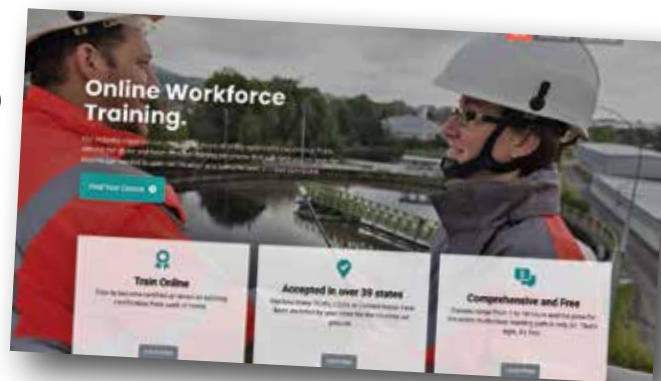
“Due to the multibarrier approach, if a particular process doesn’t meet the design criteria, the system is immediately shut down and the water is diverted back to the reclaim system or the headworks of the wastewater treatment plant. When these things happen it’s important for operators to know what to look for, to understand why they’re having those issues, and then to be able to troubleshoot and solve things.”

Operators who would like more information about the potable reuse course and voluntary certification can contact the Florida Water and Pollution Control Operators Association at 561-840-0340 or [membership@fwpcoa.org](mailto:membership@fwpcoa.org).

tpo

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The Veolia Academy includes more than 400 courses that have been approved by 38 states.



# Free Training for All

VEOLIA NORTH AMERICA OPENS ITS ONLINE WATER AND WASTEWATER TRAINING ACADEMY TO ANYONE, AIMING TO HELP BUILD THE WATER WORKFORCE AMERICA NEEDS

By Ted J. Rulseh

**M**any clean-water and drinking water professionals are retiring. Too few new people are coming in to replace them. It's the recipe for a worker shortage in an industry that's essential to protecting health and environment.

In response, Veolia North America is stepping up, opening its in-house online training program to the public to help Americans gain the knowledge and skills they need to begin well-paid, stable, rewarding careers in the water sector.

Veolia Academy offers free online courses that teach technical skills and prepare participants to earn the state certifications they need. The company says the industry in the United States needs tens of thousands of new workers.

The academy ([academy.veolia.us](https://academy.veolia.us)) was founded in 2021 to prepare Veolia team members to advance their skills and earn promotions; already more than 200 have completed more than 400 courses. The training has been approved by 38 states, and more approvals are in process through the states' licensing and regulation authorities.

Company President and CEO Fred Van Heems announced the initiative at the U.S. Conference of Mayors Annual Meeting last June in Columbus, Ohio. The academy offers courses in seven Learning Paths covering wastewater collection and treatment, drinking water treatment and distribution, water quality testing and the maintenance of water and wastewater systems.

Veolia team members developed and taught the courses. The academy is partnering with vocational and technical schools to provide the curriculum needed to prepare students to enter the water workforce. Karine Rougé, CEO of municipal water, and Adam Lisberg, senior vice president of communications for municipal water, talked about the academy in an interview with *Treatment Plant Operator*.

**tpo:** What is the history of the Veolia Academy?

**Rougé:** Veolia serves 28 million people in the U.S., which means we have operators from north to south and coast to coast with different competencies and grades of licenses. We were training them, mostly in the classroom. COVID forced us to digitize much of the curriculum. That was the origin of the online Veolia Academy, which initially focused on our own employees.

**tpo:** How was the decision made to open the academy to the public?

**Rougé:** As a big player we have a responsibility to the industry. Getting people into the industry and building their skills so we can manage the retirement wave is a huge challenge. And suddenly a lightbulb lit up: We have this amazing resource with hundreds of classes certified in many states. Why should we keep it to ourselves? Helping people get into the industry helps us,

helps our customers, and helps meet the challenges our country faces. We decided to make the training 100% free and 100% accessible.

**tpo:** Why is an offering like this important for attracting people to water careers?

**Lisberg:** It's the first step into the industry where people need the most help. It can be a tough ladder to climb. To get to the first rung, to learn that the industry exists, to acquire the basic skills, to earn the certification they need to get their first job, that's where training and guidance are the most important. Once they're in, it's easier to see the progression.

**tpo:** How many people have taken advantage of the training?

**Lisberg:** As of Aug. 29, 2023, nearly 2,000 people had taken classes from the academy.

**tpo:** From your viewpoint, how acute is the shortage of water professionals?

**Rougé:** Across the U.S., on average it's very acute, although it differs from state to state and on a local basis. Overall, the average age of a water industry worker is 55-plus, and particularly in the more senior licenses we do have gaps. In New Jersey where we have large operations all over, we don't really have a shortage. But there are states where it's a dire situation.

**tpo:** How does opening the academy align with Veolia's strategic business objectives?

**Rougé:** It aligns well as a core part of the way we measure success. We are equally focused on financial, social and environmental performance, so sharing the academy is important for that reason. And second, because of our scale, the more people we have acquiring skills and becoming interested in the industry, the easier it will be for us to continue our growth. I'm convinced that everybody rises together. We will be better off this way than if we were just trying to hire people away from our competition.

**tpo:** Industry training programs typically focus on groups such as veterans, students in technical schools and operators looking to increase their licensing levels. Is that also the case for your initiative?

**Rougé:** Yes, and we also want to bring certain types of institutions and organizations on board. For example, we're having discussions with munic-



Karine Rougé





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ipal utilities that prefer not to build a training program by themselves; they can use Veolia Academy as part of their curriculum. We're also having discussions with unions. Half of our workforce is affiliated with unions. They offer training, and the academy is a resource they want to be able to offer to their members.

**tpo:** What kinds of unions do you see getting involved?

**Rougé:** We're having discussions with the union for pipefitters and plumbing trades, where there are entry-level jobs that you might not even need to have a high school diploma to get. They want to tell their people that now they have a path to earn a license to operate a water or wastewater plant and have a high-paying job.

“ Suddenly a lightbulb lit up: We have this amazing resource with hundreds of classes certified in many states. Why should we keep it to ourselves?”

**KARINE ROUGÉ**

**tpo:** Is there counseling to help people structure a curriculum for a certain career or a license in a particular state?

**Rougé:** There is no individual counseling, but if for example someone wants to earn a license for a given state, there is a full package with all the classes they need to take, depending on the grade of licensing they want to access.

**tpo:** How would you describe the breadth of classes available?

**Rougé:** It is very deep and extensive on water and wastewater operations. We are adding maintenance courses, and by the first quarter of this year we expect to have a dedicated program in advanced water treatment to

satisfy the license requirements for water reuse in California. We think those courses will be valuable in other states as well.

**tpo:** Is there any thought of turning the academy into a revenue center?

**Rougé:** Absolutely not. If we were to turn it into a commercial venture, the whole intent of it would be lost. The challenge of building up skills for the industry is real. And from a community point of view, these jobs are great. They pay well, they are very stable, and they offer career opportunities. People can build a life on these jobs. They can get a mortgage, send their kids to college. If we can help even in a small way to get people into the industry and make a good life out of it, that's good for everyone.

**tpo:** How many of the people taking the courses are new to the industry?

**Rougé:** That is a question we're exploring. We plan to do an analysis of who is taking the courses and how long they stay, so we can have a better understanding of the need and target our outreach a bit better. Right now more people already in the industry are taking the classes because they have easier access to information about the academy.

**tpo:** How can the water sector compete with other sectors for quality people?

**Lisberg:** Many industries need people right now. You can hardly drive down the highway without seeing a billboard for jobs paying \$17 an hour. The water sector doesn't advertise on billboards, but it offers opportunities to people for careers they can stick with and really enjoy. Our industry's appeal is not as obvious to the outside world as some others, but the payoff is a lot better. So that's why we're trying to get the word out there. **tpo**

# The Courage to Improve

RICH MICKELSEN ISN'T CONTENT WITH THE WAY THINGS HAVE ALWAYS BEEN DONE. HE GIVES HIS TEAM MEMBERS THE TOOLS FOR SUCCESS, AND THEY RESPOND.

STORY: **Jim Force** | PHOTOGRAPHY: **Kim Raff**



Rich Mickelsen, district manager for the Timpanogos Special Service District in American Fork, Utah, received a 2022 William D. Hatfield Award from the Water Environment Association of Utah.



“See it. Learn it. Do it.” That motto best describes the management style of Rich Mickelsen, district manager for the Timpanogos Special Service District in Utah County, Utah. It’s how he challenges his staff, and it typifies his approach as he has risen from private business, to laboratory analysis, to his current position.

Mickelsen recalls that when he was placed in charge of the Timpanogos Wastewater Treatment Plant five years ago, the staff seemed reluctant to learn new skills or take the initiative to solve problems. “It was almost like they might lose their jobs if they tried something new,” he says.

“It was a challenge. My role was to provide the tools and the education and safety programs we needed. Theirs was to talk with each other, share knowledge and learn how to run the plant.”

Today, he’s extremely happy with the staff: “They’re hard workers.” And the plant runs well, meeting all effluent requirements including stringent limits on phosphorus.

