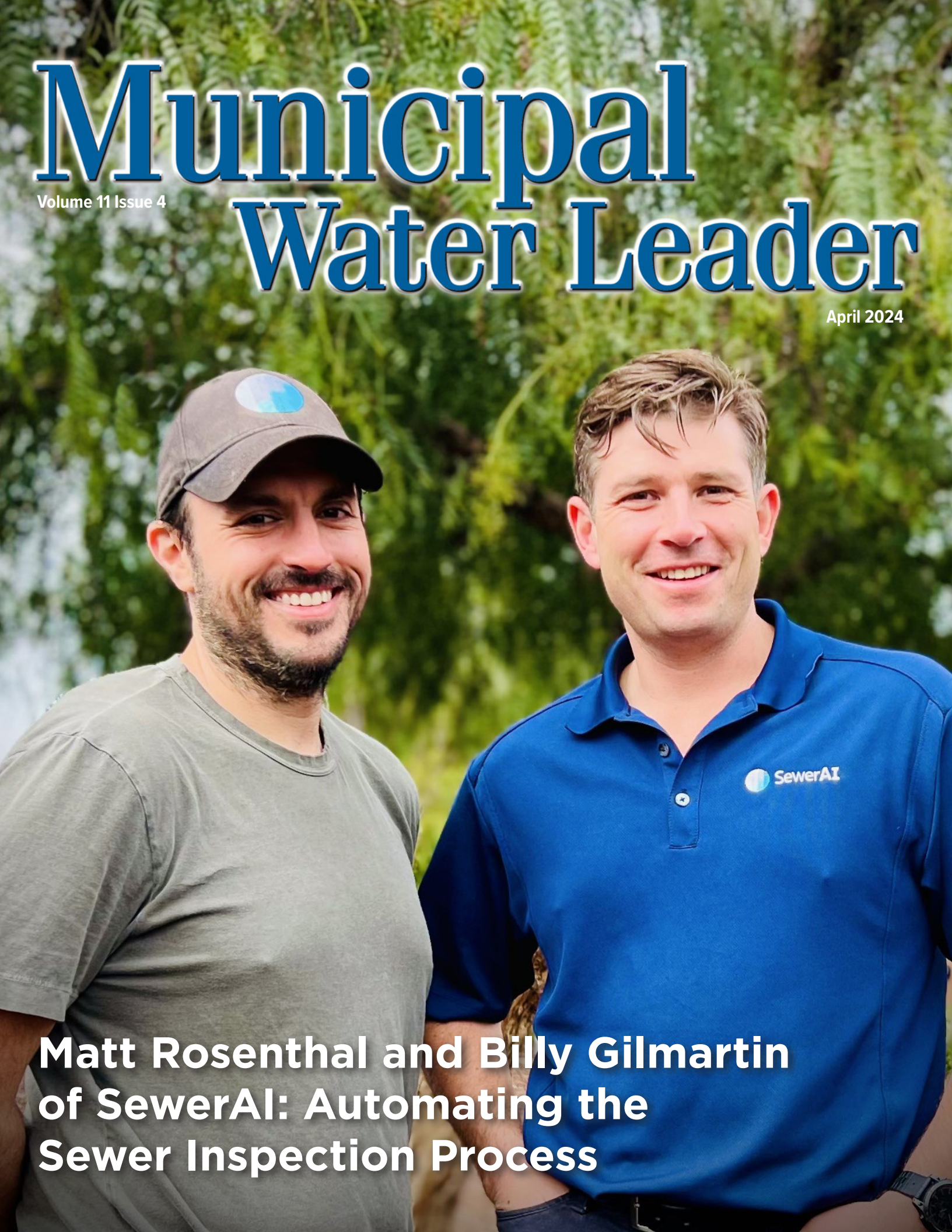
Volume 11 Issue 4

Municipal Water Leader

April 2024



Matt Rosenthal and Billy Gilmartin of SewerAI: Automating the Sewer Inspection Process

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Matt Rosenthal and Billy Gilmartin of SewerAI: Automating the Sewer Inspection Process

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Municipal Water Leader

Municipal Water Leader is published 10 times a year with combined issues for July/August and November/December by

WATER STRATEGIES LLC
an American company established in 2009.

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SUBMISSIONS:
Municipal Water Leader welcomes manuscript, photography, and art submissions; the right to edit or deny publishing submissions is reserved. Submissions are returned only upon request. For more information, please contact our office at (202) 698-0690 or municipal.water.leader@waterstrategies.com.

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COVER PHOTO:
Matthew Rosenthal, CEO and Cofounder, SewerAI (left) and Billy Gilmartin, Chief Revenue Officer and Cofounder, SewerAI (right). Photo courtesy of SewerAI.

PHOTO COURTESY OF SEWERAI.

A Revolutionary Technology

By Kris Polly

It's not too often that you encounter a technology you truly think will change the industry—but one of those moments came recently for me when I learned about SewerAI. By automating the process of reviewing pipe inspection footage using artificial intelligence, SewerAI's solutions can double field productivity and accelerate in-office sewer assessment work by even more. In my opinion, this will become the standard industry practice. The company has attracted major clients, including the City of Houston and the Knoxville Utilities Board. In our cover interview with Cofounders Matt Rosenthal and Billy Gilmartin, we discuss the company's solutions, which also include creating digital twins of underground infrastructure and automating quality assurance.

Next, we check in with two engineering firms about recent projects. Rob Stout, the Water Business Unit Leader for McKim & Creed, tells us about the company's recent awards and about its current projects, which span water reuse, septic conversions, biosolids handling, sewer evaluation, and SCADA replacement. Robert Beltran, the Florida Water Market Segment Leader for Dewberry, updates us on the company's work on septic conversions, direct potable reuse, and more.

We also talk with DJ Seeger, the president of San Antonio–based Seeger Water, about how the company grew from a family lawn irrigation business to a full-service irrigation, plumbing, and water operations company.

Israel-based WFI Group has a portfolio of impressive water reuse and treatment technologies. In our interview with Chief Business Officer Ari Veltman, we discuss a number of technical advances, including Modified Activated Carbon, which may soon make treating challenging contaminants such as hexavalent chromium more feasible.

HUBER Technology supplies equipment for wastewater plants and pump stations across North America, and with its new manufacturing facility in North Carolina, it will soon be 100 percent compliant with Build America Buy America requirements. National Sales Director Simon Randle tells us more.

Finally, we speak with Scott Dewhirst, the superintendent of Tacoma Water, about his recent testimony before Congress, representing the Association of Metropolitan Water Agencies, during which he shared information about strategies to protect water utilities from cyberattacks.

To an outsider, municipal water might seem like a static and unchanging industry—just a matter of delivering water through pipes. In reality, the technology is advancing rapidly. Artificial intelligence, automation, digital twins, and new water reuse and treatment technologies are all changing the face of the business. We salute the innovators and professionals who are keeping our infrastructure running and our water supplies safe every day. M

Kris Polly is the editor-in-chief of Municipal Water Leader *magazine and the president and CEO of Water Strategies LLC, a government relations firm he began in February 2009 for the purpose of representing and guiding water, power, and agricultural entities in their dealings with Congress, the Bureau of Reclamation, and other federal government agencies. He can be contacted at kris.polly@waterstrategies.com.*

Matt Rosenthal and Billy Gilmartin of SewerAI: Automating the Sewer Inspection Process

SewerAI's PIONEER platform being used in the field.

To maintain tens of thousands of pipes for public health and safety, city sewer system managers across the country send some 20,000 operators out each day to collect tens of thousands of hours of video. SewerAI wants to speed up that process using artificial intelligence (AI). Its software can recognize and code pipe conditions that show up in inspection videos and conduct quality assurance inspections of those videos and other data. According to SewerAI Cofounders Matt Rosenthal and Billy Gilmartin, that can help cities more effectively and affordably maintain their sewer infrastructure.

Municipal Water Leader: Please tell us about your backgrounds and how you came to be in your current positions.

Billy Gilmartin: About 12 years ago, I started my own company focused on cleaning and inspecting the largest sewer pipes out there. I developed some proprietary equipment for that work. My business took me all over the country, to places such as Baltimore, New York, and San Francisco—some of the largest cities in the United States—because that's where the largest pipes are. Seven years after starting the company, when I had developed a thriving business on both coasts, I got a phone call from Matthew. He asked me how much it would cost to have operators sit in an office and watch sewer inspection videos and help label them. No one had ever asked me a question like that before. I met Matthew, and that's when my whole world changed.

Matt Rosenthal: I came to Silicon Valley 20 years ago and worked at several startups, building several companies, including a chip design company and a touch screen company. For the last 12 years, I have been building software to help solve problems in the wastewater space.

Municipal Water Leader: What problem were you trying to solve when you founded SewerAI?

Matt Rosenthal: City managers and wastewater directors have to manage a wastewater collection system comprising tens of

PHOTOS COURTESY OF SEWERAI.

thousands of pipes, and they face the challenge of deciding which ones to fix. Historically, they would go out and do manual inspections, but that was expensive and didn't provide enough data. We wanted to get them more data so that they could make better decisions about how to prioritize pipe repairs.

After working in the wastewater industry for several years, I came up with the idea that we could probably build a product based on computer vision AI. I started building demos and prototypes. I realized that I needed more annotated data to train the software, meaning that I needed people to draw boxes to highlight defects and features in the videos. That's when I reached out to Billy. We quickly learned that we shared the vision of a future in which pipe inspection would be easier, faster, and more affordable. We wanted to help cities acquire more data and use the data to effectively manage their sewer infrastructure. We started SewerAI in 2019 to achieve that goal. SewerAI is a U.S.-based business, and we build all our own technology.

Billy Gilmartin: Every wastewater utility out there is either running into or trying to run away from a consent decree. The U.S. Environmental Protection Agency is going around the country, auditing wastewater utilities to make sure they're operating in compliance with the Clean Water Act. To comply with the Clean Water Act, you need a thoughtful condition assessment program. You need to inspect all your assets and make rehabilitation decisions about how to extend the useful life of that infrastructure. On average, most utilities try to inspect everything on 5- to 10-year cycles. For a huge city like Houston, which has 36 million linear feet of pipe underground, that's a massive annual undertaking.

The industry has some 20,000 operators who are out there every day, collecting tens of thousands of hours of video footage. The problem is that each operator can only reasonably cover 1,000–1,500 feet a day. That's because they spend two-thirds of their time on a keyboard, typing in what they see. We developed a computer vision tool called AutoCode that automatically recognizes conditions in sewer inspection videos. It frees the operator to focus on quickly taking good-quality video. The result is that each operator goes from collecting video of 1,000–1,500 feet of pipe a day to 3,000–4,000 or sometimes 5,000. Our tool is now being used by dozens of utilities and contractors throughout North America. When our customers use our technology, the productivity gains are incredible.

Municipal Water Leader: In other words, the utilities have the cameras and the technology to send the cameras down the pipe, and your software augments what they're already doing?

Billy Gilmartin: That's right. We can work with any camera. It doesn't matter to us if it's a GoPro or a $200,000 camera. If the video is good, we can analyze it. The National Association of Sewer Service Companies, the underground infrastructure industry association, has 226 standard codes for defining conditions in sewer inspection videos—everything from roots and grease to breaks, holes, and cross bores. Our AI can automatically recognize and help predict what the pipe conditions are based on those codes.

SewerAI helps utilities and contractors across the country achieve compliance, predict risk, and create solutions in a fraction of the time required by other solutions. Its sewer inspection software doubles field productivity and can cut sewer assessment time by 83 percent.

