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STAYING SAFE: LIGHT THE PATH TO SAFETY

# SHUTTING DOWN INFLOW

Georgia utility finds a watertight manhole solution that puts an end to chronic SSO problems

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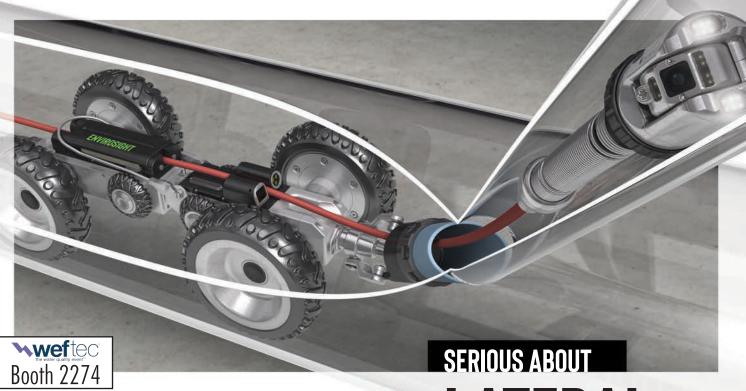
Roy Barnes Jr. Deputy Director of Sewer and Wastewater Treatment Operations Fulton County, Georgia

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FLOW CONTROL & MONITORING



ON THE COVER: Roy Barnes Jr., deputy director of sewer and wastewater treatment operations for Fulton County, Georgia, has helped his utility take a new approach to manhole rehabilitation and I&I elimination. (Photography by Kaylinn Gilstrap)









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### **FLOWING DOWNHILL**

The impacts of our actions — or inaction — is often felt far beyond our own circles

Water might connect us all, but so

do the economy, supply chains

and transportation systems.

ater from the lake I live on evaporates and rains down in places I've never been. Springs feed streams that empty into rivers that flow to the seas.

But in January, the bitter cold of northern Wisconsin feels

as far away from any U.S. coastline as it could be, Lake Superior's icy edges not included. The push and pull of the tides has as much impact on my day-to-day life as the great wildebeest migration across the Serengeti. There doesn't seem to be any connection at all.

I read a story the other day about rising tides and the growing risk of nuisance flooding they bring. I highly doubt those tides will ever be lapping at my door, but their impact might be closer than I imagined.

Those impacts, naturally, go beyond eroding shorelines. If the tides do indeed keep rising, lower-lying coastal areas will be dealing far more frequently with flooded streets, damage to homes, schools, businesses

and vehicles, and all the subsequent secondary effects that will bring — think school closures, loss of business and jobs, and massive infrastructure repair and replacement bills. And if coastal communities — nearly 40% of Americans live in coastal counties — are hit that hard, it would be foolish to think we

won't feel the impact everywhere else. Water might connect us all, but so do the economy, supply chains and transportation systems.

That supply chain piece, in particular, is a lesson that's been driven home over the course of the pandemic. Problems in one area can quickly cause problems in another. Consider that more than half of all U.S. imports arrive by boat. What happens if the infrastructure in receiving ports is damaged by higher tides? What if streets and rail yards are underwater, and goods can't move from port to their inland destinations?

What's more, there's a haze in my yard right now from forest fires well across the country. Legitimate forest fires aren't really a thing in Wisconsin because it's so green here in summer, but I can smell the smoke right now.

It's important to recognize that we're all part of a larger community that isn't defined by municipal boundaries. Events on the other side of the country — or world — can bring their impact to your door. Likewise, events in your backyard can have far-reaching implications. Current events make that fact pretty difficult to ignore.

Maybe eliminating sewer overflows won't garner thanks from people living 500 miles downstream from you, but you're certainly impacting the health of their waterways and communities. Green infrastructure and other stormwater control measures won't stop the rain in the next town down, but that might be what keeps the river from flooding to the point where homes are destroyed.

The point is that the work you do is important to your communities, but your communities are much larger than the local map shows. So is your impact.

Enjoy this month's issue. ◆

Comments on this column or about any article in this publication may be directed to editor Luke Laggis, 800-257-7222; editor@mswmag.com.

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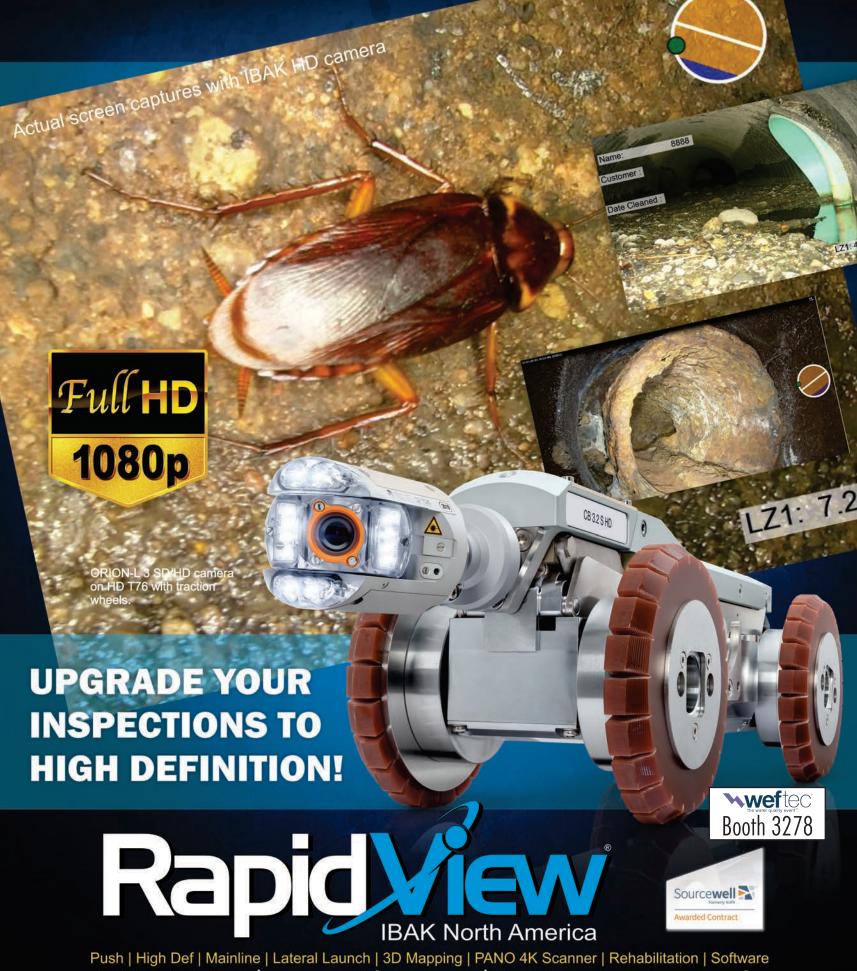


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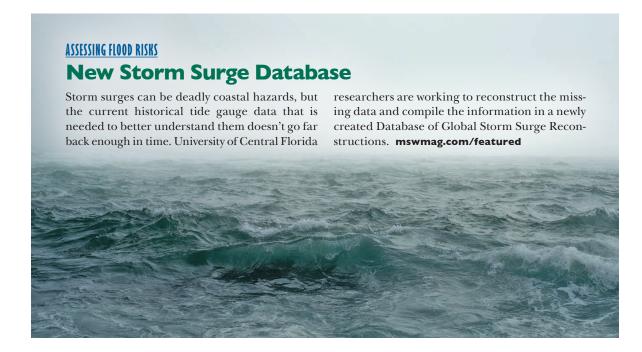
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### OVERHEARD ONLINE

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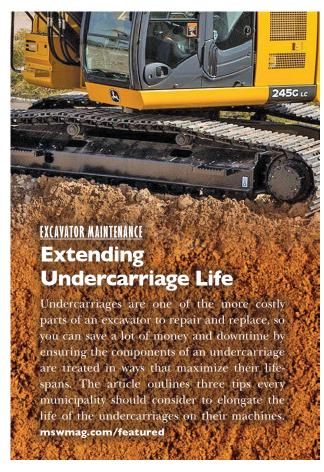




### **Municipalities Look to Clay**

for plastic producers, and in the business of laying pipe, that disturbance is being felt full-force. Municipalities have grown to rely on PVC plastic as a staple material for sewer and water systems, but some have turned to clay pipes to ensure material is available at an affordable cost.