#### BROAD RESPONSIBILITIES

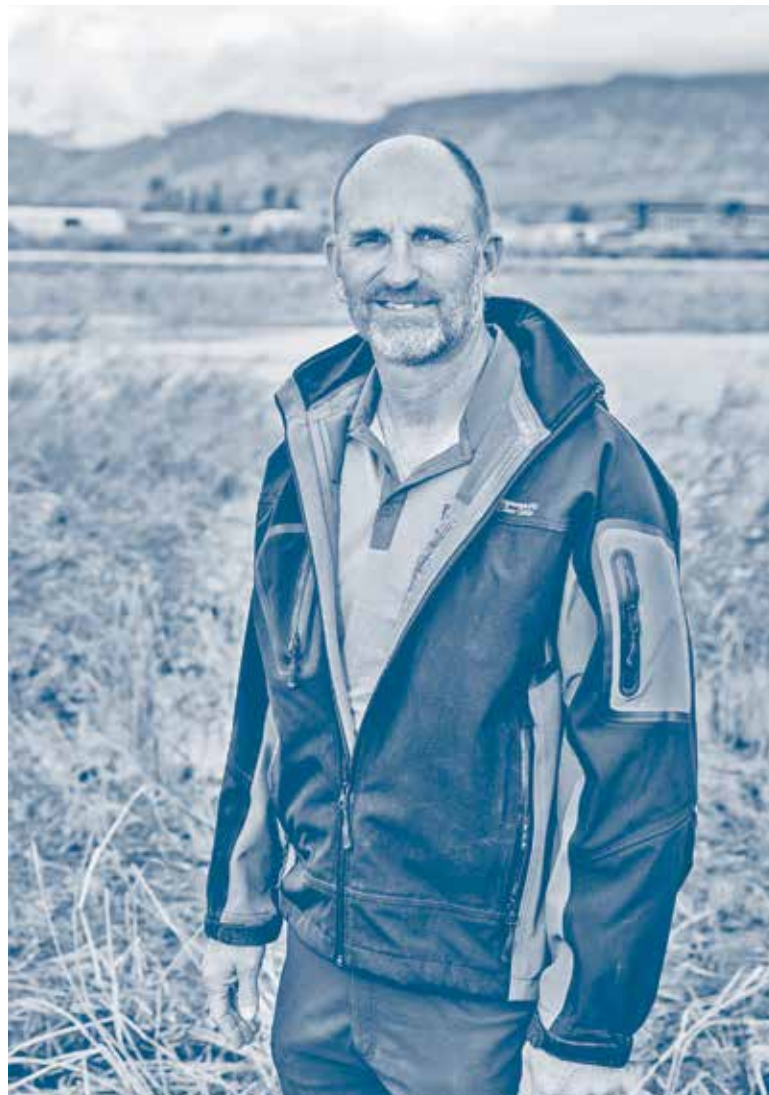
The Timpanogos treatment plant is just one of several responsibilities on Mickelsen’s plate.

Recently optimized and scheduled for expansion to 40 mgd by 2029, the facility serves 10 cities and 90,000 connections in its area of Utah, just south of the Great Salt Lake. Together, those communities comprise the Timpanogos Special Service District, overseen by a board of directors representing the member cities.

It’s a responsibility that requires accommodating expected growth, while communicating effectively with the board, the municipalities and the rate-paying public. Mickelsen and his staff are also responsible for the collection systems that connect the district communities with the treatment facility.

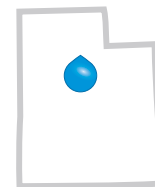
The team regularly schedules inspection for most of the system using POSM software, and line cleaning with Vactor combination trucks, coordinating with the various cities. “Some of the communities have their own cleaning equipment,” Mickelsen adds.

“It’s been quite a challenge because up to now we’ve recorded everything on paper. We’re making the transition to electronic data for better management and increased



## Rich Mickelsen, Timpanogos Special Service District

American Fork, Utah



TITLE:  
**District Manager**

EDUCATION:  
**Degrees in mathematics and chemistry, Weber State University**

EXPERIENCE:  
**23 years in the clean-water industry**

CERTIFICATIONS:  
**Grade IV Wastewater Treatment Operator, Grade IV Collection**

**System Operator, Water Distribution Operator**

AWARDS:  
**WEA of Utah: 2022 William D. Hatfield Award, 2011 Laboratory Analyst Excellence Award, 2003 Outstanding Laboratory Technician**

GOAL:  
**Clean water in a reliable and sustainable way**

knowledge on where we’ve cleaned. Each of the cities is unique and they only see their own system.”

A new program from Cityworks is helping to retain institutional knowledge that is often lost as veteran workers retire and leave the team.



“I’m thrilled with the progress our staff is making. We have a wide range of ages on staff with a number of new and upcoming people learning the business.”

**RICH MICKELSEN**

### REACHING OUT TO THE PUBLIC

Interaction with so many communities requires a special brand of communication, a skill Mickelsen and his team have developed. It was a main reason Mickelsen was selected for the 2022 William D. Hatfield Award from the Water Environment Association of Utah.

The district’s website is a critical part of that effort. An education tab there includes projections for future growth and the resources needed by all district communities to meet future treatment plans. Another tab addresses algae blooms in Utah Lake, a regional water resource that receives the district’s treatment plant effluent.

“We have a video on our master plan, and other videos on research we’re conducting on the water quality in the lake,” says Mickelsen. He spends a great deal of time meeting with the board and representatives from member communities, sharing how the district is responding to growth, explaining rate structures and more.

A few decades ago the Timpanogos area was a small community with a basic 7 mgd oxidation ditch treatment plant. Today more than 300,000 residents have settled there. Mickelsen promotes the infrastructure expansions needed to support this growth and champions the need to maintain equipment and plan for the future.

The area promotes outdoor recreation and family-friendly lifestyles. Projections have the population more than doubling in the next 40 years. “People are moving here because they love the open spaces,” Mickelsen says. “It’s a great place.” He encourages his board “not to throw anything away,” but to keep and invest in maintaining what the district has: “We need to use our assets to their full life expectancy.”

### PROGRESSIVE STAFF

Staff communications and relationships are equally critical, and Mickelsen is proud of the way the 43 full-time team members have adapted to

ABOVE: The Timpanogos Special Service District team is shown on the district’s Marsh Machine (Marsh Master). Front row, from left: David Land, pretreatment coordinator; Richard Mickelsen, district manager; and Brian Selck, lab director. Second row, Terry Coy and Jerald Spencer, operators; Shawn Parker, pretreatment inspector; Koen Miller, Cesar Ludena and Shaun Peters, operators; and Sam Grimes, operator foreman.

recent changes and are preparing for the future: “I’m thrilled with the progress our staff is making. We have a wide range of ages on staff with a number of new and upcoming people learning the business.

“We’ve moved from coarse aerators in the aerobic digesters, which basically just mixed the contents, to fine-bubble diffusers. Since 2020, on average, we’re meeting our annual phosphorus limit of 1 ppm.

“The aerobic digesters were designed by the engineers. Essentially, the tanks are holding basins until biosolids are dewatered. Those basins were releasing phosphorus because of lack of air. We increased air flow with fine diffusers. The phosphorus-accumulating organisms retain the phosphorus until the biosolids are dewatered. The additional air keeps them from going anaerobic. Our effluent phosphorus dropped from 2.3 mg/L-p to 0.6 mg/L.”

Mickelsen says the shift from paper to digital data management has been difficult for some staff members, as is generally the case everywhere. “Things like asset management and bar codes are picked up faster by the younger operators,” he says.

His job is to obtain the funding and furnish the tools and the training to help the operators do their job of making his facility run right. “My style includes meetings, demos, getting people to talk with each other and share knowledge,” he says.

“You need to know things here — how to maintain the biology, when to waste. The busier you are, the faster the day goes by. And you won’t lose your job by sharing your job knowledge with others. We promote a career path here. We want to keep good people around.”



“Rich is not just checking the boxes. He wants to do things better, and he pushes against the norms. He paints a vision of doing things better than the way they’re being done.”

TREVOR LINDLEY



Mickelsen and his team use the district’s website to educate the public on water quality research in Utah Lake.

Experience and skill will be important in the upcoming process upgrades. The new plant will incorporate primary clarifiers, anaerobic digestion, thermal biosolids dryers, tertiary filters and other sidestream equipment to ensure consistent phosphorus removal throughout the year, preventing warm-weather releases of that nutrient.

### MEANINGFUL CAREER

Degrees in chemistry and mathematics, experience in private business, and a career in wastewater laboratories have prepared Mickelsen for his current challenges. He graduated from Weber State University in Ogden in 1991, and first joined a private company in the nutrient supplement market.

His job included laboratory analysis of the supplements, so he

was prepared when, in 2000, a lab position opened up at a wastewater treatment utility. He worked in the labs in Brigham City, Ogden and Provo for several years.

“In the laboratory, you see everything that’s going on before anybody else,” he says.

That perspective gave him the broad view necessary to become district manager, a position he accepted five years ago. It also may have also provided him with vision and the eagerness to tackle tough problems.



From left, Rich Mickelsen, shown with Shaun Peters and Sam Grimes, leads a staff that covers a wide range of ages and includes a number of new and upcoming team members learning the business.

## THE SPECIAL SERVICE DISTRICT

The Timpanogos Special Service District, established in 1976, provides regional wastewater treatment for residents in the north end of Utah County. The district authorized the design and construction of a 7.6 mgd (design) wastewater treatment plant south and east of American Fork near the shore of Utah Lake.