- 130 million end customers served
- 20,000 miles of pipe data managed
- 6x faster in-office sewer assessment
- 2x faster field work

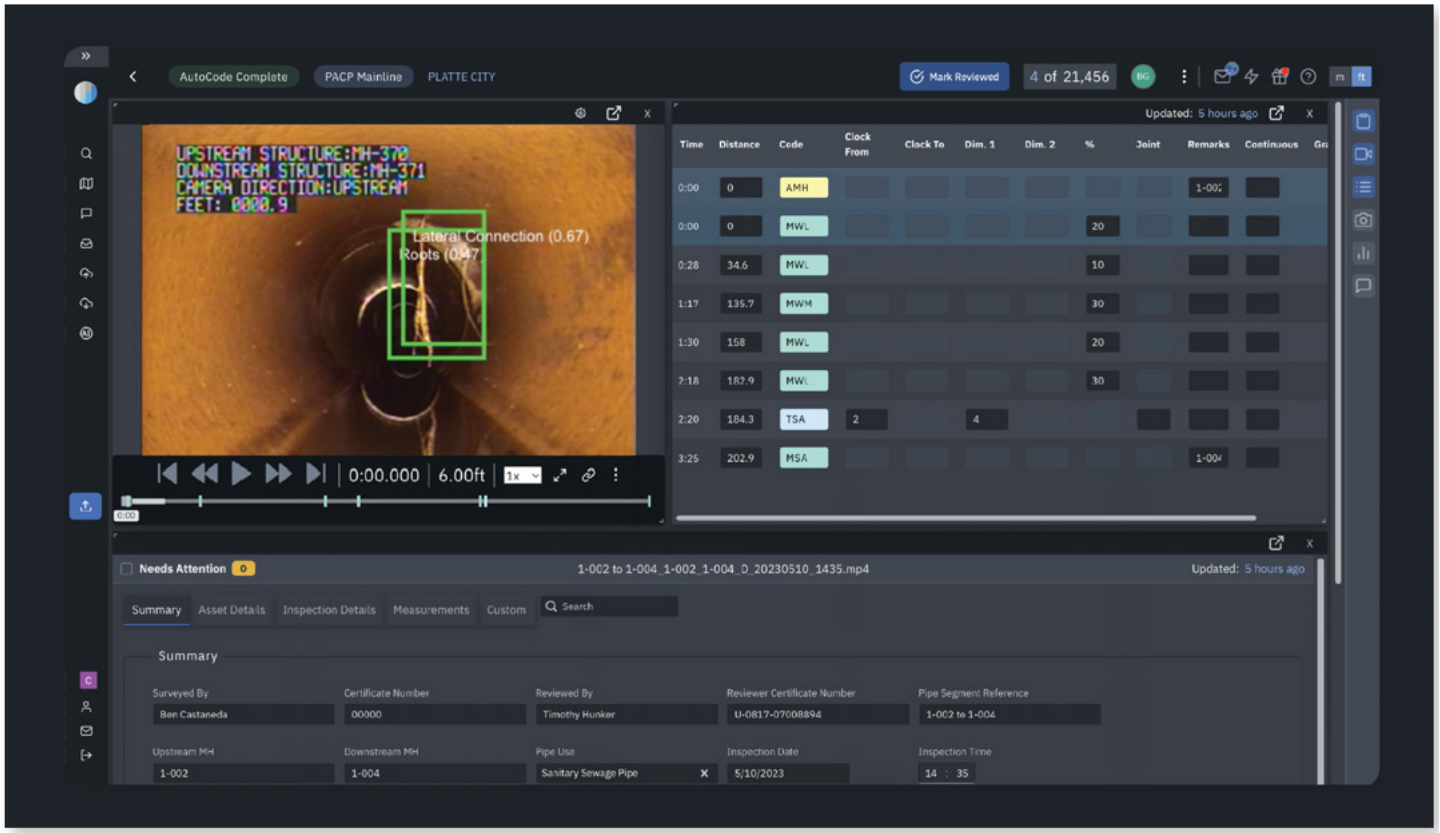
Matt Rosenthal: Historically, cities would drive big trucks to a manhole, lift the lid, put a camera down there, and drive it around. Operators had to stop constantly to code all the defects. That process would involve a half-million-dollar truck, two operators, and maybe a cleaning crew. We estimate that doing that costs about $2 per foot of pipe inspected, and operators are lucky if they can collect 1,000 feet of video per day. With our software, they can just collect the video on the truck, and when they're done, they click *sync*, the footage automatically goes to the cloud, and we do all the analysis.

Municipal Water Leader: Would you tell us about some of your other products?

Billy Gilmartin: Sewer3D is one of our favorite inventions from the last 18 months. The same problems that exist for pipe inspections exist for manhole inspections. A utility might have a $200,000 camera that it can use to collect 10 inspections a day. Then, the camera has to be offline for 24 hours so that the data can be gotten from it.

We were approached by a group of people who were building a similar inspection system but using off-the-shelf action cameras instead. We were able to design a workflow that allowed what was once done with a $200,000 camera to be done with a $500 camera. The result is our Sewer3D product. It enables people to create accurate digital twins of their underground infrastructure with affordable action cameras. They can use the models created by Sewer3D to evaluate their assets and make the best possible decisions about how to spend their money.

Matt Rosenthal: Sewer3D is powerful and easy to use. It's easy for the field crews to record the data and easy for the office crews to add all the metainformation they need about the pipe. They end up with a high-quality 3-D model that they can use to analyze the data.



SewerAI's AutoCode computer vision tool can automatically recognize conditions in sewer inspection videos.

Municipal Water Leader: Will utilities ultimately want to make a 3-D model of extended sections of their systems or even of their entire systems?

Billy Gilmartin: I'm convinced that that is where the industry is headed. We've been experimenting with how far we can take it. As we continue to develop Sewer3D, we're going to be able to produce 3-D models of entire collection systems in the not-too-distant future. This is the next step that needs to happen in infrastructure management for civil engineers: going from video to an actual twin that lives on a desktop and can inform decisions about how to manage a system or make predictions about how that system will operate in the future.

Municipal Water Leader: Would you tell us about your PIONEER platform?

Matt Rosenthal: PIONEER is our cloud data-management system. It is a powerful sharing platform with general-standard software-as-a-service cloud capabilities. For example, a city can send video to a consulting engineer to figure out how to fix a problem. We have an application programming interface, or API, that allows cities that have a lot of data in our system to use the data to run various analysis tools and figure out which pipes to fix. Every several hours, they can get a report on the worst pipes in their system. However, it's not enough to just give them the information. With PIONEER, we're giving them the tools that allow them to use their data in a productive manner to figure out which pipes need to be fixed, and how best to fix them.

Municipal Water Leader: Would you tell us about your QAI product?

Billy Gilmartin: QAI, which stands for Quality Assurance Inspections, is the newest product that we're rolling out. It fully automates a customer's quality assurance process for reviewing inspection videos. It helps ensure that the videos that end up in PIONEER are of the highest video quality and have the highest-quality metadata (data about which manhole the video was taken at, which direction the camera was going in, the size of the pipe, and so on). We're seeing that utilities are having lots of inspections completed by people who aren't necessarily the best trained and who don't follow best practices. QAI is a great tool for utilities to use to make sure that they're getting the best-quality product.

Municipal Water Leader: Please tell us about some of the results your customers are seeing from your products.

Billy Gilmartin: Since our founding, data on over 120 million linear feet of pipe have been uploaded to PIONEER. At this point, PIONEER receives about a million linear feet of data per week. The productivity gains that we deliver to our customers are incredible. I was just looking at information on a customer that uploaded a bunch of data collected without using our technology. They were averaging

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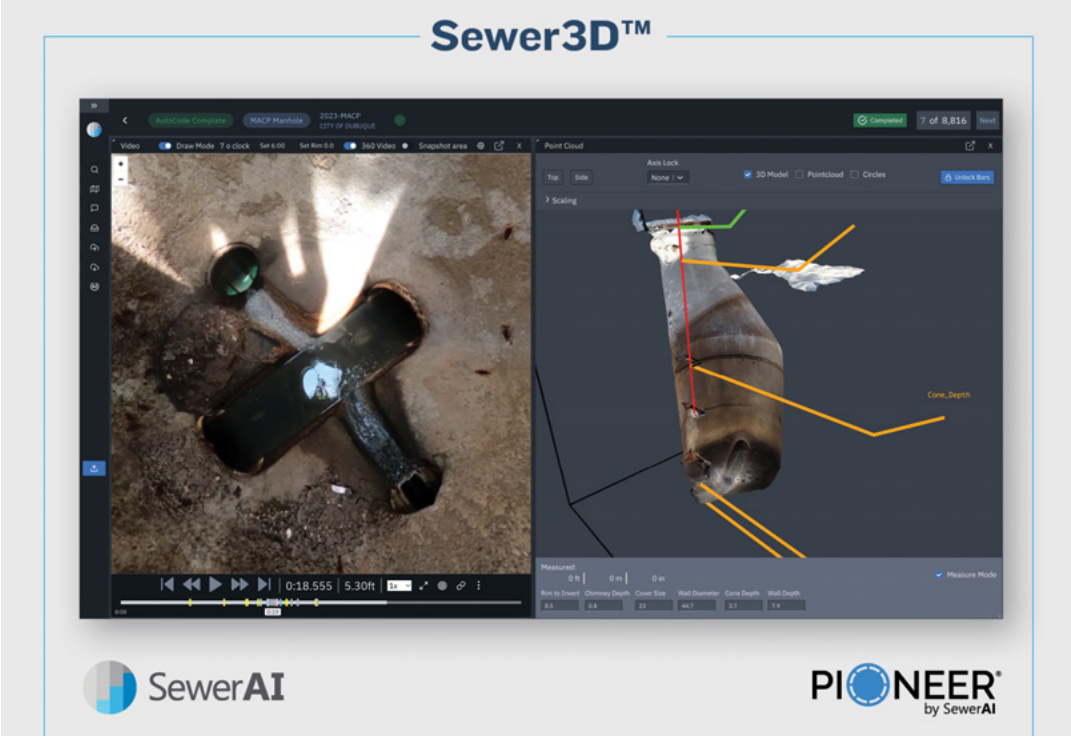

SewerAI's Sewer3D solution enables people to create accurate digital twins of their underground infrastructure with affordable action cameras.

45 minutes per inspection. We know that if they used AutoCode every day, they could double their productivity. That's ultimately why they decided to buy from us.

We help identify critical conditions and significant structural deficiencies inside pipes that can result in failures. We see these every day. Those failures are expensive and disruptive to public health and safety. Every time we identify a grade 5 defect, we communicate it immediately to our customers so that they can take action on it. Improved productivity in the office is hard to measure, but we believe we are increasing it around sixfold. We know we're making a big difference.

Municipal Water Leader: What is your vision for the future?

Matt Rosenthal: We're excited about the future. We want cities to be able to manage their infrastructure in the most cost effective way possible. We do that by providing the tools they need to accomplish that, including field productivity tools, office productivity tools, and sharing capabilities. In the future, we want to go beyond pipe inspection to help cities do pipe repair analysis. Historically, engineers have done one-off repair projects. We think we could add a lot of value to the work of engineers and cities by helping them figure out the best, most cost-effective way to prioritize and accomplish that work.