**PVC SHORTAGE** The past year was the perfect storm of disruption mswmag.com/featured October 2021 mswmag.com





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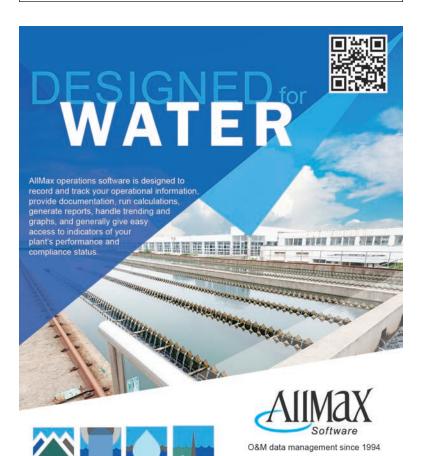
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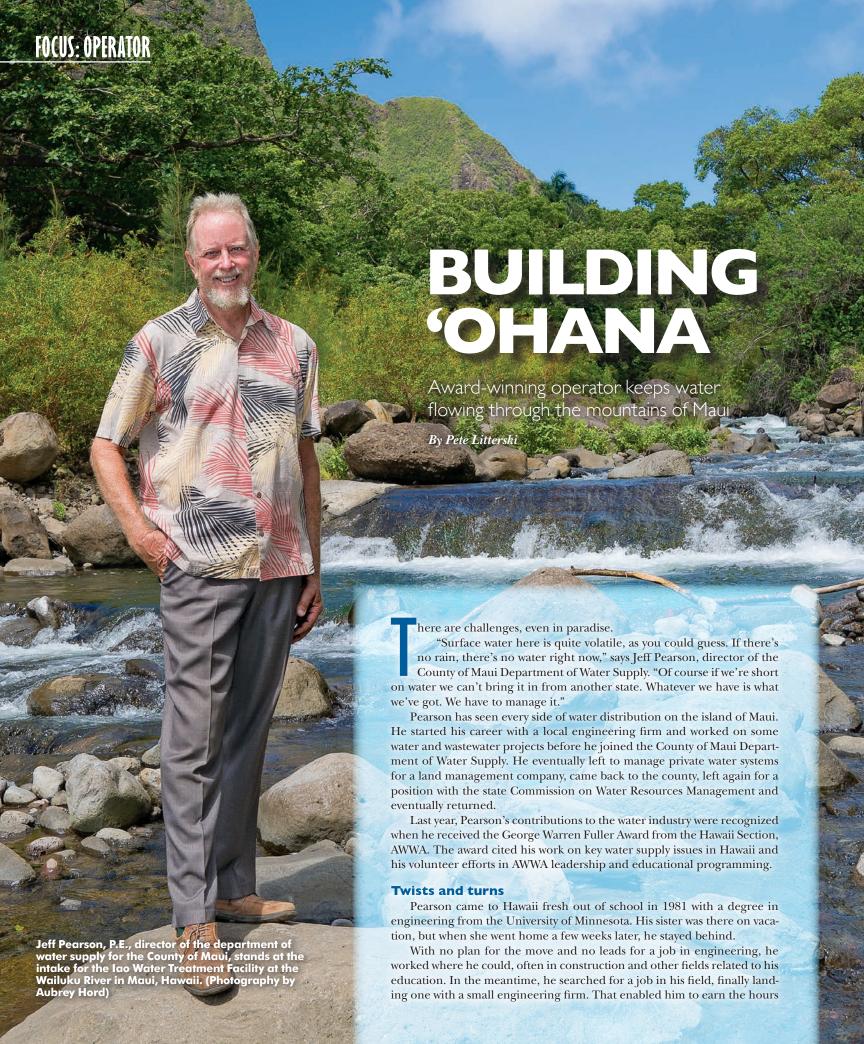


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he needed under the supervision of a licensed engineer to earn his Professional Engineer credential.

Pearson worked as an engineer in training from 1989-91 at Norman Saito Engineering in Wailuku, Maui. Along the way he supported engineers on drainage and waterline designs and got a glimpse of his future.

"I was doing some inspection for the design of a 36-inch waterline that ended up being part of the Department of Water Supply's infrastructure, so I was kind of exposed to what I'm doing now way back then."

He also studied for and passed the two eight-hour tests required by the University of Hawaii to earn his degree in public engineering in 1994.

During the 1990s and through the turn of the century, Pearson worked with two engineering firms, mostly working on water and wastewater projects. In 2003, he joined the Maui Department of Water Supply as deputy director. There he managed three of six divisions, overseeing about 90 team members, involved in operations, water quality and water treatment. He also worked on the utility's budgets and was a liaison with state water quality officials.

Pearson left the county's payroll in 2005 but stayed in the county as water manager for the privately owned Kapalua Water Co. There he managed islandwide private nonpotable and potable systems while continuing to work closely with county and state agencies on water issues, compliance and rates.

Pearson stayed with the private company through 2011, when he was named head engineer for the Maui water department's Capital Improvement Section. In the position, he oversaw \$20 million to \$30 million per year in construction projects while working with the department leaders and the county council on the utility's budget. He also coordinated land management, easements and property acquisition.

In 2015, Pearson became deputy director of the state Commission on Water Resources Management, which is under the Hawaii Department of Land and Natural Resources, overseeing all surface and groundwater sources in the state. Although he returned to the county in 2018, his time with the state was valuable.

"It gave me great insight when I came back here because I had a good understanding of how they operate, I knew the people there as far as communicating with them," he says. "The state water commission manages the source water, so it manages all the surface water, the streams and the groundwater. I was only there for about three and a half years, but it gave me great insight."

### "Whatever we have is what we've got. We have to manage it."

**Jeff Pearson** 

### **Multiple systems**

Although Maui County bears the name of Hawaii's third largest island, the county borders cross several ocean channels to encompass the neighboring islands of Moloka'i, Lana'i, Kaho'olawe and Molokini, the last two uninhabited.

The Department of Water Supply operates water production and distribution systems on the two most populous islands, serving 37,000 metered customers on Maui and 7,000 on Moloka'i. Lana'i has a single landowner, and its water system is privately operated.

Within that territory, the department operates six distinct water systems, serving the business and tourism hubs in the central area including the county seat of Wailuku, as well as a number of smaller communities.

Besides supplying water to nearly 170,000 residents, the department sees to the needs of substantial numbers of tourists. In 2019, before the COVID-19 pandemic, the average daily count of tourists in Maui County was more than 66,000, adding up to 2.9 million annual





Jeff Pearson overlooks the 50 mg raw water reservoir at the Piiholo Water Treatment Facility on the island of Maui, Hawaii.

### KEEPING IT GREEN

Approximately 40% of the County of Maui Department of Water Supply's distribution volume goes to outdoor use.

"If people didn't irrigate, we'd have close to twice the potable water we need," says department Director Jeff Pearson.

Where the coastline stretches south from central Maui, much of the land is desert, but the coastline also holds many resorts lush with tropical vegetation and large pools.

"That's where you go if you're a tourist and you want to go to a nice hotel," Pearson says. "You're going to go to that resort on the south side that's lush with tropical plants, and 10 pools and beautiful grass. Everything is beautiful and green, but that's not the natural state of desert.

"So that's the irony of all this: You come to this island of Hawaii, and 'Oh the tropics are so beautiful.' That's because we're shipping water over there to water the palm trees."

One of the solutions to this issue is the growing use of RI water. The county's Department of Environmental Management, which manages the wastewater treatment plants, also distributes RI water. The RI water is a waste product that can't be put back into the department's injection wells, but it's being treated like a commodity.

"They have systems that supply RI to the schools and shopping centers and so forth, and they're expanding," Pearson says. "Every gallon of RI that we use, for irrigation especially, is one gallon of potable water that I don't have to pump out of the ground. So RI is going to rise."

day visitors. The resorts also place a heavy demand on the system to maintain their lush landscaping, a need that has continued through pandemic.