The plant began operation in 1979, processing wastewater from the cities of American Fork, Pleasant Grove, Lehi and Alpine. Since then more cities and service areas have been added, including Highland, Cedar Hills, Saratoga Springs, Eagle Mountain, the Utah County side of Suncrest, and part of Vineyard.

Each member community is responsible for its own sewer system. The district maintains the lines connecting the communities to the treatment plant.

Influent passes through headworks, which includes a step screen (HUBER Technology). It then flows through a wet well to biological nutrient removal reactors fed by high-speed Integrally Geared Turbo Blowers (Lone Star Blower). The flow is then clarified and UV disinfected (Ozonix). Effluent is discharged to a river feeding Utah Lake. A portion of the effluent is reused at the plant; another stream feeds a constructed wetland bordering the facility.

Solids are dewatered on a belt press (Andritz) and landfilled, although there are facilities on site for composting. Expansions in 1984 and 1996 increased treatment capacity to 18.3 mgd. The latest expansion, completed in 2013 increased capacity to 30 mgd. Current plans are to bring capacity to 40 mgd by 2029 and add enhancements including solids digestion.

Trevor Lindley, client manager with Brown and Caldwell, the firm working on the Timpanogos expansion project and one of the people who nominated Mickelsen for the Hatfield Ward, puts it this way:

“Rich is not just checking the boxes. He has a passion and a vision for wastewater treatment.

“He’s a strong leader. He wants to do things better, and he pushes against the norms. He paints a vision of doing things better than the way they’re being done. For example, there are some marginal wetlands near the plant. They could be ignored, but he wants to make them better.

“He does hard things.”

And he encourages those around him, from board members to ratepayers to employees to join him in that task. **tpo**

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Nicole Horvath, environmental outreach coordinator, led the creation of the virtual tour of the WSSC Water wastewater treatment plants.

# Taking the Plants to the Classroom

A 360-DEGREE VIRTUAL PLANT TOUR EXPANDS WSSC WATER'S OUTREACH AND HELPS THE STAFF KEEP UP WITH A GROWING VOLUME OF SCHOOLS' REQUESTS

By Sandra Buettner

WSSC Water faced increasing demands for student tours but didn't have rooms large enough or sufficient staff to accommodate as many as 90 students at one time.

In response the utility created an award-winning *Introduction to Wastewater Treatment Virtual Unit* for educators that highlights two of its wastewater treatment plants with a virtual tour and a curriculum guide.

WSSC Water, Maryland's largest water and sewer utility, serves about 2 million customers in Prince George's and Montgomery counties and covers a 1,000-square-mile service area. It has nearly 6,000 miles of water distribution pipeline and more than 5,600 miles of sewers.

"Requests for adult groups and other public tours were manageable because those groups are usually smaller," says Nicole Horvath, environmental outreach coordinator. "But large student groups were more and more difficult to facilitate." When COVID came along the tours were paused, but educators still came to the utility looking for options.

## FINDING INSPIRATION

Horvath saw a nature center virtual tour online with 360-degree photos and thought that technology could help fulfill all the requests for school tours. The idea was to create a virtual tour of the wastewater treatment plants for students to view in their classrooms. That way, Horvath reasoned, schools could avoid the expense and staff time of putting tours together.

She ran the idea past two treatment plant operators, Bradley Yeakle from the Seneca plant, and Brian Persing from the Piscataway plant. They thought it was a great idea; they helped Horvath with pictures of the plants and reviewed her content.

“We’re one of the largest utilities in the country and we are always willing to share how we created this virtual tour with others.”

NICOLE HORVATH

"It didn't take us long to review the content because we know our plants so well," says Yeakle. Persing and other operators at his plant took pictures and determined the best angles to capture the treatment steps. Intern Aki Stephens and staff photographer Ronald Williams also contributed. The entire project was completed in-house.

Horvath observes, "We finished the program for middle and high school students in six months while still doing our regular jobs. We worked on the virtual tour when we had some extra time. There was no cost to create the tour. If you have the free Google Earth app, it is pretty user-friendly to design." They started work in spring 2021 and finished in fall 2021.

## EDUCATOR OUTREACH

Once the virtual tour was completed and reviewed by other staff members, Horvath took it to the schools. The educators loved it but wanted a total curriculum package. Utility staff took the curriculum from an existing teacher training day and added the tour program to it.

That gave teachers the complete package they needed to instruct their students. They walk younger students through the tour online or display it on





Bradley Yeakle, treatment plant operator, leads a tour of WSSC Water facilities.

a smart board. Older students receive a link by way of their desk computers. Students complete worksheets as they navigate the tour. They can follow along at their desks as their teacher uses the facility guide provided as part of the program.

Along with 360-degree views of the facilities, the students observe the various treatment processes. A video embedded in the tour shows all the extra work the operators go through to collect and dispose of items people improperly flush down the toilet.

Teachers and students are pleased with the program, according to Horvath. As of spring 2023, some 800 students who were not able to take an in-person tour of the facilities had seen the virtual tour. It is available to any school in the service area: public, private and homeschooled.

### MORE APPLICATIONS

The virtual tour concept has uses beyond the classroom. The Piscataway plant is working on a bio-energy project, and Persing thought that a virtual tour would be a great tool to use for that project. When completed, he plans to use it for onboarding team members.

The original virtual tour is also used along with hands-on lab activities in a day-long Sewer Science education program for high school students. In addition, other area utilities have asked for Horvath's help in putting a virtual tour together for use in employee training.

For ingenuity in creating the tour, WSSC Water received the 2023 National Environmental Achievement Award in public information and education from the National Association of Clean Water Agencies.

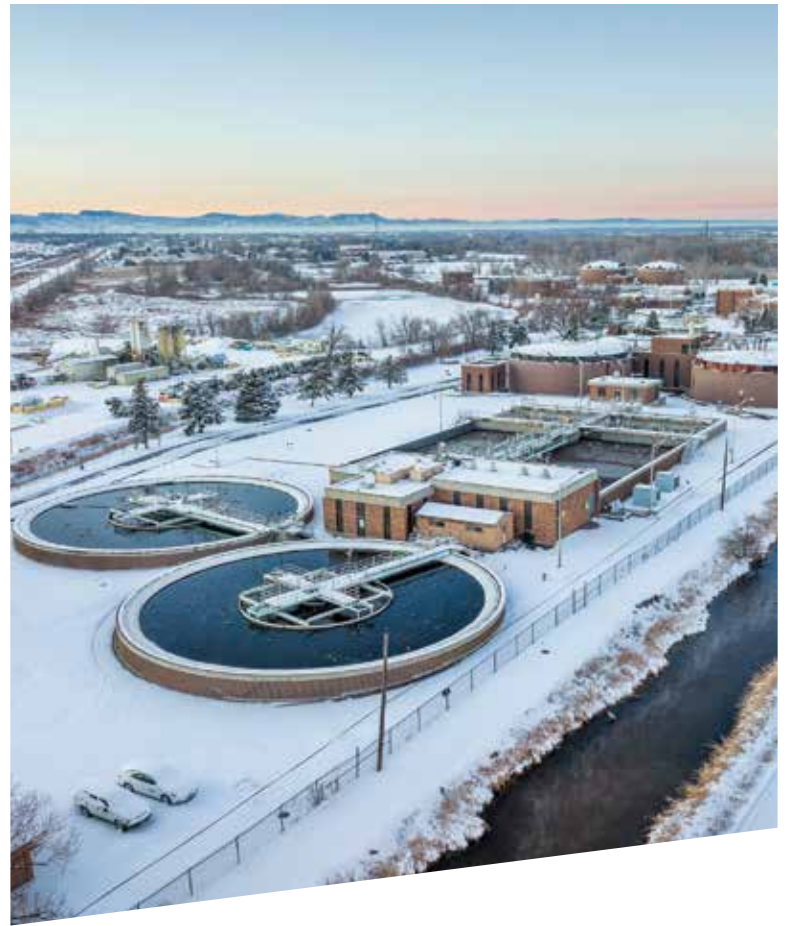
"Receiving this award from NACWA reinforces our commitment to educate tomorrow's leaders on our clean-water mission," says Kishia Powell, general manager and CEO. "We hope to pique young and curious minds and instill a desire to join us in protecting the environment."

Horvath observes, "We're one of the largest utilities in the country, and we are always willing to share how we created this virtual tour with other utilities."

Utilities interested in creating their own virtual tour may contact the WSSC Water education team at [communityoutreach@wsscwater.com](mailto:communityoutreach@wsscwater.com). Information about WSSC Water's full suite of educational programs is available at [wsscwater.com/steam](http://wsscwater.com/steam). **tpo**

### What's Your Story?

**TPO welcomes news about your public education and community outreach efforts for future articles in the Hearts and Minds column. Send ideas to: [editor@tpomag.com](mailto:editor@tpomag.com) or call 877-953-3301**



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# Hands-on Learning About Conservation

A NATIVE PLANT AND POLLINATOR GARDEN AT ARLINGTON WATER UTILITIES  
SERVES AS AN EDUCATIONAL VENUE AND A GATHERING PLACE FOR COMMUNITY ACTIVITIES

By Steve Lund

**A** Texas city won a water conservation award for building an outdoor yoga studio.

Actually, what the City of Arlington Water Utilities built was a demonstration garden to promote drought-resistant plants. The Lake Arlington Native Plant and Pollinator Garden, planted in 2022, has become a tool for teaching the community about water conservation, and a gathering place for a variety of activities.