In the long term, we are thinking about applying the same AI technology and cloud data-management technology that we provide to the wastewater industry to other infrastructure verticals. Just the other day, we were asked to provide services for an organization focused on lead pipe replacement. This is exactly the kind of problem we want to see our technology helping solve, extending the useful life of our infrastructure and improving public health and safety. When we look to the future, we know our technology could be used to improve the visual inspection process for infrastructure such as roads, rail, high-voltage electric wires, dams, and bridges. We think our technology can be more widely applied, with the ultimate vision of helping cities lower their cost of infrastructure ownership. M

SewerAI's current customers include

- City of Houston, Texas
- Oakland County Water Resources Commissioner, Michigan
- Macomb County, Michigan
- Knoxville Utilities Board, Tennessee
- Delaware County Regional Water Quality Control Authority, Pennsylvania

Matt Rosenthal is the CEO and cofounder of SewerAI.

Billy Gilmartin is the chief revenue officer and cofounder of SewerAI.

Both can be contacted at sales@sewerai.com.

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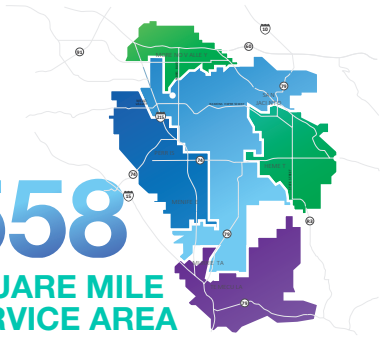

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Solve for Growth: McKim & Creed's Water and Wastewater Projects Support Fast-Growing Cities

The award-winning Chatham Park Water Recovery Center in Pittsboro, North Carolina, supports North Village, a 2,224-acre mixed-use village that forms part of the master-planned community of Chatham Park.

McKim & Creed is an award-winning employee-owned firm that handles a wide range of water, wastewater, and water reclamation projects for municipal utilities throughout the Eastern Seaboard, Louisiana, and Texas. Many of its clients are fast-growing cities that are facing a huge demand on their water and wastewater systems. In this interview, Rob Stout, who leads McKim & Creed's Water Business Unit, talks with Municipal Water Leader *about some of the company's innovative projects, such as the Chatham Park Water Recovery Center in Pittsboro, North Carolina, one of only two onsite water reclamation systems in the United States.*

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

Rob Stout: I have about 30 years of experience in municipal water and wastewater and a background in finance, operations, and business development. I graduated with a degree in civil engineering in 1994. Like many engineers-in-training, I began my career providing computer-assisted design drawings for designs. Shortly after receiving my professional engineer license, I began managing water, wastewater, and development projects. After about 12 years, I earned an MBA. I then started a water and wastewater practice in the Carolinas, essentially building business for my previous firm. We grew significantly with some key hires, strategic wins, and a best-in-class mentality when it came to client service. I switched from that role to managing the operations and finances of a business unit. My background

PHOTOS COURTESY OF MCKIM & CREED.

The Chatham Park Water Recovery Center's sustainable treatment process includes a five-stage membrane biological reactor nutrient process followed by a greenhouse incorporating native plants.

in operations, finance, and business development (managing both the top line and bottom line concurrently) has assisted me tremendously in my current role at McKim & Creed.

Municipal Water Leader: Please introduce McKim & Creed.

Rob Stout: McKim & Creed started in 1978 as a small structural engineering firm in Wilmington, North Carolina. Since then, it has grown into an award-winning employee-owned engineering, survey, and planning firm with more than 850 employees. We have 27 offices in the Carolinas, Florida, Louisiana, Texas, Pennsylvania, and Virginia. Our clients are primarily city and county municipalities along the Eastern Seaboard and the Gulf Coast. Many are fast-growing cities that are witnessing significant pressure on critical infrastructure such as water and wastewater systems.

Municipal Water Leader: McKim & Creed works on a large range of project types. What are some of the common issues you aim to solve for your customers?

Rob Stout: Our team is helping clients obtain funding from the Bipartisan Infrastructure Law and other sources, which often leads to additional work for us down the road. In 2023, our Louisiana team helped clients secure $27 million in funding to complete much-needed infrastructure improvement projects in the state and has another $96 million in the works.

We also try to stay ahead of regulatory issues for our clients. Top of mind is the U.S. Environmental Protection Agency's (EPA) upcoming lead and copper rules compliance deadline in October 2024. We are replacing lead and copper lines in several of the communities that we serve. We have helped clients meet the EPA's regulatory requirements, including by capturing the locations of lead water lines and providing a replacement plan. Another common issue is helping clients address community growth, since increasing population is straining many clients' systems. Whether the project involves expanding a wastewater treatment plant or increasing the size of water transmission and wastewater collection mains, we are there to help our clients meet those challenges.

Municipal Water Leader: Would you walk us through the process of working with a new client on a water-related issue?

Rob Stout: We try to understand our client's core needs and critical success factors so we can tailor a program to

The WaterHub at Emory University.

them. For example, perhaps the client's core need is to quickly design and construct a large new water transmission main to accommodate regional growth. In that case, our program would aim to accomplish efficiencies in the design, permitting, regulatory, and property acquisition aspects of the project so that it can get under construction without delays. Along with that, we'll develop a plan to understand all project risks. From there, we pair our experts with the project tasks that they align with. Lastly, communication is key in everything that we do. We keep the client, the stakeholders, and the project's internal and external teams in the loop on progress, risk factors, and critical decisions made along the way.

Municipal Water Leader: Your company won an American Council of Engineering Companies (ACEC) Engineering Excellence Grand Award for your work designing a water reclamation treatment facility at Emory University in Atlanta. Please tell us about that project.

Rob Stout: The WaterHub at Emory is an onsite ecological water reclamation treatment facility capable of reclaiming approximately 400,000 gallons of water per day. It's the first system of its kind in the United States. The WaterHub mines wastewater from the campus sewer system, treats it using reactors with submerged fixed film and wetlands, and repurposes it for beneficial reuse. The system can replace up to 146 million gallons a year of potable water with recycled wastewater, accounting for about 40 percent of the total campus water demand. This reduces the overall demand of the water-stressed Metro Atlanta area.

Municipal Water Leader: Please tell us about some of your other water recovery projects.

Rob Stout: The Emory project was a springboard to our Chatham Park Water Recovery Center (CPWRC) in Pittsboro, North Carolina, just outside Raleigh. CPWRC, also an ACEC Engineering Excellence Award winner, supports North Village, a 2,224-acre mixed-use village that is part of the $15 billion master-planned community known as Chatham Park. It was important to our client, Preston Development, to build Chatham Park with a focus on sustainability and the ability to meet the area's expected future growth. McKim & Creed evaluated and developed a unique approach to combine a sustainable treatment process that includes a five-stage membrane biological reactor nutrient process followed by a greenhouse incorporating native plants. The membrane biological reactor process provides natural biological treatment, and microorganisms within the greenhouse are cultivated among plant roots to remove carbonaceous material, uptake nutrients, and break down waste without using chemicals. CPWRC earned the top honor at the 2023 ACEC North Carolina Engineering Excellence Awards, a 2023 National ACEC Honor Award, and the 2022 CleanTech Innovation Award.

Municipal Water Leader: Do you want to mention any new projects you have coming up?

Rob Stout: One large project in the works is the North 3 Utilities Extension Project in Cape Coral, Florida. The goal is to replace existing septic systems and private water

PHOTOS COURTESY OF MCKIM & CREED.

McKim & Creed built two SCADA-controlled gated control structures to help reduce flood risk for the Pontchartrain Levee District of Ascension Parish, Louisiana.

wells with a coordinated, comprehensive water, sewer, and irrigation system. The scope of work includes reconstructing approximately 7 miles of divided roads and 46 miles of undivided roads and building 186 miles of new potable water, wastewater, and irrigation piping infrastructure. We will also install eight new duplex lift stations and two new wastewater master pump stations.

The disposal of biosolids has become a challenge in recent years as landfills have changed ownership and increased tipping fees. In some cases, they reject biosolids disposal altogether. Our Hendersonville Thermal Dryer Biosolids Improvements Project in Hendersonville, North Carolina, solves that problem for the client by upgrading the current solids handling process through a thermal drying facility to produce a standard biosolid product. The new thermal drying facility will provide class A product to improve the city's ability to dispose of solids.

Our potable water leak detection group does a variety of projects across the country. For Texas Water Utilities, the biggest challenge is identifying leak locations and addressing them to prevent the loss of revenue. Based on efforts last year, our team was able to provide a return of over $900,000 worth of water to the agency.

Our wet-weather group was recently awarded a project to conduct a sanitary sewer evaluation survey on a military base in Virginia. The team will inspect manholes, pump stations, and force mains and develop a rehabilitation plan. That project has several challenges, such as a high water table; restrictions on access because of its location on a military base; and the involvement of multiple governing bodies, including a regional wastewater authority.

The last project I'll mention is the SCADA replacement project for Manatee County, Florida. We will upgrade the SCADA software at four of the county's water reclamation facilities and booster pump stations. These upgrades will replace aging software, improve the facilities' cybersecurity posture, reduce maintenance, and reduce support costs. This work will be done with zero downtime.

Municipal Water Leader: How can potential customers best get in touch with you?

Rob Stout: They can visit our website, www.mckimcreed.com, or e-mail us at info@mckimcreed.com. We will put you in touch with the right person on our end.

Municipal Water Leader: What is your vision for the future of McKim & Creed's water business?

Rob Stout: Our near-term plan is to expand services in our existing territories, particularly in South Carolina and Texas. We are adding new capabilities as well. We recently expanded our cybersecurity services, because malware threats are becoming more prevalent in the water industry. There is also great potential for using artificial intelligence (AI) to increase efficiency. For example, we could use AI to review closed-circuit TV records and assign pipeline assessment and certification codes rather than having an individual watch hours of recordings. Finally, we want to stay ahead of regulatory drivers such as the lead and copper rule. Our field is always evolving from a regulatory and growth perspective. We want to continue to stay in front of those developments so we can provide the best solutions to our clients. M

Rob Stout, P.E., is the water business unit leader for McKim & Creed. He can be contacted at rstout@mckimcreed.com.

Robert Beltran of Dewberry: Client-Driven Success for Sustainable Water in Florida

Florida has plentiful and diverse water supplies and ecosystems. However, rapid population growth and ever-tightening regulations pose challenges for finding sufficient potable water for communities across the state. Dewberry has over 60 years of expertise in planning, design, and construction in water environments nationwide. In this interview, Municipal Water Leader *speaks with Robert Beltran, the Florida water market segment leader for Dewberry, about his holistic approach to working with and educating communities for a future of sustainable water supply.*

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

Robert Beltran: I have been working in Florida on water issues for 29 years. I am a native of Florida, and I have always enjoyed the water, but as I was studying engineering at Tulane University, I came to love and understand water through an internship with Hillsborough County, Florida. Water became important to me, and I saw how my work in water could affect local communities and our environment. I have had the pleasure of working both in the consulting industry and for a water management district in Florida. With 24 years of consulting experience, I have helped clients deal with different issues throughout the state. For 5 years, I worked at the Southwest Florida Water Management District, both as the assistant director and as the executive director. That was a great opportunity to see how things are looked at holistically and to understand what water means for our citizens' daily lives. I am the past president of the Florida WateReuse Association, which has kept me actively engaged in legislative affairs and in what is happening with water reuse in the state of Florida. I serve as a Polk County planning commissioner, which helps me understand the water needs for future development. I also work for Dewberry as its Florida water market segment leader, meaning I lead water efforts for Dewberry in Florida.

Municipal Water Leader: Please introduce Dewberry.