In addition to the county's largest towns, Pearson's department operates water systems for small villages and farming communities on Maui, several on the east side of the island away from the business hub and several more well above the beaches in the Upcountry mountainous core of the island.

To meet the needs of the county, there are six water treatment plants operated by the DWS system: Kamole Weir, Piiholo, Olindo, Lahaina, Mahinahina and Iao.

### From the ground

Geography and geology both inform the way the department runs its operation. Terrain and elevation changes present pumping challenges, and while the utility charges one rate for all customers, high electricity costs mean greater expense to serve certain areas.

The islands' geology plays a big role, too. "It's volcanic, of course, and there are dyke systems that will inhibit or block the flow of underground water," Pearson says.

The county's most predictable freshwater reserves sit under its mountains in aquifers, often at elevations higher than the coastal communities and resorts. The majority of the groundwater is considered basal aquifer, and the department relies on nature to do the groundwater treatment and storage. The water in these basal aquifers is well filtered as it drains through the island's volcanic soil and collects in a stable stratum of pure water, essentially floating atop the denser salt water that reaches the water table from the Pacific Ocean.

Of course, in order to pump a million gallons a day from one of these aquifers, it has to be able

to recover quickly. "You need to have a good permeability and flow underground. If it doesn't recover quickly you may not have the ability to pump for a longer period of time. So you really have to understand the geology."

Well depths can range up to 2,000 feet deep. Due to the salt water, the wells actually draw freshwater from depths that are above sea level. "The water is of such good quality that we don't really have to treat it," Pearson says. "We just add a little chlorine as a precaution for disinfection in the distribution system." The chlorination is done at the 50 well sites before the water is transported to the distribution network.

The department saves significant money because it doesn't need to treat the well water, but it cannot rely on that source alone. A recent statewide study of water resources calculated the volume of water that can be taken from aquifers without damaging the natural balance between the volcanic surface and the saltwater base.

"Right now central Maui is pumping about 16 mgd, sometimes as high as 18 mgd, but the sustainable yield is only 20, so there's not a lot of extra room," Pearson says.

#### **Dual source**

The Maui Water Use and Development Plan required by the state Commission on Water Resource Management studied the county's aquifers and the water rights for domestic use, traditional and customary practices, keeping the water in its natural state and fulfilling the needs of the Department of Hawaiian Home Lands, before setting out a proposal focused on meeting customer demands while maintaining the health of the resources.

Although protection of the aquifers is a key factor in the decision to use both well water and surface sources, Pearson says another reason for the dual systems is that the surface water can be stored and transported at low cost through ditch and pipeline systems originally built to serve the pineapple and sugar cane growing that once covered much of Maui.

It actually costs more to transport the well water from the mountainsides to the distribution systems than it does to treat the surface water in treatment plants, but the well water becomes an important resource during the drier spring

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"We're looking at an additional well upcountry and still haven't heard definitively from the electrical utility if they can run two of these large-horsepower motors at the same time."

Jeff Pearson

months when surface water is not enough to meet the demands.

With either source, Pearson says his system has a key advantage. In most of the system the source elevation is high enough above the population centers that the water flows by gravity. Even though the system's newest facility, the Iao Water Treatment Plant, requires a 30 psi head pressure, the natural surface water pressure actually has to be reduced before it reaches the microfiltration facility.

#### **Pumping**

While gravity lends a helping hand, it doesn't do all the heavy work. Upcountry areas are served primarily by surface water, but the dry season and droughts necessitate supplementation with groundwater.

To access additional source water that's farther away, there are pumping challenges of bringing that water across difficult terrain to introduce it into the existing system.

"It's of course doable, but it's quite expensive and you have to weigh the cost-benefit of that," Pearson says.

Simply getting the water up to the surface presents challenges as well. If you drill a well upcountry and you're pumping water up 2,000 feet with 600 hp submersible motors, it takes a heck of a lot of electricity.

"We start up one well that pumps water up about 2,200 feet and people's lights dim," Pearson says. "And then we pay the local electric company, I think \$9,000 a month, for them to ensure that they have the power if we need to start up the well. We run that well maybe three months out of the year at most.

"We're looking at an additional well upcountry and still haven't heard definitively from the

electrical utility if they can run two of these largehorsepower motors at the same time."

### Ready for the future

Despite the challenges, the Department of Water Supply is managing its supply, seeking new groundwater sources and preaching conservation.

With the opening of the Iao plant in 2019, Pearson's department increased its peak water capacity to 28 mgd. The Iao plant gives the county capacity to serve the growing number of residents and visitors in the Central Maui area for the next five to seven years. Before reaching the limits of the existing system, the department will turn to the Maui Water Use and Development Plan to help determine the source and the location of future water reserves.

As for Pearson, who turned 64 in August, retirement isn't too far off in the distance. He's looking forward to spending plenty of time with his grandkids.

"It's fantastic," he says of his 'ohana, or extended family. "It's just fantastic." ◆

Editor Luke Laggis contributed to this story.



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### A CUT ABOVE

Pipe saw improves safety and efficiency for Florida water utility crew

By Tim Dobbins

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ero days since our last injury" is a sign no municipal crew wants to see. And after a couple injuries to service workers while on the job, the utilities crew in Cocoa, Florida, knew they needed a safer way to cut pipes when fixing and installing water mains.

They found their solution about five years ago when Chris Collier, the assistant utilities director for Cocoa, learned of the Wachs Utility Diamond Wire Guillotine pipe saw and knew the tool needed to be in their arsenal. "Initially my crew thought it was just a new fad," Collier says. "But I told them they can't say that until they've used it and given it a chance." And that's exactly what they did.

Brandon Cox, water field operations assistant manager for the City of Cocoa, oversees six line crews that deal with main breaks and waterline maintenance daily. He agreed that something needed to change to make a safer work environment. "We were looking for a saw that was safer for our guys," says Cox. "It was Chris who found the saw and said we need to check it out. After a demo from Wachs, I definitely agreed."

After the demo, they purchased the Diamond Wire Guillotine 416 pipe saw and have been using it ever since. "We purchased the larger model right away to cut larger main pipe and we liked it so much that when they came out with the smaller DWG 208 version, we made sure to purchase one of those too," Cox says.





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### **Engineered safe**

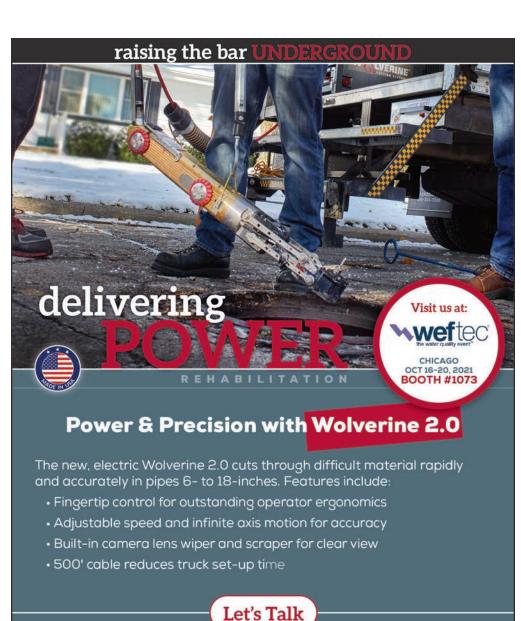
Wachs' intention with the Diamond Wire Guillotine series was to build a saw that was safe and efficient. They utilize a fully enclosed, high-speed, high-density diamond-infused cutting wire specifically made to cut pipe and bar accurately and efficiently. The cutting wire is enclosed in a housing made from stainless steel and aluminum to protect the user while remaining corrosion resistant. The saws secure to the line using a chain mounting system to eliminate the possibility of kickback accidents.

They are hydraulically powered and because they run in a sealed loop, the saws can operate in extreme conditions like partial or full water immersion. "It really does makes nice clean cuts. It doesn't matter if there is still water in the main, you can still cut, so you don't need a complete shutdown," Cox says.