“Most of the people who have come to the site have been working there and helping with planting, and most have been volunteers,” says Traci Peterson, communications coordinator for the utility. “After our first year, we tried some things that weren’t necessarily about volunteers. We had a yoga class at the garden, and the people who came out had a great time.”

The city also sponsored a photography class with a teacher from The Arlington Museum of Art.

“The morning they had the class, we went out there at 7:30 in the morning and there were all these bunnies in the garden,” says Peterson. “The 20 photographers in the class were just so excited to go out and take pictures of those bunnies.”

While yoga and photography classes don’t focus on water conservation, just bringing people to the garden helps: “That gets people out there who might not be interested in volunteering, but they can still see the plants, and we talk to them about what the garden is.” There are ID tags on the plants and QR codes in the beds linking to a website that explains more about the plants.

The garden won the Texas AWWA Water Conservation and Reuse Award in the Large Utility-Indirect category. The garden was built on three acres of the emergency spillway site near the Lake Arlington Dam.

## FOCUS ON POLLINATORS

Craig Cummings, Arlington Water Utilities director, knowing the city takes part in the Bee City USA program and the National Wildlife Federation’s Mayor’s Monarch Pledge, thought the spillway would be a good site for a pollinator



Students from the University of Texas-Arlington helped plant drought-resistant plants in the Lake Arlington Native Plant and Pollinator Garden.

garden. The area is a park-like setting but can’t be used for buildings or permanent playground equipment.

“He had heard about the things other city departments were doing for pollinators and thought we could do something, too,” says Peterson. “He thought that would be a great place to have not only a pollinator garden but a place to teach people about drought-resistant plants.”

In addition to wildflowers and native grasses, the site has demonstration plots that exhibit different styles of gardens, such as a cottage garden, a rain garden, a traditional garden, a wildlife garden and a xeriscape garden. All gardens have plants suitable to the Texas climate.

“All of the plants are drought-resistant, because we’re trying to show people that you don’t have to

put plants in your yard that need a lot of watering during the summer,” says Peterson. “I love it when people come out, especially in spring when it’s looking so beautiful, and they see that they don’t have to sacrifice beauty to have plants adapted to this area.”

## EFFECTIVE FOR TEACHING

The utility used volunteers to do the planting, often high school and college students who needed community service work. There are volunteer days twice a month when people come in to spread mulch or to do other maintenance.

“We’ve had classes where people come to the library and watch slideshows about drip irrigation or planting drought-resistant plants, but there’s really no substitute for them actually





LEFT: The chair of Arlington's Bee City USA committee talks to volunteers about gardening for pollinators at the pollinator garden. BELOW: Yoga classes are among the activities held at the demonstration garden built on the emergency spillway of the Lake Arlington Dam.



“All of the plants are drought-resistant, because we're trying to show people that you don't have to put plants in your yard that need a lot of watering during the summer.”

TRACI PETERSON

getting their hands in the dirt and seeing how it works,” Peterson says.

The drip irrigation system is supplied by a line installed by the utility's operations team. A 60-inch pipe that supplies the water treatment plant from the lake runs under the spillway. A 1-inch waterline was connected at a blind flange on that large line to feed raw water to a tank for the drip system.

Peterson says the site shows the value of drip irrigation for keeping the water where it is needed: “Right there by the lakeshore sometimes it's very windy. I just can't imagine what it would be like if we were just trying to water it with traditional sprinklers.”

Funds and technical support for the project came from a Conservation Treasures grant from Tarrant Regional Water District, the area's wholesale water supplier. The grants have helped build numerous outdoor water-conserving features for cities, schools and nonprofit organizations to educate residents in the primary service area.

### OTHER CONSERVATION

Arlington Utilities has more than 4,000 customers signed up for high-bill or high-use alerts, which sometimes call attention to leaks or overwatering with irrigation systems. Residents whose homes show continuous usage for a 48-hour period also receive proactive email alerts.

The utility also has a leak repair program for low-income residents. If they qualify, residents can ask for help dealing with a leaky faucet or similar problem. The utility then sends a licensed plumber to the house to evaluate the problem and inspect for other issues.

“We basically have the plumber go through the entire home, because usually if there's one thing wrong, there's a few things wrong,” Peterson says. “They send us an evaluation of what we can do to help this person save water. Then we sign off on it, the plumber does the repairs and we pay the plumber.”

Arlington Water works with the Tarrant district on other conservation programs. One sends weekly emails to residents telling how much water their turf grass will need in the coming week based on local weather station and rainfall data. More than 1,600 Arlington customers get the emails.

Betsy Marsh, conservation education supervisor for the regional district, says the emails help people avoid overwatering: “More than 30% of the water used annually by single-family residences is spent watering lawns and ornamental plants outdoors. We want people to make smart choices and reduce water use where they can. The weekly advice is really helpful. It's local and it says specifically how much water they need to keep their turf grass healthy.”

### WORKING COOPERATIVELY

TRWD also has a free program to send a licensed irrigator to evaluate sprinkler systems for homeowners. The district makes significant investments in water conservation through grants to municipal utilities and through programs for residents who are customers of the various utilities.

“It's in everyone's best interest if we work together to educate people about how to use water wisely,” Marsh says. “If we can protect our supply

and conserve as much as possible, when we experience droughts our water supply will last much longer. Conservation delays the need to search for additional sources.”

Peterson says the Lake Arlington Pollinator Garden could ultimately be part of school field trips that include the water treatment plant, the lake, and the pump station, all of which are near the garden. It would be a good way to demonstrate to students where their water comes from.

“If we could connect all of that together for kids, that would be a great thing to do,” she says. “And then show them how to save water with the native plants.” tpo



  
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1

“MetriNet instruments use no reagents. They provide the data users need with far less maintenance and cost of ownership.”

BRENDT THOMPSON

- 1) MetriNet technology can be deployed as a street-level system to enable water-quality monitoring without the concerns related to belowground installations.
- 2) The MetriNet system uses a customer's choice of battery-powered, reagentless sensors to monitor multiple water-quality parameters in distribution networks.



2

# Eyes on the Network

METRINET LETS UTILITIES USE REMOTE, BATTERY-OPERATED SENSORS TO MONITOR DRINKING WATER QUALITY AT CRITICAL POINTS IN THE DISTRIBUTION SYSTEM

By Ted J. Rulseh

Drinking water utilities keep a close eye on water quality. It's essential to providing a safe supply, keeping customers satisfied and staying in compliance with regulations.

But how, where on the network and how often are samples taken for quality analysis? And is the sample data readily available so that issues can be promptly identified and addressed? ATi, a Badger Meter brand, has introduced MetriNet as what it calls a field-proven breakthrough in water-quality monitoring. It is a technology based on smart sensors that lets utilities monitor for their choice of up to 16 parameters.

Digital smart M-Node sensors can be deployed at critical locations throughout the water distribution system, giving users continuous, real-time water-quality measurements and evidence-based proof that the water is safe. Data from the sensors can enable utilities to detect and predict events such as loss of disinfection; taste, odor and discoloration problems; pipe bursts or leaks; and more. The system delivers timely warnings and analysis of anomalies to which operators can react before failures develop.

Actionable insights help utilities ensure efficient delivery of high-quality water in an environmentally friendly manner. Brendt Thompson, senior manager of analytical solutions with Badger Meter, talked about the technology in an interview with *Treatment Plant Operator*.

**tpo:** What is the basic problem this technology helps utilities solve?

**Thompson:** The water-quality data utilities typically have from the distribution system is based on regular compliance samples. Those samples might be taken every few days or once a week and represent a single snapshot in history. But the distribution system is a living and breathing thing. A single weekly sample doesn't support, for example, smart flushing, where instead of just turning on hydrants according to a schedule, they flush when needed based on water-quality data. MetriNet provides real-time insights into what is happening to water quality in the network.

**tpo:** What kinds of serious events can this technology help utilities detect and address?

**Thompson:** Suppose they have a leak or a main break. After they bypass that line to make a repair, if they don't flush the system properly, the water that was stored in that pipe is pushed into the system, and that's a contamination incident. The leak itself is a contamination incident since water doesn't only come out of a pipe. There is also intrusion, so debris, organics and turbidity enter the pipeline and can cause discoloration, taste and odor.

As another example, many utilities are switching to chloramine for disinfection. Chloramine in the distribution network brings high potential for nitrification, where the water starts tasting bad and can turn yellow. That can happen quickly, within hours. If they have a reservoir that they don't sample for a couple of days or a week, they have no idea if the water is nitrifying. This is a concern especially in hot climates where chlorine degrades and nitrification happens faster.

**tpo:** What differentiates MetriNet from other water-quality monitoring technologies?

**Thompson:** Typically, water quality instruments use wet chemistry. Reagents and buffers are pumped up into a chamber to mix with water, a chemical reaction takes place, and then the sample is read colorimetrically and discharged. That's not very useful in distribution systems where they have to deal with hazardous waste from reagents and buffers. Those chemicals also have to be replenished periodically. MetriNet instruments use no reagents. They provide the data users need with far less maintenance and cost of ownership.