Robert Beltran: Dewberry is a private, family-owned company. There are not many of those in the architecture and engineering consulting industry. We were founded in 1956 as a land development surveying firm in Northern Virginia. We are currently headquartered in Fairfax, Virginia, and have more than 60 offices and more than 2,500 employees nationwide. We provide architecture, construction, engineering, environmental, geospatial mapping, planning, consulting, advisory, and technology solutions. At Dewberry, we are most focused on understanding local communities so we can best serve our clients.

Municipal Water Leader: Who are your customers, and where are they primarily located?

Robert Beltran: We have customers throughout the United States, though my focus has mainly been on water resource issues here in Florida. Throughout the country, our clients represent communities; facilities; municipalities; industry; energy; the federal government; and the education, health and wellness, and justice sectors. We do real estate and commercial development, risk response, and recovery work for resilience, telecommunications, transportation, and the water market. In the Florida practice, most of our clients on the water practice side are municipality based, and we help them with water-related projects to ultimately serve their residential and utility customers.

Municipal Water Leader: Please introduce the different water markets you work in.

Robert Beltran: Dewberry has taken a holistic approach to the Florida water market. We work on water resources or natural systems water quality projects such as stream restoration, wetland enhancements, or engagements in the environment. We also design and oversee the construction of water, wastewater, and storm water elements and facilities and process elements. We design water distribution and wastewater collection systems as well as reclaimed and beneficial reuse projects to help maximize every drop of water available to our clients. We help many of our clients envision the future through master planning and by dealing with state and federal regulatory compliance issues. We cover the gamut holistically, looking at water as one thing, no matter if it is storm water, wastewater, reclaimed water, or drinking water. It is all water, and we should treat and use it in the most effective manner.

Municipal Water Leader: Please tell us about some of your water projects and services.

Robert Beltran: One of the projects we're most proud of is McIntosh Preserve, which we carried out for Plant City, Florida. In that location, we are enhancing about 400 acres of natural area by creating 139 acres of wetlands. We are diverting a ditch creek through the wetland system, filtering that water with the plants and natural elements, and then returning it to a canal that ultimately connects to Tampa Bay, thus providing the bay with higher-quality water. During the

PHOTOS COURTESY OF DEWBERRY.

Dewberry provides reclaimed water to the McIntosh Preserve in Plant City, Florida, both enhancing its health during dry seasons and improving the quality of the water that eventually exits.

Work on a septic-to-sewer conversion in Wakulla County, Florida.

dry seasons when the wetland is not getting enough water, we will do what we call *reclaimed water augmentation*. That means providing water to those systems to keep the biology healthy while taking the opportunity to create a reclaimed water spring in which water bubbles up as in a natural spring to show the community how clean the reclaimed water from their own wastewater plant is. It is a great holistic project that uses natural systems to treat storm water runoff from the city and educates the citizens on the use of reclaimed water and how it can benefit their community.

Similarly, for the City of Jacksonville Beach, on the First Coast of Florida, we are looking at how to beneficially use reclaimed water in the community as part of an evaluation under Senate Bill 64, a regulation that says that all municipalities must try to use their reclaimed water beneficially by 2032. We are helping Jacksonville Beach look at opportunities to use that water more effectively, whether in golf course irrigation, in hospital air-conditioning systems, or even potentially for direct potable reuse (DPR).

In Wakulla County, Florida, we are improving groundwater quality by converting old septic systems into a centralized sewer, which requires a higher level of treatment. We also are doing a massive project for the Polk Regional Water Cooperative (PRWC), through which 16 municipalities are coming together to plan and develop their future water supplies. They are looking at alternative water sources and developing supply throughout the county. That approximately $650 million program is being cofunded by the state and the local water management district, and it has been a great project that will help the environment.

Finally, we have the Cherry Hill Water Treatment Facility, which we constructed for Polk County Utilities. Because of the water quantity limitations in this region of the state, we have looked at ways to provide an alternative water supply. In Florida, we typically get water from the Upper Floridan aquifer, but it is reaching its limits. With that in mind, we drilled two new wells into the Upper Floridan, one of which has the flexibility to be potentially extended in the future into the Lower Floridan aquifer, which is considered an alternative supply source. We also made sure this facility is designed to receive water from the PRWC regional system. Finally, we designed and built a pilot DPR facility at this site.

Municipal Water Leader: Would you tell us more about the DPR facility?

Robert Beltran: The DPR pilot facility at the Cherry Hill facility is a poster project for Polk County. It is one of several pilot projects throughout the state, though this is the first being done at a water treatment plant rather than a wastewater treatment plant. That means you do not swing by unpleasant smells before you get to the clean water. We were fortunate that a large pipeline already delivered reclaimed water to the existing water treatment plant. The reclaimed water that comes to this facility is already clean enough to use to irrigate your yard, but the additional treatment we carry out makes it clean enough to drink. We want the public to come out and see it; look at it; touch it; and hopefully, one day, get to taste it.

The DPR pilot facility at the Cherry Hill Water Treatment Facility.

We are not using reverse osmosis, the technology typically used for similar projects in California. This is a multilayer treatment system that includes enhanced coagulation/sedimentation, which involves adding a coagulant to the water to create larger particulates and cause additional pollutants to settle out. We are using ozone for additional disinfection and biological activated carbon filtration and ultrafiltration to filter out other chemicals and pharmaceuticals. We are then polishing with granulated activated carbon and, ultimately, UV disinfection. By the time the water comes out, it is highly treated and clean, and it most definitely exceeds all state and federal drinking water standards. It is an extensive treatment process, but we must take all those extra steps to be sure that we are providing a safe, reliable source for our citizens. This project is going to run for several years as an educational facility at a rate of about 10 gallons per minute. Once the county, the citizens, and the regulators are comfortable with it, we hope to build a full-scale facility. We are excited about that project and where DPR is going overall for the state.

Municipal Water Leader: In what ways is regulatory compliance a driver for your customers' projects? How does Dewberry bring its expertise into play in this area?

Robert Beltran: Everything we do is driven by regulations, compliance, or growth. Where the regulations are going and where our clients need to be in the future are important influences on their projects. Florida is growing a tremendous amount, with over 1,000 people arriving every day, so a lot of the work we do for our customers has to do with meeting expectations for growth while complying with today's regulations and the regulations of the future. We're also guiding our clients to find the best use of reclaimed water to meet the requirements of Senate Bill 64 by 2032. For example, we are looking to see how reclaimed water can serve the needs of Bay County, which serves Tyndall Air Force Base. Our diverse team of engineers, attorneys, scientists, and specialists is using its expertise in design and funding compliance to make sure that we are providing our customers with the expertise and knowledge to meet today's regulations and future growth needs.

Municipal Water Leader: Please tell us about your funding assistance for utilities and municipalities.

Robert Beltran: The state and federal governments have provided a lot of money to water projects over the last 7–10 years. These projects are getting more expensive, with higher levels of treatment being required to meet future regulatory requirements. We are meeting local needs while also looking at a more regional perspective, meeting the goals and priorities of the state. We educate the public, local regulatory agencies, water management districts, and legislators to make sure they understand how important each project is and how it supports state water quality goals. That way, when we ask for money, whether it is a grant, a loan, or a low-interest loan, the state supports the project and understands its benefits. This formula has led to a lot of success for us over the past 8 years. We have been able to secure over $373 million in grants or low-interest loans for our customers. We are thankful to the governor, the legislature, and the secretary of the Florida Department of Environmental Protection for providing these funding opportunities, especially for some of our rural areas and counties that would not necessarily otherwise have the funds for these projects.

Municipal Water Leader: How does Dewberry find new projects and opportunities?

Robert Beltran: My philosophy has been simple throughout the years, and I would say that it has been fairly successful. It boils down to doing a good job for our clients. If we provide value to our clients day in and day out, they are going to look to us for their next project. For example, we have been working with Polk County Utilities since 2001. We continue to perform well for the agency, so it comes back to us and tells others what a great job we do. We also look at how regulations might affect the communities where we are working and how we might be able to help those communities meet those regulations. It is a combination of doing a great job, understanding where the rules are going, and making sure we can apply the right expertise to the right problems to create high value for our clients.

Municipal Water Leader: What is your vision for the future?

Robert Beltran: Water is such an undervalued resource. As a society, we truly do not appreciate what we have when we turn on the tap. We do such a good job of providing water to our municipalities and our customers that its value can be taken for granted. As we continue to grow and as we see more issues with water quality and quantity, my vision is to make sure we have ample, reliable, and affordable water sources that meet the needs of our citizens and our businesses while maintaining a thriving environment. Florida's environment is what makes the state so special. Our lakes, wetlands, oceans, and estuaries are critical to our state for tourism and clean drinking water, and as we expand and grow, my vision is to see Florida's environment be sustained. M

Robert Beltran is the Florida water market segment leader at Dewberry. He can be contacted at rbeltran@dewberry.com.

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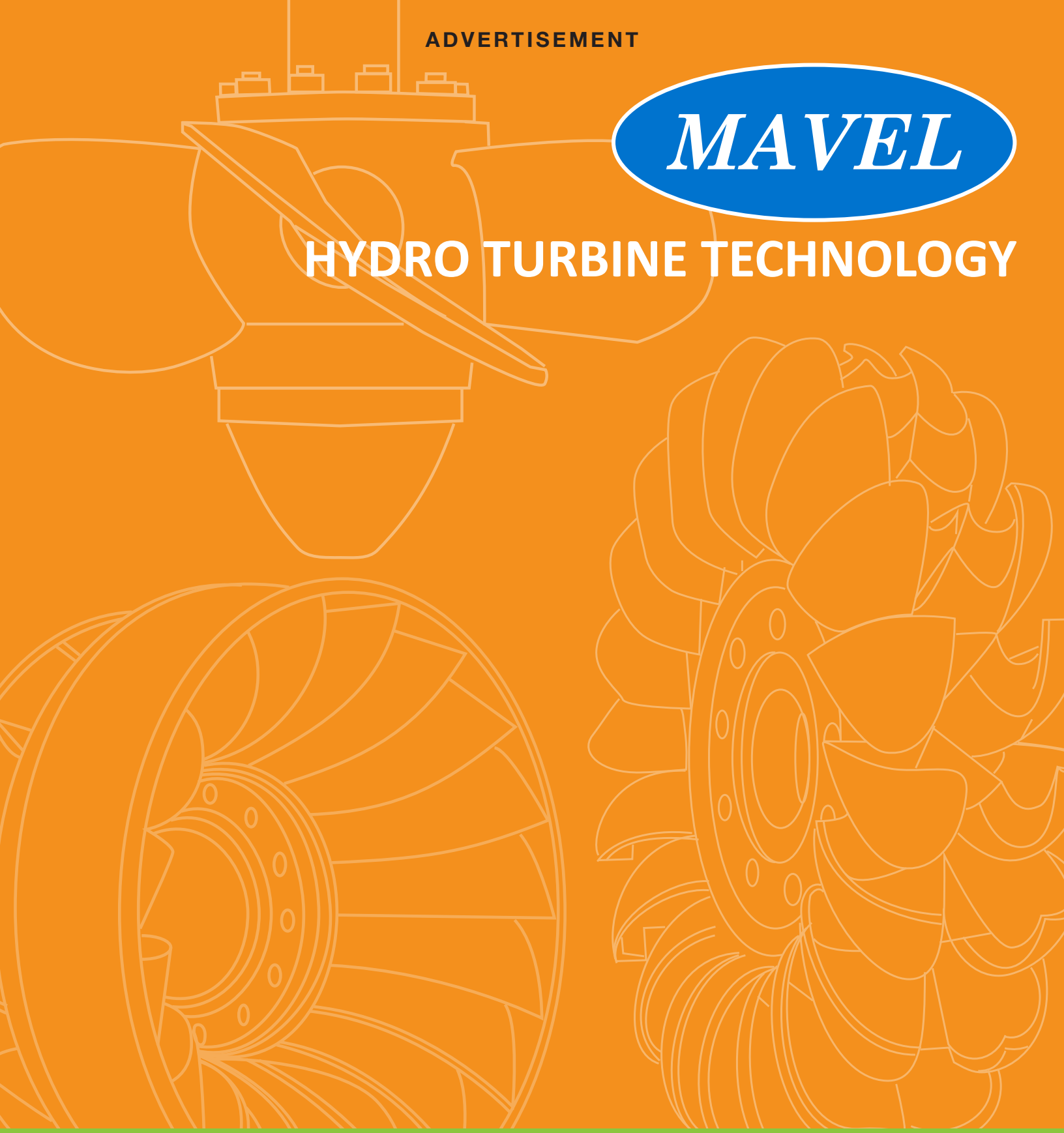