Originally, Wachs only carried the DWG 416 model that is capable of cutting 4- to 16-inch pipes but has since come out with the 208 model that is more compact and used for 2- to 8-inch lines. Though Cox and his crews use both, he says the smaller version tends to be their go-to, due to its ease of use. "With the 208 model, one person can take it right down in the hole and mount it to the water main by themself," he says. "The larger 416 model is very

"It doesn't matter if there is still water in the main, you can still cut, so you don't need a complete shutdown."

**Brandon Cox** 

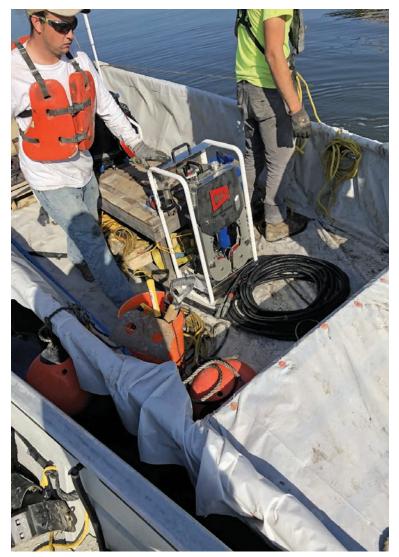


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The smaller DWG 208 model saw is easily maneuverable, can cut pipe from 2 to 8 inches, and has become the go-to saw for the City of Cocoa (Florida) Utilities.

manageable, but often takes two people.

"Before these saws, for pipes larger than 6 inches we had people laying down there on their bellies, cutting windows and we had a couple kickback incidents over the years."

The addition of the Guillotines took a lot of those unfavorable cutting strategies out of the picture for his crews.

#### **Built to be efficient**

Cox says there are few jobs they don't take their vacuum trailer to, so their fabrication team figured out a way to mount a saw to the rig.

"We mounted the model 208 to our pull-behind vacuum trailer that has hydraulic capabilities so the guys can easily take it to the job with them and everything they need is right there," he says. "On most main breaks, we are taking the vacuum trailer out. Mounting the saw to the vac makes it convenient so the team doesn't have the excuse that they forgot the saw.

### "It really covers a lot of different uses and applications."

**Brandon Cox** 

It's pretty much on all the jobs then."

Wachs built the series for one-person setup and control capability. Each unit can connect to any standard Class II Hydraulic Power Unit, includes top-mounted controls for wire speed and feed and comes standard with quick-release levers and latches for easy setup and maintenance.

"It's really easy to train new workers on, too," Cox says. "The hardest part is getting it attached to the main, getting the angle right and making sure it's straight, but once you do it one time, you're pretty much set and ready to go from there."

The ease-of-use features permit users to adapt on the job, a necessary capability when fixing main breaks. "It really covers a lot of different uses and applications. It never fails that there is a cable running over the top of the main, or something unforeseen, but you can just lay the saw over on the side a little and still make the cut."

When the job is done, the next step for Cox and his crews is some routine upkeep. "They are simple to clean. When we are done with it, we bring it back to the yard and open it up to hose out the rocks and dirt or whatever may be in it, hit it with a little lubricant around pulleys and put it back on the truck. That's it."

Safety on the job site is a top priority and comes from proper training and providing the right tools. The Diamond Wire Guillotine pipe saw was made with that in mind. Wachs believes that safety and efficiency can be intertwined, and that the DWG series is a great example of just that. ◆

The Guillotine saws can cut pipes that are still holding water, so there's no need to completely shut down the line.





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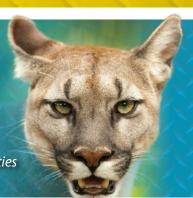
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### FIGHTING WORKPLACE RACISM

Speaking up is risky, but it helps to take a thoughtful approach that garners support

By Ken Wysocky

peaking up against racism in the workplace is fraught with risk. Yet saying nothing at all only ensures that problems will continue unabated.

Like so many hard conversations, it's important to broach this potentially uncomfortable topic with a well-planned, intentional approach that takes into account a variety of factors, says Dana Brownlee, the founder and owner of Professionalism Matters, a corporate training and consulting company.

"It's hard to talk about racism," she says. "We have a difficult history here ... and people often feel defensive

"People can shift their opinions, but will only do so over time."

Dana Brownlee

or guilty. Or they're afraid they might say the wrong thing and be judged for it. There's any number of reasons why these conversations can be difficult."

A more thoughtful approach can help minimize the chances of creating a defensive reaction that ultimately results in people mentally shutting

down. That, in turn, renders them unwilling to truly listen to what you have to say and impedes any kind of progress, says Brownlee, who has developed a course for LinkedIn Learning called How to Speak Up Against Racism at Work.

But approaches aside, doing nothing is not the answer, notes Brownlee, the author of *The Unwritten Rules of Managing Up: Project Management Techniques from the Trenches*.

"It's like standing on a moving walkway," she explains. "If we just stand still and don't actively turn around and walk in the other direction, you'll still get racist outcomes even though you didn't intend to.

"You can either be non-racist [a passive stance] or be anti-racist, which means you're actively trying to change things by pushing back against biased or potentially offensive comments, policies and so forth."

### **Honor different views**

So what advice does Brownlee have for people who see racism in the workplace? For starters, you're doomed to disappointment and failure if your main goal is to get everyone in a discussion to view things the way you see them.



"Everyone is shaped by their own life experiences," she says. "We all come from different backgrounds and upbringings, so it's a bit much to think that everyone will see things exactly like you see them. So it's important to give them the space to have their own perspectives. People can shift their opinions, but will only do so

We invite readers to offer

ideas for this regular column, designed to help municipal and utility managers deal with day-today people issues like motivation, team building, recognition and interpersonal relationships. Feel free to share your secrets

for building and maintaining a cohesive, productive team. Or ask a question about a specific

issue on which you would like advice. Call editor Luke Laggis at 800-257-7222, or email editor@mswmag.com.

Labeling also is not a good idea. For example, if there are no people of color on a company's board of directors, telling, say, a senior executive that the organization is racist probably isn't an effective approach.

"Unfortunately, the term 'racist' often is perceived as a scarlet letter," Brownlee observes. "Labeling generally is not a productive use of time and energy. It's similar to giving feedback to a less-productive employee; instead of saying they're lazy, it's more constructive to point out that everyone on the employee's team averages 20 sales a month while that employee averages 10 a month.

"So it's important to go to the facts, as in we don't have any black people on the board of directors, for example, instead of using labels."

### Firm but diplomatic

In addition, stating things as a question "lands softer" than a statement. It also provides an opportunity to find support by bringing others into the discussion who might have similar views.

For example, instead of stating that the speaker panel for a conference isn't diverse enough, an employee could note that the panel isn't very diverse and ask how others feel about this, given the company's commitment to diversity and inclusion.

While using effective wording is a good strategy, it's also important to make your point firmly, even though it might feel uncomfortable, so it's not easily dismissed.

"I do believe there's a tension point in these conversations between remaining comfortable and making progress," Brownlee says. "If you only push the group to the extent that everyone remains comfortable, you'll only progress as far as the least progressive person, so there's little or no movement.

"So like anything else in life, if you want to gain any benefit, you have to be able to withstand some level of discomfort. And interestingly enough, we do this in other areas of our lives, such as with personal trainers or therapists. Pushing past discomfort is how we make progress."

#### **Consider your role**

Another thing to consider: While it's so important for everyone to speak up against racism — particularly white people — it's also important for them to thoughtfully consider how their position and perspective might differ from their counterparts of color.

"If I'm part of a marginalized community, I can speak from a certain perspective," she notes. "But if you're a white guy and you notice that black

colleagues don't get promoted, get talked over or always get assigned to more menial tasks, it's important for you to speak up about that.

### "Pushing past discomfort is how we make progress."

Dana Brownlee

"But I'd recommend that you first consider talking to some colleagues of color to learn more, gain additional perspectives or even garner support before you step in."

But Brownlee stresses that while it's ideal to check off these boxes to make your argument more palatable, it can't be a prerequisite. The truth is that uncomfortable conversations sometimes are a necessary part of true progress.

Brownlee also says it's critical to strategically consider stakeholder interests when you want to push forward a potentially controversial viewpoint or objective. For example, which people or parties will be most impacted by your proposal? Who are the most influential people? Who might be for or against whatever you're proposing? What motivates key people in the decision-making process?