**tpo:** Without reagents, how do these devices take measurements?

**Thompson:** A variety of technologies are built into the sensors. There



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are optical sensors for parameters like turbidity, TOC and DOC. There are electrochemical sensors for pH, ORP and conductivity. There are amperometric sensors for free, total and combined chlorine. The combination of all these types of measurement creates the package that is MetriNet.

**tpo:** What accounts for the flexibility of this technology?

**Thompson:** Typically, water-quality instruments require AC power because they use pumps to move samples and deliver reagents. That limits where they can be deployed. MetriNet sensors are battery powered, autonomous and compact, so they can be deployed in small spaces and in areas where water-quality data is advantageous but there is no infrastructure. The data can be put into the cloud or into a SCADA system without the need for AC power.

**tpo:** What are some locations where sensors typically would be deployed?

**Thompson:** Common locations include distribution entry points, operational control points, pump stations, storage tanks and reservoirs, and at critical customer sites like hospitals, stadiums and universities where there are concentrations of population. They are also deployed in areas where there are known water-quality issues, such as where there have been customer complaints or where consumption is low and stagnation could occur. The monitoring devices are meant to be put where historically utilities would be blind to water-quality conditions.

**tpo:** How does the sensor data make its way to the customer's user interface?

**Thompson:** Typically utilities have a SCADA system that is a very controlled environment. It is kept under lock and key and requires power. Where we deploy our devices there is none of that. So we leveraged cellular connectivity to move the data from the field to a cloud platform. It's similar to the way Badger Meter operates its advanced metering infrastructure flowmeters:

using cellular connectivity into our platform called BEACON, which is a cloud-based tool to view and analyze data from the field.

**tpo:** Does MetriNet work only in conjunction with BEACON?

**Thompson:** Not necessarily. We can provide the data wherever and whenever the customer wants it. We can push the data into a SCADA system. We can send the data to a file transfer protocol so the SCADA system can reach out and pull it in. MetriNet stations have local communication via Wi-Fi, Modbus, Ethernet IP and PROFIBUS.

**tpo:** How easy is it for customers to view and use the data?

**Thompson:** The data is GIS-based so users can open a map and look at all their water quality installations across their network. They can click on one location from the map and it will display all the data from the parameters they are monitoring. They can also link assets. For example, suppose that a meter is monitoring a flow into the distribution system and there's a MetriNet station next to it. They can overlay those two data sources.

**tpo:** Can you cite an example of how that overlay would be beneficial?

**Thompson:** As consumption goes up and more water is being consumed, the water in the system fresher. For a tourist community where consumption is high on the weekends and falls off during the week, they could overlay the flow with water quality data on a single screen. So for example they could see if the decrease in consumption is affecting water quality, whether water is being held too long and is stagnating.

**tpo:** Can operators in the field access the MetriNet data?

**Thompson:** Yes. Operators in the distribution system managing the network most of the time don't have access to the SCADA system. MetriNet gives them access to water-quality data in the field, when and where they need it. **tpo**

# Reuse, Recovery and Energy Management

By Craig Mandli

## Asset Management

### AUTOMATION24 VEGAPULS C 21

The VEGAPULS C 21 from Automation24 is a non-contact, radar level sensor utilized frequently in wastewater management applications. The device has been used to monitor water levels in pumping stations and for monitoring flow in open channels and dams.

It is made of resistant and durable materials to help it survive harsh industrial environments, dealing with environmental factors like a humid environment, condensation on the sensor body and foamy water. It has a measuring range of up to 50 feet and outputs a radar frequency of 80 GHz to keep a narrow 8-degree beam angle. This sensor has features that can be edited through the VEGA software, either via Bluetooth on smartphones or on a computer for more nuanced tweaks to see the true level and flow of the water that is being treated. **800-250-6772; www.automation24.com**



**VEGAPULS C 21 radar level sensor from Automation24**



**Bioselect separator from Boerger**

### BOERGER BIOSELECT

The Boerger Bioselect separator is designed for efficient manure separation. It offers low life cycle costs, and is turn-key from a single source — including the separator, pump(s), control unit, or stationary or mobile skids. It includes a profile auger with counter bearing for no

auger screen contact. It provides continuously variable dry matter content, and is the largest Separator in the market at up to 600 gpm. **612-435-7300; www.boerger.com**

### DUPERON FLEXRAKE IQ

The Duperon FlexRake IQ platform provides real-time smart screening for maximum resilience at the headworks. It tackles high peaking factors due to extreme weather and difficult debris like flushable wipes, first flushes and settled solids. This is accomplished by system improvements and a sequence of operations that automatically responds in real time to optimize the screen field. The reimagined design focuses on smart enhancements to the raking device to manage heavy solids loading events with four times increased debris removal capacity, improved grit and rock handling and greater solids capture. During peak flow conditions, it adjusts the bar screen opening itself to provide additional hydraulic capacity and safety factor, matching the best capture rate to the flow volume in real time. **800-383-8479; www.duperon.com**



**FlexRake IQ screening system from Duperon**

## Automation/Optimization

### PRIMEX ECO SMART STATION

The Eco Smart Station control system from PRIMEX provides a safe, energy-efficient solution for optimum pump control in municipal lift station applications. It uses the latest technology in VFD, microprocessor-based controller, data storage and communication capabilities available. It achieves up to 30% energy savings using an efficiency auto-tune algorithm that searches for the pump speed that will consume the least amount of energy per gallons of liquid pumped. It is also housed in a multiple-compartment Arc Armor Enclosure, reducing the risk of injury resulting from electric shock and exposure to arc flash. It features the Energy View controller powered by kW Logix software, an energy-efficient solution. The color touch screen HMI provides level control, pump alternation, flow monitoring, data logging, alarm logging, historical trending and comes equipped with an SD memory card for data storage and download. It is available in 29 models, from 10 to 100 hp. **844-477-4639; www.primexcontrols.com**



**Eco Smart Station control system from PRIMEX**

### YSI, A XYLEM BRAND ALYZA IQ

Alyza IQ from YSI, a Xylem brand is an online wet chemistry analyzer platform developed to help ensure regulatory compliance, improve operational efficiency, and reduce costs. It is designed to minimize analyzer maintenance while maximizing accuracy and reliability. It features automatic cleanings and calibrations, no-spill reagent containers, and uses only 5 to 15 microliters of reagent per measurement, resulting in fewer reagent changes over time. The analyzer platform has a fully automated temperature control system with a double-insulated cabinet to maximize performance regardless of where it's deployed. The Alyza NH4 continuously measures ammonium and can be used to help control ammonia-based aeration and ensure regulatory compliance. The Alyza PO4 continuously measures orthophosphate to monitor and control chemical-P removal, verify bio-P removal and help ensure regulatory compliance. **937-767-7241; www.ysi.com**



**Alyza IQ from YSI, a Xylem brand**

## Drive

### FRANKLIN ELECTRIC CERUS X-DRIVE

Designed for variable torque applications up to 600 hp, the Cerus X-Drive is Franklin Electric's all-inclusive drive solution for a variety of markets. Available as a standalone drive and in multiple enclosed configurations, these panels are built to last, according to the maker, with every detail and component centered around the application's specific requirements. It can be paired with a choice of motors and pumps to maximize the performance of the application. **866-271-2859; www.franklinengineered.com**



**Cerus X-Drive from Franklin Electric**



## Heat Exchanger/Recovery System

### JDV EQUIPMENT SLUDGE HEATER AND EXCHANGER SYSTEM

The Sludge Heater and Exchanger System from JDV Equipment ensures optimal thermal efficiency for anaerobic digestion. The counterflow tube-in-tube Ralph B. Carter design promotes high efficiency heat transfer with minimal fouling to recirculated biosolids. The integrated three-way blending valve maintains a uniform inlet water temperature for increased digester operational efficiency. Each system is manufactured to ASME standards. 973-366-6556; [www.jdvequipment.com](http://www.jdvequipment.com)



Sludge Heater and Exchanger System from JDV Equipment

## High-Efficiency Motors/Pumps/Blowers

### CAT PUMPS STAINLESS STEEL TRIPLEX PUMPS



Stainless steel triplex pumps from Cat Pumps

Cat Pumps stainless steel triplex pumps mounted to a gear motor can provide thousands of hours of maintenance-free slip pump service. Direct-coupling a pump to a gear motor provides many advantages, including a smaller footprint, reduced noise and increased ease-of-service with no belts to

maintain. A 316 stainless steel manifold, paired with elastomers like NBR, FPM, EPDM and PTFE, allow for many chemical and fluid compatibility options. Performance specs range from 0.1 to 100 gpm, and 100 to 10,000 psi. Custom-built power units include pump(s), motor, base, pressure regulator, safety relief valve, pulsation dampener and gauge. Custom builds typically have a three- to four-week lead time. Pumps and repair parts are stock items, with 95% of orders being shipped within 24 hours of order placement. 763-780-5440; [www.catpumps.com](http://www.catpumps.com)

### EURUS BLOWER ZZ SERIES

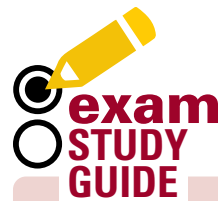
ZZ Series blowers from Eurus Blower are drop-in replacements for competitor blowers. They have heavy-duty cast housings, machined impellers, alloy steel shafts with oversized bearings, hardened/precision machined steel forged gears, oil-lubricated gear and/or grease- or oil-lubricated drive sides, plus keyless locking assemblies for easier timing gear maintenance. The blowers provide up to 15 psig pressure and 2,350 cfm flow. 918-361-0285; [www.eurusblower.com](http://www.eurusblower.com)



ZZ Series blowers from Eurus Blower

### MTH PUMPS MDT SERIES DAF PUMPS

MDT Series DAF Pumps from MTH Pumps can provide a sustainable solution for optimized dissolved air flotation. These pumps leverage regenerative turbine technology to reinvent wastewater treatment. By eliminating the need for compressed air, static mixers and pressure vessels, they reduce startup costs and cut energy consumption by up to 30%, benefiting both the environment and the budget. They precisely produce microbubbles for efficient solids  
(continued)



Licensing exams can be challenging. Our **Exam Study Guide** helps you prepare by presenting questions similar to those on an actual exam. You can find many more sample questions on the *TPO* website at [www.tpomag.com/study](http://www.tpomag.com/study).