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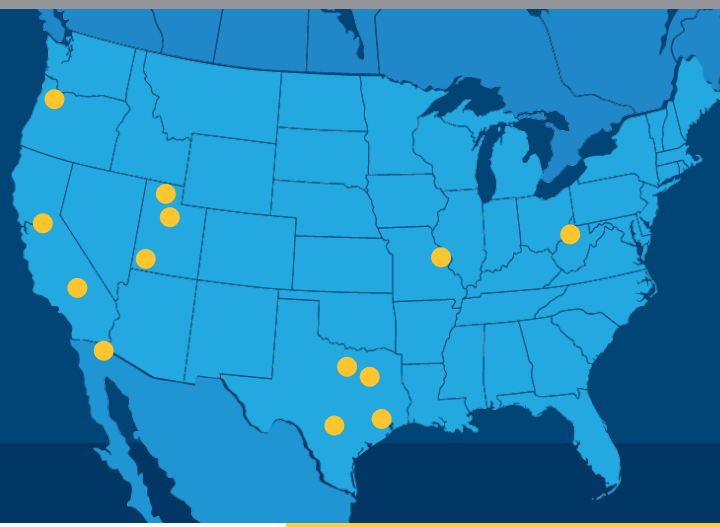

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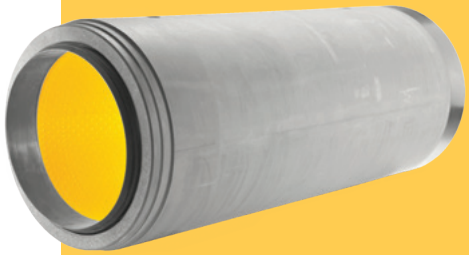


Seeger Water's Evolution From Lawn Sprinkler Repair to a Full-Service Water Company

A clarifier for surface water treatment.

As DJ Seeger grew up around the family lawn irrigation business, he took an interest in the big picture of water supply. Today, as the president of Seeger Water, he leads what has become a full-service irrigation, plumbing, and water operations company. It helps municipal water clients with everything from chlorine and compliance to communicating with customers. In this interview, Mr. Seeger shares with Municipal Water Leader *how the company helps clients in the fast-growing Austin–to–San Antonio corridor save water.*

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

DJ Seeger: I am the president of Seeger Water, a family-owned company in San Antonio, Texas. My dad started the company in 1986 as a lawn irrigation repair business, and I grew up around the business. In 2007, when I was in middle school, my dad renamed the company Seeger and Son's Sprinkler Company. Throughout school, I worked for the sprinkler company every weekend, doing repairs and installs, helping with designs, and getting quotes to customers. I also took an interest in the water side of irrigation. In irrigation, you learn all about sprinkler systems, but you don't ever think about where that water is coming from and how much of it is available. But here in south-central Texas, we experience frequent droughts. In San Antonio, we are famous for our water restrictions. You get an 8-hour window, 1 day a week, to water your lawn or landscape with overhead sprays and rotors.

By the time I was out of high school, I realized that the future of irrigation is water management. It was more than just connecting a sprinkler system to a water meter and turning it on; it was about understanding where that

PHOTOS COURTESY OF SEEGER WATER.

water comes from and how much is available and making educated decisions about how best to design an irrigation system with the available resources. Sometimes, that is as simple as choosing native plants or native grasses. And, of course, minimizing the total footprint of turf grass that has to be watered in a landscape should always be a top goal of a landscape irrigator. As I got into that, I started to pick up bigger commercial jobs. We eventually added plumbers to our staff and expanded into plumbing. We do a lot of work on pumps, and water utilities started calling us to ask if we could work on their pump stations, and then if we could do the chlorine and the bacterial sampling. Four years ago, we hired water operators and began working for small water systems. Some are municipal and some are homeowners associations (HOAs) that own the water and supply it to the residents.

Today, we are a full-fledged irrigation, plumbing, and water operations company. Our 80 employees serve San Antonio and Austin with irrigation and plumbing needs. We serve the entire state of Texas with our pump stations and water operations. We do irrigation service and repair and plumbing service and repair, and we design, install, and service pumps and controls for all water applications. We also do backflow testing. If it's water related, we do it.

Municipal Water Leader: Who are your customers?

DJ Seeger: Almost all our customers are in Texas. They range from homeowners and commercial property managers to agencies such as the army, for which we've done work at Fort Cavasos in Killeen, Texas, and Fort Carson in Colorado Springs, Colorado, and the U.S. Army Corps of Engineers, for which we do a lot of work at Canyon Lake, Texas. We also serve municipalities and industrial clients. Many of our clients manage commercial properties, such as office buildings, golf courses, and warehouses.

Municipal Water Leader: Would you tell us about the range of services you provide for public water systems?

DJ Seeger: For public water systems, we offer the full gamut of services, from pumps and controls to servicing water wells, delivering chlorine, and measuring and adjusting the chlorine residuals to conform with state requirements. We also consult and file compliance documentation with the Texas Commission on Environmental Quality, which is the regulatory authority for public water systems in Texas. We even help with things like public water systems' billing and communications with customers. When there's an issue such as a boil water notice, we make sure that those notices get out on time and that questions from those consumers are answered quickly.

Municipal Water Leader: What are some of the ways that you address water scarcity through water storage for your customers?

These tanks form part of a rainwater recycling project that stores and cycles 150,000 gallons of rainwater for irrigation.

DJ Seeger: You often hear people say that we don't have a water problem, we have a water storage problem. Here in south-central Texas, we rely greatly on our groundwater resources. In fact, for decades, San Antonio got 100 percent of its water from the Edward aquifer. But we do get rainfall, and when it rains, it pours. So we have pushed many of our clients, especially those outside the major cities, to increase their storage capacity through the use of both underground systems and above-ground tanks.

We also want to make sure that the aquifer recharge zone, which runs from north of Austin to west of San Antonio, stays clear of any obstacles so that all the water hitting the ground makes it down into the aquifer and recharges our water wells. To accomplish this, we encourage customers to keep creeks, streams, and drainage basins clear of obstacles, trash, and debris. Additionally, we have implemented water conservation initiatives for our clients. During periods of drought, we want to limit the watering of ornamental landscapes. We want to reduce the amount of outside pressure washing. We try to water in the middle of the night so that we do not lose water to evaporation. We avoid watering in the early morning hours when it is especially windy. But I would say that our biggest step toward addressing water scarcity is our use of flow sensors. Here in Texas, Seeger Water was one of the early adopters of flow sensors. We install them on water meters, tanks, and water wells. If a leak is detected, we get a notification, and we send that to a water operator or an irrigation technician to investigate.

Municipal Water Leader: Similarly, what are some of the water management practices that Seeger Water offers?

DJ Seeger: In subdivisions that have wastewater treatment facilities and where the HOA irrigates common areas, we use treated wastewater to water the grass. It is perfectly safe to use type 1 effluent-treated wastewater for irrigation. We also

encourage clients with large buildings, especially those with metal roofs, to collect rainwater using cisterns. We use that water in irrigation or outdoor pressure washing. The most important thing for us, though, is to be able to detect leaks when they happen. We also want to explore all our alternative water sources, such as wastewater, rainwater, or gray water from the building, for use in supplemental outdoor watering.

Municipal Water Leader: What are some of the main challenges your customers deal with in an arid climate like Texas's, and how do you help them address those?

DJ Seeger: The two big issues in Texas start with the concerns about water availability. Our service region, from San Antonio to Austin, is one of the fastest-growing metropolitan regions in the United States right now. In other parts of the country, the biggest use is agriculture or industry, but here in south-central Texas, where so many single-family homes are popping up, the number 1 use of potable water is landscape irrigation. With all the development, our clients are concerned about whether there is going to be enough drinking water. We are pushing our clients and the local water utilities to implement water conservation initiatives involving everything from using native plants to high-efficiency irrigation.

Another big challenge is water treatment. We are starting to see groundwater treatment facilities that were originally built to process 10 million gallons per day now processing 60 million gallons per day. We are having to upgrade the chlorine injection pumps, the chlorine storage capacity, and the booster pumps. Another big challenge is the pipe size of the distribution mains. In many areas, they are no longer big enough to support the number of homes and businesses that are pulling water from them. We need to increase our distribution capacity. Some water treatment plants are just going to have to be upgraded, but others will need to be demolished and rebuilt to support the greater demand on the system.

Municipal Water Leader: As the climate continues to change, how will the region maintain an adequate water supply?

DJ Seeger: In Texas, all retail public water suppliers, wholesale water suppliers, and irrigation districts are required to have a drought contingency plan (DCP). We draft DCPs for clients and send them to the clients' civil engineers for edits and approval. We are encouraging our clients to raise their estimates of how much water they'll need over the duration of their DCPs—they'll use more than they think. The Texas Legislature has made money available to public water systems to bring in additional water resources. I think that one day we are going to be piping water into our region. I think we could look to the Rio Grande as a potential source of water in the future. The Rio Grande is filled with snowmelt from the Rockies, and during periods of high snowfall, the Rio Grande is full, if not over its capacity, by the spring and summer. There are also some civil infrastructure projects going on with lakes in Dallas that will help recharge our aquifer. I am a big believer in aquifer storage and recovery, which in some cases involves desalinating brackish water and using it to recharge the aquifer. I think we need more of those recharge centers. I think we need to explore our other resources, such as snowmelt, the Rio Grande, and possibly water from aquifers that are in less populated areas that we can bring to San Antonio and Austin.

Municipal Water Leader: Are there any events coming up that Seeger Water is participating in?

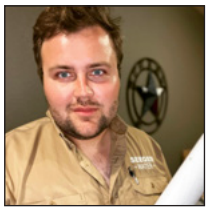
DJ Seeger: In March, I spoke at the Central Coast Water Senate in Santa Cruz, California. The senate is an annual conference that brings together municipal water systems, municipal water leaders, and landscape and plumbing professionals to discuss California's water challenges. I shared some of the things we are doing here in Texas. For instance, our biggest initiative toward conservation has been remote monitoring. With central irrigation and SCADA programs, we are able to monitor flow rates and system pressure in real time and identify possible leaks within minutes of them starting. We've also implemented a 24/7 on-call response policy, allowing us to respond to leaks immediately and thereby prevent water waste.

Also in March, we went to Washington, DC, to meet with members of Congress about the ongoing water crisis here in Texas.

In November 2024, we will speak at the Irrigation Association's Irrigation Show in Long Beach, California, about water conservation initiatives and water storage initiatives specifically for landscape irrigation.