"You can't just blurt something out in a group meeting," she advises." You may want to consider what motivates people at a meeting. Maybe it's a legal issue — avoiding a lawsuit — or a return-on-investment issue for them. Knowing what motivates them will help you align your pitch with their interests and build a good business case.

"After that, you can collect data that supports and appeals to their motivations."

#### Other considerations

Moreover, it's also important to think about the best setting for approaching this sensitive topic. Maybe a one-on-one convo in an office is best. Or a group setting. Or an off-site lunch. Maybe a third party should be present to mediate a bit, she suggests.

"You have to think about the logistics around it. It can make a big difference, so be sure to think it through."

The bottom line: Don't be daunted. And silence is not an option.

"It's always risky to speak truth to power, especially if you work in an environment that's not open

to new ideas or that's autocratic," Brownlee says. "You could be ostracized — not be invited to sit at the cool kids' table at lunch anymore — or suffer other repercussions.

"But the real key to truly building an anti-racist workplace is to get out of the mindset that it's only the responsibility of the people who run the diversity, equity and inclusion programs or the responsibility of the board of directors. It's everyone's responsibility." •







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### **SHUTTING DOWN INFLOW**

Georgia utility finds a watertight manhole solution that puts an end to chronic SSO problems

By Kyle Rogers

n early May, Fulton County (Georgia) Public Works had its first true test.

A storm hit the area, producing 6 inches of rain over the course of a couple days — the type of rain event that for years consistently caused sanitary sewer overflow problems for the utility. But this time was different. In the storm's aftermath, the utility had zero SSOs to report and deal with.

"It was the first time in the history of the county that we had no reported spills," says Roy Barnes, deputy director of sewer and wastewater treatment operations for the utility. "Normally when we have rain events of 3 to 4 inches or more, we typically have a lot of SSOs."

The secret to Fulton County's sudden turnaround is fairly straightforward: a manhole rehab program using a combination of fiberglass inserts and composite rings and covers that create a watertight seal, eliminating inflow that was at the root of the SSO issues.

"We've had really good success with it," Barnes says.

### Searching for a solution

Fulton County Public Works covers a 285-square-mile area and serves 86,500 customers among North and South Fulton and Sandy Springs in North Central Georgia near Atlanta. The collections system consists of five treatment plants, 2,300 miles of pipe, 45 lift stations and about 70,000 manholes. The system already handles 51 mgd on average, so the extra inflow produced during heavy rainstorms frequently overwhelmed the system.

Barnes arrived at Fulton County Public Works in 2018, and the chronic problem of SSOs after those heavy rains immediately stuck out to him as something that needed to be addressed.



### **CUSTOMERS SERVED:** 86,500

### **INFRASTRUCTURE:**

Five treatment plants, 2,300 miles of pipe, 45 lift stations and about 70,000 manholes

### **ANNUAL OPERATING BUDGET:**

\$58 million for sewer and treatment

### **EMPLOYEES:**

**PROFILE:** 

157 involved in sewer and treatment operations

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### "It was the first time in the history of the county that we had no reported spills."

- Roy Barnes

"It's very disturbing to the citizens when you have a lot of SSOs, and then you have to go through the whole cleaning and notification process, the standard SSO procedures. I said, 'We have to fix this," recalls Barnes.

Prior to that, Fulton County's attempt at a solution, knowing that inflow during large rain events was the primary issue, had been to raise problem manholes so that they would not become submerged. Barnes instead focused on sealing the manholes so they wouldn't allow inflow into the system, even when submerged.

"We had a bad inflow problem because the standard, iron manholes are not watertight," Barnes says.

In doing his research, Barnes came across composite manhole rings and covers from Composite Access Products.

"I saw this product and it was sitting in a tank full of water and underneath the tank it was dry. It had been sitting in there for two weeks or something to that effect," Barnes says. "When I saw that, I said, 'That's what we need.' So we bought some and started to implement them into our system."

Chad Nunnery, president of CAP, explains how his product works.

"The CAP composite manhole cover and frame make a more tightly mated assembly because composites remove the corrosion that fuses cover to frame," he says. "Also, because the compression-molded composites have one mold for every cover and frame, the CAP system eliminates the higher part-to-part variation inherent in a different sand cast for each iron cover and each frame."

To pair with the composite rings and covers, Fulton County also started approaching full rehabs of manholes in a different way. After seeing fiberglass inserts at a trade show, Barnes started having

utility crews use them on manholes that required more than just the ring and cover upgrade.

"You slide them into a manhole and you rehab the manhole instantly," Barnes says.

Crews then use a high-performance epoxy foam to fill in the annular space.

"We combined these solutions, and after we're done, we now have a rehabbed manhole that can be submerged without any water getting into the system," says Barnes.

### A critical test

Since launching the new manhole rehab methodology a year and a half ago, Fulton County has tackled about 200 manholes, prioritizing those located near waterways and in low-lying areas.

One of the biggest problem areas in the past had been a riverside park along the Chattahoochee River that contained 19 manholes, all of which would allow considerable inflow during heavy rain when a dam upstream released water and the river would breach its banks.



Jonas Tobler takes a photo down a newly rehabbed manhole to document it's condition.





"The manholes were in fairly good shape, so all we did was replace the rings and covers with the watertight options," Barnes says. "Normally during large rain events, it was almost like clockwork. Those were 19 manholes we consistently had SSOs coming out of."

That was why the heavy rain in early May proved to be a good test. It was the first rain event of that magnitude to occur after that park area along the Chattahoochee River had been completed.

"Typically that would've resulted in large sewer spill in that area," Barnes says. "But we had zero spills. Back in 2019, we had a lot of rain, and unfortunately in that area we had a spill around 30 million gallons. It was every year. That area just gets inundated with river water and causes a lot of spills. But since making the manholes watertight, that has stopped. And it reduces the amount of flow going to our wastewater treatment plants, which helps the process."

### **Growing the program**

Fulton County has already made good progress with its new manhole rehab program, but there is still plenty of work left to do. There are 70,000 manholes in the system and Barnes estimates that about 30% of them are located in lowlying areas or near waterways. He's had the utility's GIS department help identify those priority manholes, and the GIS department's efforts have been paired with data provided by Fulton County's flow monitoring crew.

"They're able to say which lines fill up first or the fastest or have an increase in flow after we have major rain events. That gives us an idea of which lines are suffering from I&I and which manholes to check," Barnes says.

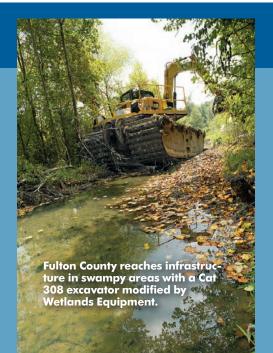
Fulton County's system is separated into different sewer basins, and at the moment, the utility is taking the manhole work basin by basin, not maintaining any specific schedule. Street manholes will get the same treatment in time, but first Fulton County is prioritizing carefully.

"Our system is a pretty good size. We're the largest county in Georgia," Barnes says. "So we're identifying all the low-hanging fruit. The areas that we know get submerged when we have heavy rains and addressing all those first."

### Spreading the word

Fulton County is using its success story to try to help educate other utilities that may be experiencing similar I&I issues.