## WASTEWATER

By Rick Lallish

**Packed bed is the most common form of wet scrubber odor control. How is this accomplished?**

- A. Hypochlorite adsorption
- B. Electrolytic chemical scrubber
- C. Chemical absorption
- D. Biological oxidation

**ANSWER:** C. The common packed bed wet scrubber system uses chemical absorption for odor control. It differs from the chemical mist scrubber by using packing material in the contact chamber and the recirculation of the scrubbing chemicals. It is advantageous due to very efficient mass transfer and easily handles changes in odorous concentrations. The biggest disadvantage is high maintenance. There are many methods of odor control, and the main goal is to maintain a good relationship with neighbors of the treatment plant. More information may be found in the OWP, CSU-Sacramento textbook: *Advance Waste Treatment* (Fifth Edition), Chapter 1.

## DRINKING WATER

By Drew Hoelscher

**How does ion-exchange treatment help reduce the development of disinfectant by products?**

- A. Magnetically charged beads remove the chlorine residual as the water flows through the softener.
- B. Magnetically charged beads, fed as a slurry, allow dissolved organics to adhere and settle out.
- C. Magnetically charged beads remove calcium and magnesium ions as the water flows through the softener.
- D. Magnetically charged beads remove iron and manganese as the water flows through the softener.

**ANSWER:** B. Ion exchange is mostly used to reduce hardness, arsenate, and/or nitrate. However, it can also be used to reduce the development of disinfectant byproducts by feeding small beads as a slurry into a mixing stage. The suspended beads provide large surface areas for organics to adhere, resulting in rapid settling downstream. This ion-exchange process is called MIEX (magnetic ion-exchange resin).

### ABOUT THE AUTHORS

*Rick Lallish is water pollution control program director and Drew Hoelscher is program director of drinking water operations at the Environmental Resources Training Center of Southern Illinois University Edwardsville. tpo*

and contaminant separation, allowing valuable reclamation from wastewater. Additionally, they promote water reuse, maintaining water quality standards while reducing the strain on freshwater resources. These pumps produce flows between 5 and 100 gpm, and feature all stainless steel construction, air injection port, hard faced seals and internal flush lines. **630-552-4115; www.mthpumps.com**



**MDT Series DAF Pumps from MTH Pumps**

### VALMET FLOW CONTROL FLOWROX FXM

Flowrox FXM metering pumps from Valmet Flow Control are suitable for but not limited to chemical dosing applications that require accurate metering. FXM2 and FXM3 series pumps have only one wear-resistant part (tube assembly) in contact with corrosive or abrasive mediums. The pumps have a low consumption of spare parts, which allows reduced maintenance and downtime to improve process performance and provides accurate dosing. They ensure accurate dosing by the positive displacement of the tube bore with zero slip that produces the same volume on every cycle. There is no variation due to the discharge pressure condition. The compression points of the tube act as a self-cleaning check valve without clogging. This helps eliminate the risk of vapor lock. They have expanded logic programming, functionality and have a higher pumping capacity. Other features include contactless external leak sensors for tube failure detection. They have upgraded motors and control circuits to ensure accuracy even at the lowest speed. **678-772-9584; www.valmet.com**



**Flowrox FXM metering pumps from Valmet Flow Control**

They ensure accurate dosing by the positive displacement of the tube bore with zero slip that produces the same volume on every cycle. There is no variation due to the discharge pressure condition. The compression points of the tube act as a self-cleaning check valve without clogging. This helps eliminate the risk of vapor lock. They have expanded logic programming, functionality and have a higher pumping capacity. Other features include contactless external leak sensors for tube failure detection. They have upgraded motors and control circuits to ensure accuracy even at the lowest speed. **678-772-9584; www.valmet.com**

## Water/Wastewater Reuse

### ANUA AIRASYMBIO

AiraSymBIO from Anua is an onsite, closed-loop odor treatment system that harvests raw wastewater, filters and then treats it for use as the irrigation water in the multistage biological odor treatment system. The system utilizes a water resource already present, thus reducing operating costs, uses no freshwater, and allows the biological odor control system to function as intended, as many areas around the country do not have potable water available at the lift or pump station site or have water conservation initiatives in place, which prohibits the use of biological treatment technologies. **346-225-8033; www.anuainternational.com**



**AiraSymBIO odor treatment system from Anua**

### ATLANTIC ULTRAVIOLET MEGATRON GERMICIDAL ULTRAVIOLET DISINFECTION SYSTEM

Large-scale industrial/municipal water and wastewater applications can benefit from the MEGATRON Germicidal Ultraviolet Disinfection System from Atlantic Ultraviolet, which contains multiple UV-C lamps

producing wavelengths lethal to bacteria and viruses. Four different models treat 90 to 450 gpm of clear freshwater (clear wastewater and high purity water are handled at other flow rates). Each model consists of a Type 316 stainless steel chamber with multiple UV-C lamps, making it completely self-contained. Units can be plumbed together to handle larger water flow requirements. A newly available remote electrical enclosure features an HMI touchscreen, water temperature monitoring and UV-C intensity monitoring. Additional standard features include a sight port for viewing lamp operation, digital lamp operation indicators, an elapsed time indicator and removable chamber heads. It is available with manual or automatic wiper systems to clean quartz sleeves around each lamp. The Model M250 meets Environmental Technology Verification Program standards. **631-273-0500; www.atlanticultraviolet.com**



**MEGATRON Germicidal Ultraviolet Disinfection System from Atlantic Ultraviolet**

### HEADWORKS INTERNATIONAL ULTRACELL

UltraCell from Headworks International combines MBBR and ultra filtration processes without a need for a secondary clarifier or a DAF to remove the bulk of the TSS. Typically, a biological treatment system is followed by a secondary solids separation process and a tertiary filtration step to produce reuse quality water. UltraCell was developed with an extensive pilot study of its MBBR process with a ceramic membrane. Due to the very low TSS in the MBBR process relative to the MBR, the process requires minimal power and cleaning chemicals. Moreover, the flux rate through the membrane is increased by a factor of four, quadrupling the lifetime of the membranes. The overall capital and operating costs of the process are significantly lower than the MBR process, while the footprint of both processes is approximately the same. **713-647-6667; www.headworksintl.com**



**UltraCell from Headworks International**

### SMITH & LOVELESS TITAN MBR MEMBRANE BIOREACTOR

The TITAN MBR Membrane BioReactor treatment system from Smith & Loveless delivers ease of operation and maintenance through high-performance flat sheet membranes, easy component access, intuitive graphical touchscreen PLC controls, smart advanced data monitoring and communications, reduced process complexity, and a streamlined membrane clean-in-place process. It is designed with a stable process tailored to permit requirements, and is capable of achieving superior effluent quality and Title 22 approved water reuse. It offers a robust system design with stainless-steel componentry and streamlined electrical layout with an operator-friendly wire management system. The treatment plant will arrive in a complete and compact factory-built system with significantly less field assembly for even swifter installation and start-up. **800-898-9122; www.smithandloveless.com tpo**



**TITAN MBR Membrane BioReactor treatment system from Smith & Loveless**







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### Hayward Flow Control UHMWHDPE seats for PFAS remediation

To support the efforts of our customers to detect and remediate PFAS in their systems, Hayward Flow Control introduced the Ultra-High Molecular Weight High Density Polyethylene seat material option for its TBH Series true union industrial ball valve. An extremely durable material, UHMWHDPE features high impact and crack resistance, low friction, excellent abrasion resistance, and good chemical resistance, making it ideal for valve seats. For many of the applications where PVC and CPVC valves are specified, UHMWHDPE can be used. In addition, the TBH Series ball valves with UHMWHDPE seats are assembled using PFAS-free lubricants. The seats are available with TBH Series ball valves sizes 1/4-through 2-inch/DN15 – DN50 in PVC and CPVC construction and support the full pressure ratings ball valves.

888-429-4635;

[www.haywardflowcontrol.com](http://www.haywardflowcontrol.com)

### DuPont AmberLite P2X110 ion exchange resin

DuPont launched its first product dedicated to the production of green hydrogen, the DuPont AmberLite P2X110 ion exchange resin. To support the production of hydrogen from water, this ion exchange resin is designed for the unique chemistry of electrolyzer loops. Designed to endure the thermal and chemical challenges presented in an electrolyzer, the AmberLite P2X110's recipe offers durable and reliable water quality that helps prevent contaminant build up in the electrolyzer loop. These customized features, and improved removal capacity, present a differentiated option for electrolyzers with more service time than industry generic resins.