Municipal Water Leader: What is your vision for the future?

DJ Seeger: The issue of water scarcity is not going anywhere. As the population in south-central Texas continues to skyrocket, the availability of fresh drinking water resources is going to continue to be an issue. I envision a future in which contractors, public water systems, consumers, and government leaders work together to find innovative solutions to Texas's water availability, treatment, and storage issues. M



DJ Seeger is the president of Seeger Water. To contact Seeger Water, visit www.seegerwater.com or call (830) 624-9000.

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WFI Group: Advancing Water Technology to Protect Public Health

A MAC-based Toxsorb system for removing perchlorate from ground water that will be used as drinking water in Israel.

A MAC-based Toxsorb system for the removal of chrome and cyanide in an electroplating facility in California.

Israel-based WFI Group has numerous business units promoting cutting-edge water treatment technologies. Among them, Triple-T focuses on wastewater reuse and reclamation; ROTEC on high-recovery reverse osmosis (RO) desalination; and Toxsorb on pollutant removal. In our interview with Chief Business Officer Ari Veltman, we look at developments in all three business units, with a special focus on Toxsorb's Modified Activated Carbon (MAC) product, which may soon make treating challenging contaminants like hexavalent chromium more feasible.

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

Ari Veltman: My background is in economics and business. I did my business masters in Israel, followed by a PhD in game theory at the Tokyo Institute of Technology. My professional background includes international business development and 8 years in international Google offices leading business teams. More recently, I have been mentoring startups on business strategy in an industry-agnostic fashion, which opened my mind a lot to applying business principles across industries. This mentoring work extended to the Israeli Export Institute, which is where I crossed paths with WFI's CEO, Ofer Avidan. We had been working together for a few months when Ofer asked me to join the group.

Municipal Water Leader: Please introduce WFI Group.

Ari Veltman: WFI Group was established about 15 years ago by Marc Perlman (who built Ocean State Job Lot from scratch into a top-notch retail chain) together with two innovator-entrepreneur friends from Israel, Ofer Avidan and Nathan Parsons. They recognized the need for innovation in the water space, which led them to start the group with the vision of developing new technologies in Israel and bringing them to support future needs globally, specifically in the United States. Since then, we have been investing a lot in research in three main fields: wastewater treatment for decentralized reuse applications, the selective removal of inorganic pollutants, and high recovery RO. All our units are based on proprietary technologies and know-how and are patented.

Municipal Water Leader: Would you tell us about your Triple-T business unit's technologies and the importance they hold for municipal and agricultural customers?

Ari Veltman: Sure. Triple-T's main focus is on a technology that enables wastewater reuse or reclamation for decentralized communities. At a high level, this technology is bringing the best of intensive and extensive approaches—namely, a treatment process with low operational expenses and minimal operational needs that delivers effluent of a quality that can usually only be achieved by intensive systems such as activated sludge. It can achieve nitrification and denitrification in one step, without involving complex machinery or aerators and without ongoing sludge handling.

PHOTOS COURTESY OF WFI GROUP.

This can connect what is usually a municipal economic headache with agricultural/irrigation needs for water sources, creating an economic opportunity for everybody.

On the agriculture side, we are also getting ready to pilot a more intensive solution based on the same concept that can serve hog farms to significantly remove ammonium content from pig manure.

Municipal Water Leader: Would you also give us an overview of your work in desalination?

Ari Veltman: Our ROTEC business unit has developed a technology called FR-RO (FR stands for *flow reversal*). With the simple idea of reversing the flow direction across RO membranes, we reverse the effects that create scaling and biofouling. This technology can increase the recovery rate significantly, delivering more high-quality permeate and reducing concentrate volumes while minimizing chemical consumption, clean-in-place frequency, and membrane replacement. This technology can also be retrofitted onto existing systems, which is what we are currently doing in Santa Monica.

Municipal Water Leader: Turning to your pollutant removal solutions, would you tell us about the different technologies under your ToxSorb business unit?

Ari Veltman: ToxSorb specializes in adsorption technologies, and it carries out research into processes that increase economic efficiency through the superior selective removal of inorganic pollutants from water (either drinking water or industrial wastewater). One key product is MAC, or Modified Activated Carbon, which can be applied to various pollutants such as chrome and perchlorate with a selectivity that allows significant reductions in brine.

We are also moving forward soon to an industry pilot with a technology we call Nitrate Brine Treatment, or NBT. Brine is one of the key limiting factors for treating nitrate in drinking water, and this can help alleviate some water sourcing constraints.

Municipal Water Leader: How does MAC differ from conventional activated carbon, and what are the advantages?

Ari Veltman: First, MAC retains all the usual great attributes of activated carbon for organic and hydrophobic pollutants. However, while normal activated carbon is not effective for ions or polar molecules, our modification functionalizes the carbon for applications that are not usually treated with carbon, such as oxyanions. Normally, then, the comparison will be to alternative technologies that are used for the removal of these pollutants—the most obvious is ion exchange. MAC's advantages include that it produces a smaller volume of brine because of its higher selectivity, that it acts as a catalytic agent for redux reactions to fully eliminate the brine problem in some cases, and that it can fully regenerate over long periods.

Municipal Water Leader: What sorts of pollutants is MAC best positioned to treat?

Ari Veltman: At the moment, we are mostly targeting oxyanions such as arsenate, chromate, perchlorate, and phosphate. We have also had MAC applications for cyanide and heavy metals such as copper, lead, and nickel.

Municipal Water Leader: When MAC is regenerated, what happens to the pollutants, and how are they disposed of?

Ari Veltman: The full solution and process vary depending on the specific pollutant, so there is not one answer here. With cyanide, for example, the pollutant is oxidized and completely detoxified. For chrome, the hexavalent chromium is reduced by MAC to trivalent chromium, which is precipitated as chromium hydroxide.

Municipal Water Leader: Why it is significant that MAC can treat hexavalent chromium? How are regulations of this compound changing, and what will the result of that be?

Ari Veltman: Hexavalent chromium in drinking water is a known health concern, but regulators have hesitated to impose more stringent limitations on its level because of the technology barrier and the economic effects of imposing such a regulation. California has been looking into reducing the maximal contaminant limit from 50 parts per billion to 10 for a long time. It did reduce the limit a number of years ago, but that change was later reversed; now, the state is considering lowering the limit again. There is a lot of speculation regarding whether this is actually going to happen. Any technology that can remove hexavalent chromium and reduce the economic effect of a potential change could contribute significantly to public health.

Municipal Water Leader: Are there any other technologies under your ToxSorb unit that you would like to discuss?

Ari Veltman: At this point, I can briefly mention our technology to help remove the brine concerns from nitrate treatment solutions. Unlike our usual approach, which involves using MAC to replace other solutions such as ion exchange, this will be a complementary solution that will augment an ion exchange–based facility by treating its brine and turning the nitrate into either atmospheric nitrogen or potassium nitrate fertilizer, allowing the nitrate-free brine to be reused for regeneration and thus eliminating brine haulage. The results of internal testing and piloting have been great, and we will be looking soon for a suitable facility for an external pilot.

Municipal Water Leader: Who are the customers of your ToxSorb unit?

Ari Veltman: There is a big range of customers, ranging from municipal utilities that need to remove specific pollutants from drinking water to entities engaged in a range of industrial applications: electroplating or defense (for chrome), mining (for perchlorate), and more. We even have an application with an educational youth village that is drawing drinking water via a well from an aquifer that has been polluted by industry with perchlorate. We are not only helping the village efficiently produce drinking water but also helping to prevent the aquifer pollution from spreading.

Municipal Water Leader: What sort of overlap or cross-pollination is there between WFI's different units? Does innovation in one unit help the other units?

Ari Veltman: For any company, and definitely those that have more than one track, this is a big ongoing question. There are a number of ways in which cross-pollination exists within WFI. For one, there are a number of people who have an overall view across units and can identify opportunities for collaboration and synergies. The engineering teams know and talk to each other, so each unit has access to know-how beyond its immediate specialty. The research and development teams are generally not strictly limited, and they frequently consult and contribute to each other. Lastly, we occasionally have clients that need a solution that includes more than one of our technologies (e.g., RO plus the removal of a specific pollutant or biological wastewater treatment plus RO).

Municipal Water Leader: What are some of the upcoming projects that WFI Group is looking forward to pursuing?

Ari Veltman: Of the projects that are already public knowledge, I can mention ROTEC's upcoming involvement in the Pure Water San Diego project. Pure Water is a big direct potable reuse project with advanced purification designed to supply nearly half the local water supply. It will ultimately produce 83 million gallons per day (MGD) of water by diverting and recycling wastewater from the Point Loma Wastewater Treatment Plant. ROTEC is taking part in a four-stage demonstration system, which will use FR technology to treat and reuse the wastewater, achieving a recovery rate of up to 95 percent while minimizing specific energy and chemical use.

We are also excited about a nitrate removal project in California in which we applied out-of-the-box thinking to tailor the solution. I hope we'll be able to share more soon.

On the wastewater treatment front, there is a local reuse project for agricultural reuse in the north of Israel. It's a 210,000 gallon per day facility. Officially, it launched at the end of 2023, but due to the situation in the area, we have only been able to monitor it remotely, without any operator on site. We are very proud to see the system running so smoothly without any operator on site for such a long period, and we are anxious to see the system getting to its normal status and to officially celebrate the launch, which we have not yet had the opportunity to do.

Municipal Water Leader: What is the best way for new customers to get in contact with you?

Ari Veltman: We have different contact points that should be easy to find. People can always send an e-mail to info@wfi-water.com or call (602) 910-5109. I am also happy to receive any questions directly by e-mail at ari@wfi-water.com or on Linkedin at https://www.linkedin.com/in/ariveltman/.

Municipal Water Leader: What is your vision for the future?

Ari Veltman: I believe that the industry keeps making steps toward fully net-positive economic models. Water is a valuable asset (to say nothing of the value of process derivatives), and this industry is about creating more of this asset. The economics of water value are skewed, but we are making steps toward understanding the value of the resource and changing the economics around water and wastewater treatment. There used to be a strong divide in the industry between the water people and the wastewater people. This line is quickly blurring as we come to understand the value of the circular economy and that today's wastewater is really tomorrow's valuable water.

Additionally, I have a vision for the evolving role of the regulator in the adaptation of new technologies. The regulator is dependent on the availability and adaptation of new technologies to improve public health; at the same time, the regulator must protect public health by putting up some barriers to the introduction of unproven new technologies. This apparent gap is something that will be solved through programs for new technology adaptation, led by the regulator. M

Ari Veltman is the chief business officer of WFI Group. He can be contacted at ari@wfi-water.com.