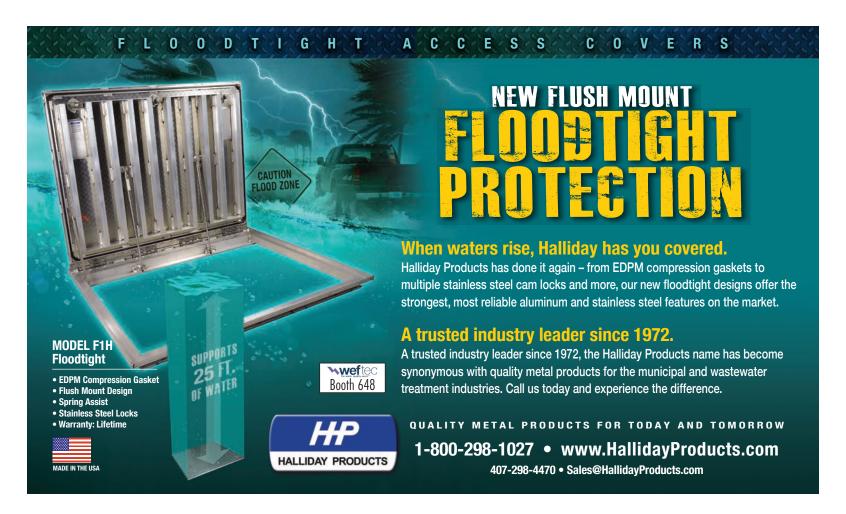
Barnes along with Nunnery filmed a segment for Viewpoint, a show hosted by actor Dennis Quaid that airs on PBS, focusing specifically on the 19 manholes in the park alongside the Chattahoochee River that had been so problematic in the past the most successful application of the new manhole rehab method Fulton County has had to date. Barnes says the plan is to also do a formal presen-



### **TRAVERSING** THE SWAMP

In its manhole rehab efforts, Fulton County Public Works has been prioritizing low-lying areas, as those are the manholes most susceptible to becoming submerged during heavy rains and thus allowing inflow to wreak havoc on the system.

One challenge has been accessing the particularly swampy areas where some manholes are located, so Fulton County purchased a unique piece of equipment to address the problem — a specialized excavator that sits on tank tracks on pontoons, allowing the machine to easily traverse



"What we've learned is you definitely need to address the low-hanging fruit, the known areas of I&I."

- Roy Barnes

The Fulton County Wastewater team includes (from left) heavy equipment operator Jerry Jones, construction manager Steve Jackson, Deputy Director Roy Barnes, senior crew supervisor Craig Daniels and heavy equipment operator Jonas Tobler.

swampy terrain. Wetland Equipment, based in Thibodaux, Louisiana, manufactured the machine.

"We're the first in the state of Georgia to have it," says Roy Barnes, deputy director of sewer and wastewater treatment operations. "We have a lot of swampy areas in the lower part of our county, and it has been impossible to access those manholes in the middle of swamps. With this machine we can go and rehab those manholes and make them watertight to stop the inflow."

tation about the utility's work at the Water Environment Federation's Technical Exposition and Conference in the future.

"What we've learned is you definitely need to address the low-hanging fruit, the known areas of I&I. That's kind of common sense, but it's important. If you interview your frontline staff, they'll show you the problem areas," Barnes says. "If you do have flow monitoring, look at the data. Try to address the areas where you know there is a lot of inflow."

And from there, CAP's composite rings and covers have Barnes' endorsement as a solution to put-

ting an end to that inflow, the cause of so many problems like chronic SSOs. His crews like them too.

"They're much lighter, they're easier to work with, and they do what they are supposed to do. They keep the water out," Barnes says. •

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### LIGHT THE WAY

Intrinsically safe headlamps improve worker safety in hazardous environments

By Del Williams



tilities have a duty to protect employees and provide a safe work environment, but many fail to supply or specify all the proper personal protective equipment — namely headlamps.

The lack of suitable headlamps can lead to serious — even deadly accidents in hazardous locations.

As a tool, headlamps are essential when hands-free lighting is required for

tasks in low-light areas. This can include operating/maintaining machinery and assessing its condition, or servicing pipes, manholes or other infrastructure. Headlamps are also necessary for safe, efficient personnel movement, particularly in confined or restricted spaces.

In many situations, having a headlamp that does not generate a spark is

critical. This is particularly important whenever flammable gases, vapors, liquids or off-gassing is present.

Despite meeting OSHA's definition of PPE, "equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses," headlamps are often not included in budgets for PPE. As a result, utility workers may be left to purchase their own, and if they overemphasize price and choose products that lack necessary options, the units may be unsafe for some tasks, settings or conditions. This could open the utility to potential liability.

To protect personnel in any work environment and to defend against such liability, a growing number of safety officers are including or specifying headlamps in the budget, as PPE.

"It is safer to provide suitable headlamps upfront rather than leaving it up to employees to make their own purchases."

Scott Colarusso

"It is safer to provide suitable headlamps upfront rather than leaving it up to employees to make their own purchases. However, department approval of only intrinsically safe product would handle the issue. Preventing even one serious injury, fire or explosion would

pay for any implementation," says Scott Colarusso, general manager and co-owner of All Hands Fire Equipment & Training in Neptune City, New Jersey.

When utilities supply intrinsically safe headlamps, which are specifically designed not to be a source of ignition in hazardous zones, workers are protected wherever they need to go from serious, even potentially lethal acci-



For water and wastewater utilities, however, typical headlamps can be a dangerous source of ignition if workers unwittingly enter a hazardous area or are exposed to flammable materials or conditions.

Safety considerations are particularly important considering OSHA's recently issued standard for construction work in confined spaces (Subpart AA of 29 CFR 1926). The new standard recognizes that such spaces can present physical and



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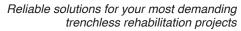


dents. Essentially, everyone is covered and the chance of mishap eliminated.

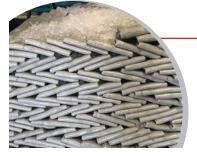
"Without safety-certified headlamps appropriate for the application, utilities are exposed to potential liability if an incident occurs. By supplying workers with headlamps that are rated for any hazardous environment that could be encountered, utilities can prevent the problem," Colarusso says.

#### **Mandating greater safety**

Headlamps enhance safety and efficiency by leaving workers' hands free. It's important to choose devices that are designed to be easily operable even when workers need to wear heavy gloves. Typically, the units are waterproof and chemically resistant, ready for use in rugged surroundings, which may include getting thrown into a truck toolbox or dropped and providing sufficient "burn time" to last an entire work shift without a change of batteries.



FerraTex.com







### **STAYING SAFE**

# "Now the technology is at a better price point than it was five years ago."

John Navarro

atmospheric hazards that can be avoided if recognized and addressed prior to entry. It is designed to eliminate potentially deadly hazards by requiring employers to determine what kinds of spaces their workers are in, what hazards could be there and how those hazards should be made safe (including the use of headlamps, flashlights and other lighting equipment that carry the proper safety ratings).

Therefore, in inherently volatile settings, headlamps should carry the proper certification for various classes, divisions and groups of materials. One example that meets these requirements is the intrinsically safe Vizz II headlamp by Princeton Tec, a producer of ETL and UL-approved lighting products.

In response to the new OSHA standards, some manufacturers now make headlamps with durable thermoplastic material designed to withstand drops and rough handling and have superior resistance to common, potentially dangerous chemicals and solvents utilized by utilities.

The latest models also offer anti-static properties and safety features, such as a locking mechanism that requires a tool to open the battery compartment. This prevents users from inadvertently opening the battery housing in a hazardous environment, which could not only result in electric shock, but also potentially ignition or explosion.

"Many of our corporate customers specify Princeton Tec headlamps and lighting products due to the reliability, longevity, price point and made in U.S.A. production," says John Navarro, a purchasing agent for Bayville, New Jersey-based CWR Wholesale Distribution.

"With an intrinsically safe headlamp, you are meeting the standard and enabling employees to work in the safest possible conditions with the most up-to-date equipment," Navarro says. "Now the technology is at a better price point than it was five years ago. So, it is affordable for corporate safety budgets."

Many of Navarro's industrial customers are willing to spend a little more for higher rated, compliant, intrinsically safe headlamps.

"Our industrial customers want to know their plant personnel can safely use their intrinsically safe headlamps anywhere. Safety committees do not want to worry about where personnel may use the units, if it is

safe to use under hazardous conditions."

While utility production, service and maintenance carry some inherent risk, facilities seeking to improve safety can take a positive step by providing workers with safe headlamps that ensure compliance.

As the need for safety only grows along with stricter regulation, utilities can take a positive step by providing workers with headlamps that ensure compliance and minimize operational risk and liability. •



#### GREG BRECKLER

Operations Manager

Knox County Water & Sewer District

Knox Co., Ohio, USA

# PUMPS DESIGNED TO STAND THE TEST OF TIME.

AND THEN SOME.