800-447-4369; [www.dupont.com](http://www.dupont.com)

## product spotlight wastewater

### Enhanced motor-driven diaphragm pump equipped for industrial applications

By Craig Mandli

Industrial wastewater applications often require infrastructure designed to stand up to harsh operating environments. With that in mind, **Xylem's Flojet brand** has enhanced its **VersiJet Series** industrial motor driven **diaphragm pumps** with the introduction of a new, four-chamber model. The pump has been specifically designed to serve industrial applications requiring flow rates of between 3 and 5 gpm.

"The addition of the four-chamber pump to our established VersiJet Series will enhance our Flojet industrial pump portfolio significantly," says Young Baeg, Associate Product Manager at Jabsco, Flojet, Rule. "By incorporating the robust qualities of our innovative VersiJet Series into this new four-chamber design, we're offering our industrial OEM customers increased pumping capabilities through a simplified portfolio."

The pump is the first four-chamber pump available under the Flojet VersiJet Series and replaces the existing Flojet Quad Series, offering higher pressure capabilities, greater ambient temperature resistance and longer pumping life. The pump head has a cast aluminum lower housing for enhanced durability, handling a maximum pressure of up to 60 psi. It also



Flojet VersiJet Series from Xylem

offers improved heat resistance and has been tested to achieve temperature stabilization in elevated ambient conditions of 122 degrees F. This capability opens up the four-chamber design to applications in markets requiring spraying or on-demand pumping in high temperature conditions, unlike the previous Quad Series model. Due to this level of heat durability, the pump is suitable for use in heavy-duty applications.

The newly expanded VersiJet Series, which also includes a five-chamber pump, is capable of handling pressures of up to 70 psi at a maximum capacity of 6 gpm. The pump's durable exterior, coupled with its excellent shock absorption capabilities, supports the operation of machinery in harsh environments, while its IPX6 rated water protection certification is well-suited for efficient installation in tough surroundings.

According to Baeg, customers have also cited the reliability of the VersiJet Series as a deciding factor when selecting pumps, due to the consistent level of quality assurance offered by the global pump brand. "This will make it even easier for our customers to find the right pump for the job, every time," he says. 855-995-4261; [www.xylem.com](http://www.xylem.com)



### Emerson Fisher FIELDVUE DVC7K digital valve controller

Emerson's Fisher FIELDVUE DVC7K digital valve controller features Advice at the Device technology with embedded computing and analytics that convert raw data into actionable information locally with Bluetooth capability, within the device. Maintenance personnel can receive the data via phone, tablet or computer wirelessly without having to be in a control room at the plant location. Digital valve controllers are available as accessories for control and on-off valves to provide local analysis of valve data, digital com-

munications with host systems and other features. If analysis reveals a problem, an alert is created that can be viewed locally or remotely. All alerts include recommended actions to fix the problem.

800-972-2726;

[www.emerson.com](http://www.emerson.com)



### Grace Industries Grace Connected Safety worker safety system

Grace Connected Safety uses the new Grace Cloud Connect monitoring and alerting engine, supporting the Grace Lone Worker System, with features including fall detection and suspension trauma prevention prod-

ucts. Grace Cloud Connect solves the safety monitoring problem for workers in fixed or remote locations who are working alone or at heights. Using cloud connectivity via ethernet, Wi-Fi, Iridium satellite and cellular through a Grace Gateway, the worker's safety status is monitored directly without the need for a third-party call center. Grace Cloud Connect uses a web-based portal to assign and schedule the subscriber's own monitoring attendants, and to configure custom email and text notifications of safety-critical events. The system includes value-added I/O features useful for process control SCADA, door and gate entry, gas monitoring, weather warning or any other specialized system control application.

724-962-9231;

[www.graceloneworker.com](http://www.graceloneworker.com)





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**Pratt P77 perimeter-seated bidirectional knife gate valve**

Henry Pratt Co.'s P77 perimeter seated bidirectional knife gate valve is engineered to handle tough slurries and abrasive materials. It meets the rigorous MSS SP-81 standards and offers a range of features and benefits that make it an excellent valve for industrial applications. The P77 has superb sealing capabilities ensuring a drip-tight shutoff, and preventing the buildup of solids regardless of line pressure. The valve is designed to eliminate any confusion regarding the direction of isolation, providing clarity and ease of use in demanding environments. The valve is designed with multiple rows of packing to reduce stress on the packing chamber, enhancing the longevity and reliability of the valve.

The integrated PTFE gate guide reduces wear on the packing, preventing blockages and flow disruptions with its non-stick properties.  
877-436-7977;  
[www.henrypratt.com](http://www.henrypratt.com)



**Sensaphone Sentinel PRO remote monitoring system**

Sensaphone's Sentinel PRO remote monitoring system promptly notifies staff of potential equipment issues that may cause unexpected shutdowns. Its 24/7 monitoring works with any equipment that uses a panel or SCADA system compatible with MODBUS RS485 and TCP IP. It can handle up to 64 inputs pulled from existing equipment and sensors and can also accommodate an additional 12 analog or digital inputs. The Sentinel PRO system alerts site workers via text, email or phone call to power failure and issues with various equipment such as soil

vapor extraction systems and groundwater treatment equipment, leachate and landfill gas systems, VOC monitors, air sparge compressors, vacuum blowers, air strippers and generators. Sensaphone offers both cellular and Ethernet versions of the Sentinel PRO system, and both are housed in a NEMA 4X enclosure for protection from dust, dirt and moisture.  
855-807-1887;  
[www.sensaphone.com](http://www.sensaphone.com)



**OZ Lifting Products davit crane wheel base**

The new wheel base from OZ Lifting Products can be used with its full range of davit cranes up to 1,200 pound capacity. Made in the U.S., the wheelbase is adjustable and has four different length positions: 56.57 to 77.57 inches long, 32.44

inches wide and 36.87 inches high. It weighs 140 pounds when fully assembled (without a crane pedestal base), so the total weight will depend on the davit crane used. With durable steel construction and powder-coat finish, oversized casters make rolling the base and moving the crane easy. The floor anchoring system allows the davit to rotate 360 degrees, even when under load.  
800-749-1064;  
[www.ozliftingproducts.com](http://www.ozliftingproducts.com) **tpo**

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## Treatment system geared toward smaller and underserved communities

By Craig Mandli

Water treatment cartridge system from AqueoUS Vets



Treatment systems servicing small communities are held to the same high standards as those in metropolitan areas. But limited operating budgets mean cost is a constant consideration in those municipalities. Fortunately **AqueoUS Vets** offers an innovative treatment alternative for low flow applications that empowers utilities to run with operational independence.

That alternative is a **water treatment cartridge system** designed to remove PFAS, arsenic, and other contaminants of emerging concern (CECs) from groundwater. The plug-and-play system treats flows from 5 to 400 gpm, is easy to install, operate and maintain, and offers leasing options to eliminate capital expenditures — which can be an attractive alternative for communities lacking substantial capital funding.

“Upcoming PFAS regulations will be challenging, expensive, and a drain on the resources of all water systems, particularly those in small or underserved communities,” says Rob Craw, Aqueous Vets president and CEO. “With this new product line, AV expands its Concept to Commission commitment and can now provide treatment options that address the complete range of flow applications and capacities, from the smallest, rural 10 gpm plant to the largest utilities requiring 30 mgd or more.”

The NSF-certified modular product line offers the flexibility of increasing flows or treating multiple contaminants by selecting the specific filter to meet treatment goals. These systems also address long-term waste concerns with responsible and certified media disposal with a convenient self-disposal system.

“Not only does the new system offer convenience and flexibility, but it also puts control of ongoing operations and maintenance back into the hands of the utilities, where it belongs,” says Craw. “It eliminates the need for outside design, install or service, giving utilities independence and freedom from third-party media service providers.”

According to Craw, the company is now applying its Concept to Commission approach to small systems designed to be as simple as changing a refrigerator filter cartridge. Bridging the knowledge gap between engineering, manufacturing, installation and commissioning with a consultative approach, the company works with clients to customize a solution built specifically to address the individual utility’s needs.

“This customizable system enables utilities of all sizes to remain in compliance and achieve treatment objectives without the capital expense,” says Craw.

925-331-0573; [www.aqueousvets.com](http://www.aqueousvets.com)

## people/awards

The **City of Santa Monica** received the 2023 Helen Putnam Award for Excellence from the League of California Cities for its Sustainable Water Infrastructure Project.

**Chris Higgins**, Boothbay Harbor Sewer District superintendent, received the Al Jellison Lifetime Achievement Award from the Maine Water Environment Association.

**Camden County, Camden City, and the Camden County Municipal Authority** received the Innovation and Collaboration – Government Agency Award from the Water Resources Association of the Delaware River for their commitment to local and regional water quality, water access, environmental justice and sound water management.

**Jason Schroeder**, wastewater collection system technician, was honored by the Centralia (Washington) City Council as the Pacific Northwest Clean Water Association Collection System Operator of the Year.

The **Champlain Water District** won the award for “New England’s Best” water during the New England Water Works Association Annual Conference.