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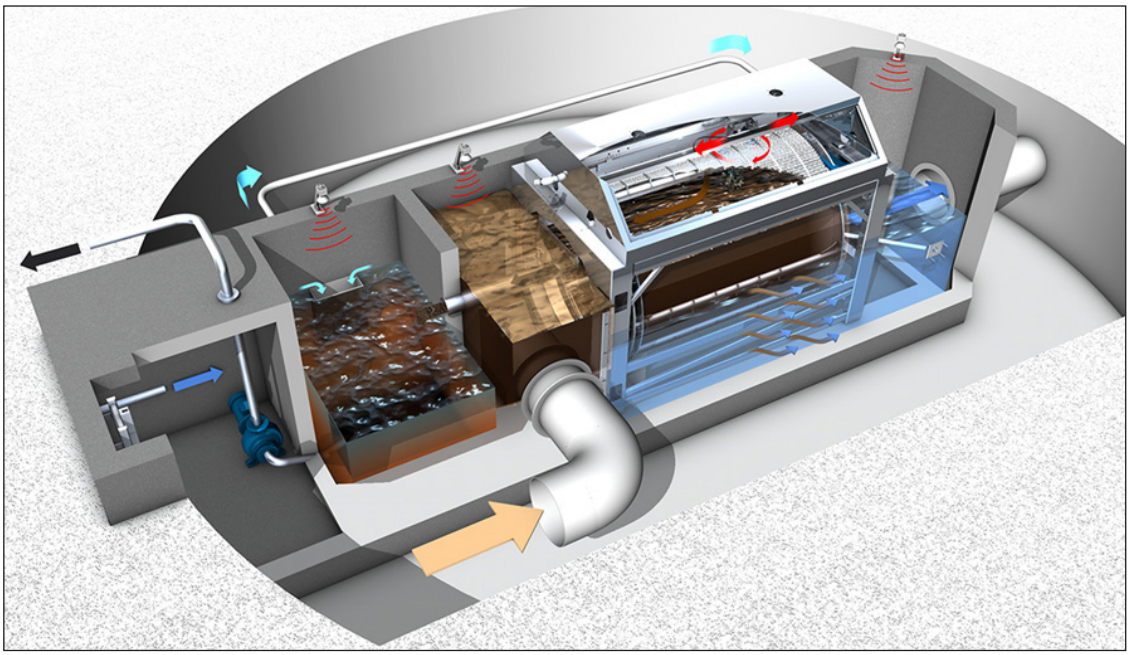
Simon Randle of HUBER Technology: New Built-in-America Technologies From a Recognized Name in Plant Equipment



HUBER's CarbonWin system.

HUBER Technology provides equipment for municipal and industrial wastewater plants and pump stations in the United States and Canada. By the end of 2024, the expansion of its Denver, North Carolina, manufacturing facility will allow it to make its entire product range in the United States. In this interview, National Sales Director Simon Randle takes Municipal Water Leader *on a tour of HUBER's latest offerings, including the RotaShield, a trailer that takes septic waste directly from haulers and removes the solids before that waste goes into a wastewater treatment plant—and then bills the hauler automatically.*

Municipal Water Leader: Please introduce yourself by telling us about your background and how you came to be in your current position.

Simon Randle: I joined the water and wastewater industry in 1988. I worked for 12 years as a salesman for my father's company, Jones and Attwood, in the UK, where I'm from. In 2000, he gave me the opportunity to come to the United States to incorporate Jones and Attwood here and serve as the general manager. In 2010, I moved to Florida to work for Hydro-Dyne Engineering, where I was the national sales director for 10 years. In 2019, I relocated to Charlotte, North Carolina, to serve as the national sales director for HUBER Technology, the subsidiary of HUBER in the United States and Canada.

Municipal Water Leader: Please introduce HUBER.

Simon Randle: HUBER is a German company based in the medieval town of Berching, north of Munich. It is a family-owned company that dates to 1872, so we're in our 152nd year. HUBER started in the brewing industry and got into water and wastewater in the 1950s. Today, it is a full manufacturing company with approximately 850 employees in Germany and around 1,300 employees around the world. The U.S. subsidiary, HUBER Technology, just celebrated its 25th anniversary. We supply equipment for wastewater plants and pump stations in the United States and Canada. We've grown from a small sales office to 150 people, and we have a manufacturing facility in Denver, North Carolina.

Municipal Water Leader: Who are your customers, and where are they primarily located?

Simon Randle: Our customers are primarily municipal facilities. We have great brand recognition. You'd be hard-pressed to find anyone in the municipal world who doesn't know about HUBER. We also work frequently with contractors and engineering offices. The other side of our business, a smaller part but a growing part, is what we term *industry*, which to us means everything that's not municipal. We help with the management of waste products for the

PHOTOS COURTESY OF HUBER.

food and beverage industries, including fish farms and meat and fish processors.

Municipal Water Leader: Would you talk about the various screen options that HUBER Technology offers?

Simon Randle: We probably offer 30–35 different types of screens. Historically, we have been known for a range of products called ROTAMATs. The ROTAMATs are all-in-one filters designed to remove screenings at what we call the *headworks* of smaller plants. The headworks is where the raw wastewater enters the wastewater treatment plant, and at that point, you need to remove the nonbiodegradable solids. The ROTAMAT screens remove the solids, which are then compacted and put into a dumpster. All that nasty waste can eventually be taken to a landfill site.

The main screens that we offer for larger wastewater treatment plants are marketed under the generic title of HUBER Max screens. They constantly rotate, removing the rags from the wastewater and dropping them into washing presses, which wash and press them and put a dry, relatively clean product into the dumpster. Those screens are put at headworks or in front of pumping stations. In this country, there are thousands of pumping stations that move sewage along, stage by stage, before it gets to the wastewater treatment plant. These pumps need to be protected from large objects ramming into them and jamming the mechanism, so we put a lot of screens in front. We've installed thousands of these screens.

Municipal Water Leader: Can you tell us about your CarbonWin solution?

Simon Randle: Our latest product, CarbonWin, which incorporates a Drum Screen Liquid, was developed by our headquarters in Europe. It is designed to replace the primary clarifier. *Primary clarifiers* are concrete structures that can be as large as 100–150 feet in diameter. They work well, but they take up a lot of space and are expensive to make. So we've developed a micro, or drum, screen to replace them.

The screen's filtration mesh is tiny: 200–300 microns. It is a shiny stainless steel drum screen—imagine a great big hamster wheel. The flow goes into the center of the wheel and passes out of the sides and the bottom. The sludge, which would normally be trapped in a primary clarifier, is trapped inside that drum. When the drum rotates, there are simple, high-pressure spray bars that flush the sludge from the inside of the drum to the next stage, which normally consists of sludge pumps.

This technology requires just 10 percent of the space of a traditional primary clarifier. The biggest is about 12 feet long by nearly 8 feet in diameter, but that's still tiny compared to a clarifier, which for the same flow might be 50–60 feet in diameter. Another huge benefit is cost. We're not pouring all the concrete that would be necessary to build a clarifier, and concrete has become quite expensive.

HUBER's RotaShield is a trailer that takes septic waste directly from haulers and removes the solids before that waste goes into a wastewater treatment plant.

HUBER's North Carolina manufacturing facility.

HUBER's RotaShield system.

In Europe, the product is well established; we already have 10 full-scale working installations. So although CarbonWin is new to the U.S. market, it is a tested and proven technology. We built a full-scale pilot plant in 2021, and we are encouraging customers all over the United States and Canada to use this pilot plant to see how well it operates.

Municipal Water Leader: Please tell us about your RotaShield pilot machine.

Simon Randle: This is probably the most exciting piece of equipment that we have introduced. The RotaShield is a trailer that takes septic waste directly from haulers and removes the solids before that waste goes into a wastewater treatment plant. It has a clever device called a Portalogic control system that allows the municipality to see what is being discharged by the haulers and shuts off automatically if it detects chemicals and substances harmful to the wastewater process. The system can monitor what the hauler is discharging in terms of quantity, and then bill the customer directly. Our pilot system is being driven around the country, and customers can use it for a week so they can see how well it operates. It has been to two places in Florida, it is now en route to Tennessee, and then it will go to Pennsylvania and Nevada.

Municipal Water Leader: What support does HUBER offer with the installation of your products?

Simon Randle: I'm proud of HUBER's aftermarket and service department. I think we're up to about 30 people in the United States, divided between aftermarket specialists, who provide office-based support to customers, and service technicians, who provide support in the field. HUBER doesn't install equipment—we're not a licensed contractor—but we offer to supervise installation. We do the standard commissioning, startup, and training. *Commissioning* means that once the contractor has installed it, we check all the settings and make it work. Aftermarket service is important because equipment breaks down—what is important is how you deal with the problem. We have 16 remote service technicians with full-service trucks who are fully capable of going to a site and doing many repairs, upgrades, and checks. With our factory expansion, we now have a service bay where we can repair bigger pieces of equipment that can't be handled on site. We also offer maintenance contracts. Many municipalities don't have the staff to look after their equipment. We can go as often as they want to do a maintenance check of their equipment, put in spare parts, and do whatever's needed to make sure their equipment is running properly.

Municipal Water Leader: Please tell us about the new manufacturing facility that HUBER Technology is opening in Denver, North Carolina.

Simon Randle: In 2019, we built phase 1, which was about 66,000 square feet. We fast-tracked phase 2 so we could take advantage of Bipartisan Infrastructure Law funding. By the end of this year, we will be 100 percent Build America Buy America compliant, which means our full product range will be wholly manufactured here in the United States. That's a good thing for us and our customers, too. It means that we don't have to deal with gaps in the global supply chain. Like a lot of companies, we couldn't get many needed supplies during the COVID-19 pandemic, and freight became incredibly expensive, which made it hard to price projects. A container coming across the Atlantic Ocean from Germany ordinarily costs around $5,000, but during the pandemic, that rose to $15,000–$20,000. That's just one example, but there were many reasons why the president of our company went to the board of directors and said, "We've got to do this expansion now. It will put us in control of our destiny and enable us to better serve our customers by delivering on time."

Municipal Water Leader: Are there any conferences, trade shows, or other events that HUBER Technology plans to attend?

Simon Randle: We attend at least 40 state trade shows a year. The big one for us from a municipal standpoint is the Water Environment Federation's Technical Exhibition and Conference, known as WEFTEC. That is the big show, held alternately in Chicago and New Orleans. There are normally around 30,000 attendees, and HUBER invests a lot of money, time, and people, and we bring our equipment to the booth. We also attend the Water Environment Federation's Residuals and Biosolids Conference, held this year in June in Oklahoma City. That is specifically for our sludge products. We're also getting into industrial shows. The big one that we're doing this year is WasteExpo in Las Vegas in May. Globally, the big event is IFAT, held every 2 years in Munich. It is the biggest wastewater and waste management show in the world. I have a list of 35 customers I'll be taking to IFAT this May.

Municipal Water Leader: What is your vision for the future of HUBER Technology?

Simon Randle: We're on a huge growth path. Bringing in orders and making money is important to us, but we also see ourselves as guardians of the environment. We take that role seriously. We're proud of our small contribution to the environment, and it is becoming more important to us all the time. We're excited about the expansion. The future looks bright. M

Simon Randle is the national sales director for HUBER Technology. He can be contacted at simon.randle@hhusa.net.

PHOTO COURTESY OF HUBER.

Scott Dewhirst: How the Association of Metropolitan Water Agencies Promotes Utility Cybersecurity Nationwide

Scott Dewhirst testifies at a hearing held by the Subcommittee on Environment, Manufacturing, and Critical Materials of the House Committee on Energy and Commerce on January 31, 2024.

In addition to serving as the superintendent of Tacoma Water in Washington State, Scott Dewhirst is a member of the boards of the Association of Metropolitan Water Agencies (AMWA) and the Water Information Sharing and Analysis Center (WaterISAC). This January, he represented AMWA in testimony before Congress about the need to protect water utilities from cyberattacks. In this interview, he tells Municipal Water Leader *about the risks of such attacks, the need to guard against them, and some of the existing resources that water utilities can take advantage of.*

Municipal Water Leader: Please introduce yourself by telling us about your background and how you came to be in your current position.

Scott Dewhirst: I was born and raised in Virginia. I graduated from Virginia Tech in the 1990s with a bachelor of science in civil engineering and a master's in environmental engineering. I consulted for about 5 years, then transitioned to the municipal utility sector. I worked in southeastern Virginia for Newport News Waterworks for about 17½ years.