GORMAN-RUPP PUMPS OFFER LOW TOTAL COST OF OWNERSHIP... AND OUTLAST THE COMPETITION.

Greg Breckler has worked in the wastewater treatment field for over 18 years. His reputation relies on the equipment he uses. That's why when it was time to replace the 42-year-old Gorman-Rupp pumps in one of his hardest-working lift stations, he stuck with Gorman-Rupp Super T Series® self-priming, solids-handling pumps. *And he expects them to be around long after he retires*.

One of the original pumps installed in 1974.



The Pump People .

## **LEARNING THE** TRENCHLESS BASICS

Sheila loy is executive director of NASSCO. She can be reached at director@nassco.org.

410-442-7473; www.nassco.org

NASSCO is located

at 5285 Westview Drive, Suite #202, Frederick, MD 21703:

A new library of videos will provide an introduction to trenchless technologies

By Sheila Joy

ost people know that NASSCO exists to set standards for the assessment, maintenance and rehabilitation of underground infrastructure. What is lesser known, perhaps, is the second part of NASSCO's mission, which assures the continued acceptance and growth of trenchless technologies.

While many of us have been involved in the underground infrastructure industry for decades, we must not lose sight of the fact that there are many new

industry professionals joining our ranks every day. While our knowledge and experience with trenchless technologies has become second nature to us, there are many new professionals who have not yet learned the basics. If we are to prepare for the future of underground infrastruc-

ture, we need to guide young professionals as well as those just entering the industry as a second career.

In an attempt to increase awareness for all trenchless technologies, NASSCO has begun building a library of basic videos explaining the features, benefits and uses of a variety of systems and methods for the assessment, maintenance and repair of underground water and wastewater systems. Thanks to hardworking committee members and sponsors, to date NASSCO has completed the production of short videos on pipe bursting, grouting and CIPP.

By next summer — again, through committee participation and sponsorships - NASSCO will have expanded this library to include educational videos on the topics of spiral wound pipe, spray-applied pipe lining, lateral rehabilitation and manhole rehabilitation. NASSCO's Operations and Maintenance Committee is also updating an existing (and very important) video on jetter safety.

Finally, NASSCO's Health and Safety Committee is busy working on two new videos on the topics of confined-space entry and styrene monitoring equipment, which will complement the existing NASSCO Health and Safety video on the topic of pipe plug safety.

In addition to these short, introductory videos, NASSCO's new Training Source, built on a sophisticated learning management system, provides a platform for robust educational resources. Specifically built to improve the student experience for NASSCO's Pipeline Assessment Certification Program and Inspec-

> tor Training Certification Program, the NASSCO Training Source opens up a world of opportunity for other educational tools.

NASSCO's Infrastructure Assessment Committee has already taken advantage of this resource through the development of progressive educa-

tional videos and courses, including two new videos currently in development titled "Introduction to PACP" and "PACP for Asset Management." The Infrastructure Assessment Committee is also busy developing a course titled "PACP Risk Management."

It's an exciting time for NASSCO and for our industry. We need to open doors, welcome new professionals into our world and guide them through the process of learning everything that is available through state-of-the-art equipment, materials and other resources designed to properly assess, maintain and rehabilitate our burgeoning underground infrastructure systems.

To access NASSCO videos, specification guidelines, webinars and other technical resources, please visit nassco.org. And come back often — our resources continue to grow!

If you are not yet a NASSCO member and would like to be involved in the development of these important industry resources, please join us today. •

#### Get the EDge Training and Continuing Education Courses

#### **PACP TRAINING**

#### Oct. 4 Placentia, CA

Includes: PACP, LACP, MACP Trainer: Marilyn Shepard

916-899-8961 • mshepard1@hotmail.com

#### Oct. 4, 8 AM Central Time Virtual Classroom Training Includes: LACP, MACP, PACF

Trainer: Brandon Conley 574-201-7704 • brandonconleypacp@gmail.com Oct. 12

Baton Rouge, LA Includes: ITCP - MANHOLE REHABILITATION Trainer: Tim Back 513-253-8461 • timbacktwo@gmail.com

Oct. 5 Augusta, GA

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Oct. 5. 8 AM Central Time Virtual Classroom Training

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#### Oct. 6, 8 AM Central Time Virtual Classroom Training

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Oct. 11, 8 AM Eastern Time

Virtual Classroom Training Includes: MACP, PACP, LACP

574-201-7704 • brandonconleypacp@gmail.com 813-504-3663 • mjlukas20@gmail.com

### Tallahassee, FL Includes: LACP, MACP, PACP

Trainer: Jerry Weimer 513-659-5008 jerryweimerconsulting@gmail.com

Oct. 13, 8 AM Eastern Time Virtual Classroom Training Includes: PACP, LACP, MACP

Trainer: John Jones 678-527-4212 • plumblineconsultant@gmail.com

#### Oct. 13, 8 AM Eastern Time Virtual Classroom Training Includes: MACP. PACP. LACP

Trainer: Brandon Conley 574-201-7704 • brandonconleypacp@gmail.com

#### Oct. 13, 8 AM Eastern Time **Virtual Classroom Training**

Includes: ITCP - CIPP Trainer: Gerry Muenchmeyer

#### Oct. 18, 9 AM Eastern Time Virtual Classroom Training Includes: MACP, PACP, LACP

"While our knowledge and experience with

trenchless technologies has become second

nature to us, there are many new professionals

who have not yet learned the basics."

Trainer: Rizwan Siddigi

#### Oct. 19, 8 AM Eastern Time Virtual Classroom Training - BMC

Includes: ITCP - CIPP Trainer: Michael Lukas

#### Oct. 19, 8 AM Mountain Time Virtual Classroom Training

Includes: PACP Trainer: Brandon Conley 574-201-7704 • brandonconleypacp@gmail.com Trainer: Brandon Conley

#### Oct. 21

#### Cincinnati, OH

Includes: ITCP - MANHOLE REHABILITATION Trainer: Tim Back

513-253-8461 • timbacktwo@gmail.com

#### Oct. 25. 8 AM Pacific Time **Virtual Classroom Training**

Includes: LACP, MACP, PACF Trainer: Brandon Conley 574-201-7704 • brandonconleypacp@gmail.com Trainer: John Jones

Oct. 25. 8 AM Eastern Time Virtual Classroom Training Includes: PACP, LACP, MACF

Trainer: Susan Dakak 865-320-6332 252-626-9930 • gerry@muenchmeyerassoc.com susan.dakak@smartviewsllc.com

#### Oct. 26, 8 AM Eastern Time

Virtual Classroom Training -BMC Includes: PACP, LACP, MACF Trainer: Jerry Weimer 513-659-5008 ierryweimerconsulting@gmail.com

#### Oct. 26, 8 AM Central Time Virtual Classroom Training

Includes: ITCP - CIPP Trainer: Michael Lukas

813-504-3663 • mjlukas20@gmail.com Oct. 27. 8 AM Pacific Time

#### Virtual Classroom Training Includes: MACP, PACP, LACF

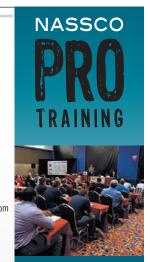
574-201-7704 • brandonconleypacp@gmail.com

#### Oct. 27, 12:30 PM Central Time Virtual Classroom Training Includes: ITCP - MANHOLE REHABILITATION

Trainer: Tim Back 513-253-8461 • timbacktwo@gmail.com

#### Nov. 3, 8 AM Eastern Time Virtual Classroom Training Includes: LACP. MACP. PACF

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#### **OTHER CLASSES FORMING**

Contact one of the trainers listed above if you are interested in having a class at your facility or in your area.