**Rocky Horvath**, West Chicago utility superintendent, was recognized as the Operator of the Year by the Illinois Potable Water Supply Operators Association.

The **Maine Water Company** received the 2023 Utility of the Year recognition from the New England Water Works Association.

The Iowa American Public Works Association chapter presented its Project of the Year accolade to the **City of Britt** for its 150,000-gallon elevated water storage tank, which included historic preservation of its pre-1937 red-capped tower.

Two Kenosha Water Utility staff members were recognized by the AWWA for operations and development of innovative tools and techniques. **Robert Wienke** received an Operator Meritorious Award and **Andrew Lorsung** received a Gimmicks and Gadgets award for ingenuity in modifying the utility’s CCTV equipment to inspect large sewer mains.

## events

Jan. 9-10

Michigan Onsite Wastewater Conference, Kellogg Hotel & Convention Center, East Lansing. Visit [www.canr.msu.edu](http://www.canr.msu.edu).

Jan. 9-11

South Dakota Association of Rural Water Systems Annual Technical Conference, Ramkota Hotel & Conference Center, Pierre. Visit [www.sdarws.com](http://www.sdarws.com).

Jan. 24-27

2024 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show, Indiana Convention Center. Visit [www.wwettshow.com](http://www.wwettshow.com).

Jan. 25-26

2024 Wastewater Administrators Conference, Bavarian Inn, Frankenmuth, Michigan. Visit [www.mi-wea.org](http://www.mi-wea.org).

TPO welcomes your contributions to Worth Noting. Email [editor@tpomag.com](mailto:editor@tpomag.com).

tpo



## Community treatment combats saltwater intrusion and recharges aquifer

### Problem

The coastal community of Los Osos, California, had outdated wastewater systems and a history of nitrogen issues. Many lots in the community were too small for code-compliant septic systems. With existing systems far exceeding their design life, the regional water quality control board declared a prohibition zone that included a building moratorium. Meanwhile, farms were experiencing saltwater intrusion as groundwater was pumped to meet demand for irrigation and drinking water.

### Solution

Initial studies recommending an ocean outfall for a centralized wastewater treatment system raised concerns that saltwater intrusion would increase. Los Osos chose a decentralized solution from **Delta Treatment Systems** that discharges to a community drainfield, recharges groundwater, and minimizes saltwater intrusion. The system treats a design flow of 1.6 mgd.



#### RESULT:

Treated effluent is pumped to a large chamber dispersal field installed along a hillside with ideal soils to facilitate aquifer recharge. With this solution, the town-owned property was converted to open space walking trails. Therefore the land was still functional while providing active recharge to the aquifer. **800-221-4436; www.infiltratorwater.com**

## Cheesemaker uses nanobubbles to increase production

### Problem

Wisconsin-based Meister Cheese treats its wastewater solids using anaerobic digestion. The biogas is converted to electricity to power the plant. The wastewater is high in antimicrobial chemicals from surface disinfection to meet food safety standards. These chemicals disrupt biological wastewater treatment. For years the company struggled to maintain digester performance from biological inhibition. The only option was to reduce cheese production or pay costly hauling fees to dispose of high-strength waste.

### Solution

In 2022 the company began treating its influent wastewater with **Moleaer technology** that injects nanobubbles, a clean chemistry generated on site using air and water, to remove cleaning chemicals.



#### RESULT:

The company saw immediate improvement in digestion and was able to increase cheese production by 20% and biogas production by 30%. The technology had a payback of about 30 days, and the process improvements enabled the company to avoid more than \$10 million in costs. “With nanobubble technology, we’ve become more than energy neutral at the wastewater treatment facility,” says Larry Harris, director of technology and cheese master. “In a normal month, we would spend about \$11,000 in electricity costs. Currently our average is about \$2,000.” **424-558-3567; www.moleaer.com**

## Ozone technology helps a water treatment facility handle source fluctuations

### Problem

Pure Water Monterey, an advanced water purification process that treats four sources of water for domestic, irrigation, and aquifer recharge in Monterey County, California, also has to deal with seasonal and source-related fluctuations in contaminants and volumes. Source flows include winter stormwater, agricultural runoff during the growing season, wastewater during the tourist high season, and vegetable processor rinse water in summer and fall.

### Solution

Monterey turned to ozone to help control pathogens, taste and odor, and minerals across the variations in source water. To guarantee that



the ozone performed optimally, design engineers selected a **sidestream injection system for ozone dissolution** from **Mazzei Injector** for its mass transfer efficiency, small footprint, low pumping energy, turndown flexibility and low maintenance.

#### RESULT:

The ozone effectively keeps pathogens, taste and odor, and minerals under control. It also improves the performance of downstream filtration and polishing by reducing the size of organic particles, increasing their polarity and enhancing their hydrophilicity. Improved performance in microfiltration, reverse osmosis and UV advanced oxidation is measured in runtimes and flux, intervals between cleaning and consumption of backflush water and chemicals. **661-363-6500; www.mazzei.net tpo**

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### Carollo Engineers launches two technical practices

Carollo Engineers launched two technical practices dedicated to assisting both public utilities and private organizations in achieving greater resilience and sustainable water supplies in the face of escalating challenges impacting critical systems and water resources. Carollo's Resilience and Sustainability Practice will focus on helping clients navigate a wide range of issues, from climate change mitigation to infrastructure vulnerabilities, and safeguard the continuous delivery of protected and reliable water and wastewater services to their customers and communities. Carollo's Water Resources Practice consolidates decades of experience and water management initiatives under one formal umbrella, embracing a holistic One Water approach that empowers clients to assess, diversify and manage their water portfolios effectively.

To lead these practices, Carollo has appointed two seasoned company leaders. Sarah Deslauriers, with 22 years' experience in climate science, sustainability and environmental engineering assumes the role of director of the resilience and sustainability practice. Inge Wiersema, with 26 years' experience in water system planning, One Water planning, master planning and water management has been appointed director of the water resources practice. Both leaders have been with Carollo for over 17 years.

### Veolia North America releases annual sustainability report

Veolia North America recently released its annual sustainability report, featuring the results of the company's various programs and initiatives, showcasing the work they are doing across over 500 communities to save energy, reduce waste and preserve natural resources. The company also released a virtual, immersive version of the report, an online tool that brings visitors on a tour of their projects, allowing its work to come to life in an innovative and interactive way.

### Axine Water Technologies expands its leadership team

Victor Leung, formerly vice president, technology, has been promoted to the position of chief technology officer. And Louis LeBrun joins Axine as vice president of sales to broaden the company's expanding commercialization services.



Victor Leung      Louis LeBrun

### Aqua Membranes closes new financing for reverse osmosis technology

Aqua Membranes has closed a new round of financing from Kurita Water Industries and Clean Energy Ventures. Together, these investments will help Aqua Membranes address diverse challenges faced by reverse osmosis membrane facilities across industrial sectors, accelerating the production of 3D Printed Spacer Technology to reduce carbon dioxide emissions and maximize contributions to a more sustainable society.

### Xylem, Lorentz partner to deliver solar-powered pumping solutions

Xylem, and LORENTZ, a German solar water pump manufacturer, will enter into a distribution agreement to expand the availability of solar-powered pumping systems, globally. Under the agreement, Xylem will harness the power of both companies' solutions. LORENTZ will supply Xylem with solar-powered and solar/grid hybrid pumping systems. In addition, LORENTZ technology will be used to augment solutions in Xylem's existing portfolio, and the companies will collaborate to develop new Xylem products. Both companies will continue to serve their respective market segments and maintain their existing distribution networks.

### WEF honors Houston Flipping with lifetime achievement award

The Water Environment Federation has honored Brown and Caldwell Vice President Houston Flippin with its W. Wesley Eckenfelder Industrial Water Quality Lifetime Achievement Award. The award recognizes his 40-year career of enhancing the environment through the design, construction and optimization of industrial water and wastewater treatment facilities. Since joining Brown and Caldwell in 1984, he has evaluated and developed process design and operating guidelines for hundreds of treatment facilities encompassing food and beverage, chemical, pharmaceutical and nutrition, refinery and renewable fuels, mining and many more industries.



Houston Flipping

### Netzsch Pumps expands Pennsylvania facility, opens Texas plant

NETZSCH Pumps USA is expanding its pump manufacturing machines and processes in its Exton, Pennsylvania facility. The expansion will include multitasking machining centers which are a complete fusion of CNC turning and machining centers. In addition to the facility in Pennsylvania, Netzsch also recently opened an assembly plant in Houston.

### Terry Duperon receives highest Saginaw chamber honor

Terry Duperon, founder of Duperon Corp., has been named recipient of the 2023 Robert H. Albert Lifetime Community Service Award. The highest honor in the annual Saginaw (Michigan) County Chamber of Commerce Awards, the accolade recognizes individuals who have exhibited a lifetime of service to both the community and their profession. Duperon has been an integral part of the Saginaw business community as an inventor, entrepreneur, philanthropist and mentor for more than six decades. His first invention was born out of his garage in the 1970s, which led to the formal establishment of Duperon Corp. in 1985. The company has grown steadily over the course of its history and currently employs more than 70. **tpo**



Terry Duperon, right, award recipient, with Mark Turpin, president of Duperon Corp.



The team at the Central Valley Water Reclamation Facility in Salt Lake City, Utah

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