I fulfilled my passion to live out West when I started at Tacoma Water as the superintendent in 2017. My career has largely focused on drinking water systems at the executive leadership level for the past 10 years or so.

Municipal Water Leader: Please introduce Tacoma Water, its history, and current services.

Scott Dewhirst: Tacoma Water is a division of Tacoma Public Utilities, which today consists of a water utility; a power utility; and, ironically, a rail utility. The utility has its origins in the late 1800s. In 1893, the City of Tacoma purchased what was the Tacoma Light & Water Company and began to operate it as a city entity. Tacoma Water provides about 350,000 residents—all those within the city of Tacoma and residents of portions of Pierce and King Counties—with direct water service.

Municipal Water Leader: You are also a member of the board of AMWA. Please introduce AMWA, its mission, and its membership.

Scott Dewhirst: AMWA has about 200 member utilities, most serving populations of at least 100,000 people. I've been on the board of directors since 2019. AMWA is largely

PHOTO COURTESY OF AMWA.

focused on advocacy with policymakers and agencies such as the U.S. Environmental Protection Agency (EPA) on issues relevant to the water sector. We're committed to providing safe, reliable, high-quality drinking water to the 160 million people we represent across the country.

I am also a member of the board of managers of WaterISAC, the water sector's dedicated information-sharing entity on cyber, physical security, and natural threats.

Municipal Water Leader: Please discuss the cybersecurity issues that you testified about before Congress on January 31. What was the main message you wanted to convey?

Scott Dewhirst: I represented AMWA and member utilities at the hearing alongside representatives from the American Water Works Association, the National Rural Water Association, and the Association of State Drinking Water Administrators. First, I wanted to express the view that the EPA should continue to be the risk management agency for the water sector. There has been some discussion of cybersecurity migrating over to the U.S. Department of Homeland Security (DHS).

I also wanted the committee to learn about how WaterISAC can increase the sector's awareness of cyber risk and protect against it. WaterISAC has developed a lot of cybersecurity tools and resources over the last 15 or 20 years. AMWA is eager to work with the EPA to get more water utilities to sign up as members of WaterISAC. We currently have about 160 members, and the nation has 50,000 water utilities, so we've got a long way to go to close that gap.

A third point was the need to fund cyber resiliency programs authorized but not yet funded in recent legislation, such as the Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law.

The last point was that there are already resources out there. One example is the *15 Cybersecurity Fundamentals for Water and Wastewater Utilities* document that WaterISAC provides free on its website for anyone to download. Another example is that earlier this month, the EPA and other partners developed an incident response guide for water and wastewater systems. Once you're in the middle of something, what do you need to do and who can you call to get help and assistance? We don't need additional funding to produce more information, we need funding to help people know what's already there, gain access to it, and learn how to make themselves more secure.

Municipal Water Leader: Do you believe that the House committee understood and was receptive to your message?

Scott Dewhirst: I felt they were engaged. The committee members asked relevant questions. They did their homework with the testimony we had provided to them in advance. They seemed to agree that this problem does not call for a one-size-fits-all solution. As I mentioned before, there are 50,000 water utilities across the country with huge differences in size, scale, and complexity. Some don't even have a computer. Many have very complex operations. I think they heard that message and understood.

Last year, the EPA put forth some cyber standards as part of its sanitary survey process. We thought that wasn't the right approach because it amounted to asking folks who are focused on public health and water treatment to also be cyber experts. We believe in a coregulatory approach in which a separate, third-party agency oversees cyber and is responsive to the EPA. That is based on the electric sector model.

Municipal Water Leader: Would you tell us about some of the cyber breaches water systems have experienced and why they're vulnerable to such attacks?

Scott Dewhirst: The most recent example is a small township in Pennsylvania called Aliquippa that was attacked by Iran-based hackers who were seeking to exploit any Israeli-developed industrial control systems in retaliation for the conflict in Gaza. As I understand it, there were base-level things that could have been done to avoid this situation. Those are things such as changing the password for a particular control system. A lot of folks—and I'm guilty of this, too—will take the router out of the box, plug it in, and just use it. There's a base administrative password that should be changed. The *15 Cybersecurity Fundamentals* document from WaterISAC provides awareness about how attackers can gain access.

I don't know that we're targeted because we're water utilities. Sometimes, attackers go after the water sector because it is a vital part of our public health foundation; other times, it's dumb luck that they come for us. Oftentimes, attackers are simply looking for a vulnerable access point.

Municipal Water Leader: Please explain the importance of open lines of communication between stakeholders and federal government entities as they cooperate to close cyber gaps.

Scott Dewhirst: We think a collaborative approach with regulators that leverages all the expertise we have at the federal level is important. That includes all the agencies that exist out there, including DHS. Generally, regulations for water utilities involve a standard water quality measure that everyone must meet. In this case, by contrast, the imperative is to be cyber secure, and that means something different for everyone. That's why we have to keep the communications going and understand our differences.

Cybersecurity is oftentimes not utilities' primary focus. We're here to make sure water is safe, and sometimes cybersecurity doesn't get the attention it needs.

We're all in this together. A breach at a place like Aliquippa is almost as bad as a breach at a place like Tacoma. It starts to undermine confidence and poses the question, "How safe are we and how secure is our water system?"

To use another water analogy, we gain the trust of our customers one drop at a time, and we can lose it a bucket at a time. We have one incident, and trust goes away. We're working hard to make sure that we don't have that problem.

Municipal Water Leader: Would you tell us about your cybersecurity operations at Tacoma Public Utilities? How big is your staff, and what kind of work do they do?

Scott Dewhirst: Our 10-person cybersecurity team is housed under the power section of our combined utility. Our expensive, enterprise-grade cyber tools benefit both the water and the power utilities. Those tools monitor the communications coming into and out of our network. Tacoma Power is a power balancing authority, so any unauthorized communication coming in there is a problem.

I was in Washington, DC, back in December, and I logged into our SCADA system for water while I was there. Within an hour, I had a chat from someone in the cyber team saying that someone had logged into the network from Virginia and confirming that it was me. That tells you that they're verifying all these things. In the event we do detect something, we have a protocol to make sure that we contain it, remove it, and recover if needed.

We have a lot of cyber education at my utility. We have an annual refresher, because the tools and tactics used to gain access are constantly changing. It reminds us that we've got to update our understanding and education on how people can gain access to our systems and what that does.

Municipal Water Leader: Why should the EPA Cyber Resilience Program be funded? What is the benefit of revisiting different expired technical assistance programs?

Scott Dewhirst: We have an unprecedented level of change going on in the regulatory requirements for the water industry. The situation in Flint, Michigan, prompted updates to the lead and copper rule. Per- and polyfluoroalkyl substances (PFAS) are another concern. The EPA is in the process of finalizing standards for the levels of PFAS that can exist in drinking water. We've got another rule change around the corner related to microbial disinfection byproducts.

I believe the real importance of having these cyber programs funded is to give us a sense that this is a national priority. These challenges are going to be very expensive for the industry and our customers.

Municipal Water Leader: Please explain the different existing resources and how incentivizing the adoption of best cyber practices will ultimately lead to protection for all utilities and authorities.

Scott Dewhirst: WaterISAC's *15 Cybersecurity Fundamentals* document was published in 2012 and updated in 2019. When you have an incident, you're scrambling. You don't know where to turn. If you don't have a plan, you don't know how to direct your resources to mitigate and contain whatever may be occurring. Following the basic steps in that document will go a long way to making us more secure and giving us the protection that we need.

Municipal Water Leader: What advice would you have for fellow water utilities about cybersecurity steps that they can take right away?

Scott Dewhirst: Go through those 15 steps and see if you're doing them or not. We say we want to have a cyber culture. Culture starts with education. If utilities across the country and their staff understand how important this is, it will make us all better.

Municipal Water Leader: Is there anything you'd like to add?

Scott Dewhirst: Coming from a combined utility, I see a lot of benefits to the National Energy Regulatory Commission (NERC) model. The agency is a third party that's funded by the utilities to do their cybersecurity audits. There are a lot of differences between water utilities and power utilities, but there are also similarities. I propose that we look at this model seriously. Let's not reinvent the wheel. One thing I think the NERC model does well is focus on outcomes. NERC can be very nimble. Its standards were developed by people who understand their industry and understand utility operations.

Municipal Water Leader: What is your vision for the future?

Scott Dewhirst: It's critical that we include stakeholders at the table as we develop the plan and approach to tackle this issue. In any path forward, we need to think about a tiered, risk-based approach guided by water sector experts who understand our industry. It should be focused on objectives, not prescriptive, one-size-fits-all mandates, which would not be effective. After the subcommittee hearing, I was encouraged by the alignment of the four entities represented there. Let's all get together for workshops and get the right people in the room. I think we can really make progress quickly.

Scott Dewhirst is the superintendent of Tacoma Water. He can be contacted at sdewhirst@cityoftacoma.org.

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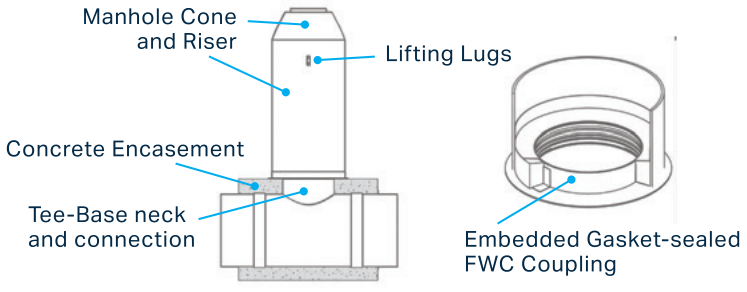

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Municipal Water Leader

Upcoming Events

May 2–3 Nevada Water Resources Association, Truckee River Tour, TBD

May 7–9 Association of California Water Agencies, Spring Conference & Expo, Sacramento, CA

May 8–10 National Association of Counties, Western Interstate Region Conference, Mariposa County, CA

June 10–11 Nebraska Association of Resource Districts, Republican River Basin Tour, TBD

June 10–13 American Water Works Association, Annual Conference and Expo, Anaheim, CA

June 12–14 Texas Water Conservation Association, Summer Conference, Arlington, TX

June 17–18 The Nebraska Water Center, Nebraska Water and Natural Resources Tour, Tecumseh and Nebraska City, NE

June 20–23 U.S. Conference of Mayors, Summer Meeting, Kansas City, KS

June 25–26 Tristate Tour and Meeting (Idaho, Oregon, Washington), Burley, ID

July 10–11 North Dakota Water Resource Districts Association and North Dakota Water Education Foundation, Joint Summer Water Meeting, Minot, ND

July 12–15 National Association of Counties, Annual Conference and Exposition, Tampa, FL

July 14–17 National Association of Regulatory Utility Commissioners, Summer Policy Summit, West Palm Beach, FL

July 17–19 American Water Resources Association, Universities Council on Water Resources, and The National Institutes for Water Resources, 60th Anniversary Joint Water Resources Conference, St. Louis, MO

July 17–19 Groundwater Management Districts Association, Summer Conference, Omaha, NE

July 23–25 National Water Resources Association, Western Water Seminar, Kennewick, WA

July 23–26 National Association of Clean Water Agencies, Utility Leadership Conference and Annual Meeting, Buffalo, NY

July 25 Water Day at the North Dakota State Fair, Minot, ND

October 1–3 Coalition of Rio Grande Water Users Meeting, Santa Fe, NM

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