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# FLOW CONTROL AND MONITORING

By Craig Mandli









#### DATA LOGGER AND MANAGEMENT

#### I. Hermann Sewerin GmbH SePem 155

**SePem 155** data loggers from **Hermann Sewerin GmbH** are suitable for mobile use and can also be used for the stationary monitoring of water supply networks. The SePem 01 Master, with its simple and intuitive menu navigation, provides fast and reliable results and can also be reliably operated by less experienced users. The measuring times and periods of radio activity are freely programmable. In a pipe network, water loss caused by a number of smaller leaks added together is likely to be considerably higher than the loss caused by a few spectacular pipe bursts visible on the surface. Noise loggers are capable of reliably detecting both types of leak site — slowly growing and spontaneously occurring. **888-592-9916**; www.sewerin.com

#### FLOW CONTROL/MONITORING EQUIPMENT

#### 2. Badger Meter ModMAG M2000

Water treatment and distribution applications can be complex and result in limited pipe runs to install flowmeters. When space runs out, the **ModMAG M2000** electromagnetic flowmeter from Badger Meter is a solution, delivering accuracies of  $\pm 1\%$  with zero straight run required or  $\pm 0.2\%$  with appropriate straight run. It effectively measures water, wastewater, waterbased fluids and other liquids that meet minimum electrical conductivity. It has a full-bore design, which means there is no size reduction resulting in undesirable pressure drops. **877-243-1010**; www.badgermeter.com

#### 3. Fluid Conservation Systems Pegasus 2

The Pegasus 2 pressure control system from Fluid Conservation Systems utilizes a modem capable of connecting via LTE-M and NBIoT for reliable and low-powered two-way communication. With the capability to set target pressure by time, flow or a combination of both (with different table settings per day), it is easy to set up locally via tablet or PC app and remotely via the PressView Cloud Server. It delivers a sophisticated level of targeted control, even on a time basis. It provides the flexibility to modulate pressure according to demand throughout the day with changes being made remotely, and it features a secondary channel for fast logging down to 25 Hz.

This is invaluable for investigating system transient events. **800-531-5465**; www.fluidconservation.com

## 4. Franklin Electric SubMonitor Connect

Franklin Electric's SubMonitor Connect provides enhanced real-time and time-stamped system monitoring capabilities to improve trouble-shooting while protecting three-phase motor and pump systems ranging from 1 to 700 hp, or up to 1,000



amps. It protects against damage due to adverse conditions, such as low flow wells, clogging, bound pumps and poor or unreliable power. The unit's Basic Setup feature, initiated through the FE Connect mobile app or directly programmed on the unit's outward-facing NEMA 4X display, enables quick setup while ensuring motor protection. Additionally, the app empowers contractors to monitor system status easily, save commonly used setups for later use and view/send fault history through the convenience of Bluetooth connectivity. The unit also protects against arc flash while offering 1% power metering that eliminates the need for an additional meter while providing communication with building management systems to track energy costs and motor status. 866-271-2859; www.franklinengineered.com

#### 5. Hach Data Delivery System

The **Data Delivery System** (DDS) from **Hach** is an efficient flow monitoring service tailored to deliver relevant data when needed. For a fixed monthly fee, it provides all of the equipment, data transmission and technical support needed to acquire flow data — delivered in real time for immediate analysis. It allows operators to know their flow status anytime, anywhere, for either long- or short-term applications. **800-368-2723**; www.hach.com

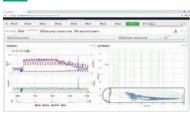
#### 6. KROHNE TIDALFLUX 2300 F

The **TIDALFLUX 2300 F** electromagnetic flow meter from **KROHNE** provides reliable flow measurement in pipes between 10 and 100% full. It offers a non-contact sensor that is unaffected by oils and fats floating on













the surface. Available in diameters to fit pipes up to 64 inches, it has high chemical and abrasion resistance to provide exceptional durability. The electromagnetic flowmeter offers integrated, non-contact capacitive level measurement and an approval for ATEX zone 1 for use in hazardous environments. It is a suitable choice for municipal or industrial wastewater transport application and can also be used for measurement of effluent brine from dredging, mining or sea/well water injection applications. Wet-calibrated at the factory using a direct volume comparison, it does not require on-site calibration. The meter's accuracy in partially filled pipes is less than 1% of full scale, and the accuracy in full pipes is less than 1% of the measured value. **800-356-9464**; www.us.krohne.com

#### 7. Opto 22 GRV-EPIC-PRI Edge Programmable Industrial Controller

The GRV-EPIC-PR1 Edge Programmable Industrial Controller from Opto 22 is an embedded Linux real-time controller with gateway functions. This groov EPIC processor provides control, connectivity, data handling and visualization at the edge of a network and is suitable for industrial internet of things applications or any automation application. Its modern design offers a condensed and sturdy unit that features a resistive-touch, high-resolution LCD display and network configuration, troubleshooting and system HMI. The LCD display lifts to provide easy access to the power button, power supply connectors, network interfaces, ports and status LEDs. A dual, independent gigabit ethernet network interfaces securely segment trusted networks (like a control network) from untrusted networks (like the internet). Dual USB ports connect to serial interfaces, Wi-Fi adapters, and keyboard, mouse and touchscreen controls. An HDMI port connects to an external monitor for displaying configuration and groov View HMI on an external large screen, useful for local process visualization and OEM applications. 800-321-6786; www.opto22.com

#### 8. PRIMEX Pump Watch Express

**Pump Watch Express** from **PRIMEX** is a comprehensive family of compact cellular RTUs and Gateway used for monitoring pumping systems. It offers a simple, effective tool for management of multiple sites, including alarm notification, data logging and graphic system visualization. It includes a lithium-ion backup battery for power loss detection and notification, SMS/email/web portal alarm notifications, graphic HMI with simple and clear

station status display, interactive pumping station map, data logging and historical trending, first year of service included, and optional web portal customization. NEMA 4X control panels come in three versions: lite, premium and gateway. 844-477-4639; www.primexcontrols.com

#### SOFTWARE

#### 9. ADS Environmental Services PRISM 2.0

The PRISM 2.0 solution platform from ADS Environmental Services provides the tools to capture, cleanse, analyze, store, report and visualize actionable answers to the industry's most critical wastewater collections system problems — prioritizing sewer cleaning and preventing SSOs, assessing your RDII, and measuring and managing your CSOs. The cloud-based platform's home page provides immediate system insight including a map view reflecting flow, level and rainfall monitors with location and condition details, leaderboard tiles with system status and quick access to the data vault, as well as specialized reports. Users can configure alarms for advance notice of developing problems, while data, reports and related files can be shared among cross-functional groups. 800-633-7246; www.adsenv.com

#### 10. BinMaster Level Controls BinCloud

The **BinCloud** platform from **BinMaster Level Controls** is an integrated cloud foundation for data monitoring of levels of municipal water or at wastewater treatment plants, pumping stations and overflow basins. It allows onsite and remote workers to securely access level data stored in the cloud from a phone, tablet or PC via the internet. It includes real-time monitoring, automated alerts via text or email and historical reporting. It is compatible with non-contact radar, SmartBob, 3DLevelScanners, guided wave radar, ultrasonic, or laser level sensors with a 4-20 mA, Modbus or HART output, and can be combined with gateways and other wireless networking devices to connect sensors to the system with minimal wiring. It is suitable for residential drinking water and waste treatment, as well as environmental control for flood, dam and river level monitoring, or preventing sewer overflows. **800-478-4241; www.binmaster.com** 

#### 11. Flowrox Malibu

The Flowrox Malibu portal is a combined industrial internet of things online process monitoring, maintenance and analysis tool. The data is collected from sensors on a device, sent to a cloud, processed and shown in the Malibu portal. It is easy for anyone to view and use because data is presented through a 3D model of the actual pump station, filtration process, thickener or other devices. In other words, it is a customized user interface tailor-made for the particular application. This Industrial Internet of Things online process monitoring portal enables maintenance and analysis of the process. It collects data from smart products in operation and converts it into an easily accessible and visual format. The portal also functions as an analytics tool. 410-636-2250; www.flowrox.com  $\spadesuit$ 

#### FLOW CONTROL & MONITORING By Craig Mandli

# Direct pump station flow monitoring improves collections system modeling

#### **Problem:**

U.S. municipalities working to understand and manage the variance between design and operational capacities of their pump stations are often forced to derive input flows solely from pump runtimes recorded by the SCADA system — data insufficient to accurately model surging and other dynamic flow characteristics. This was the case in several connected municipalities outside Detroit.

#### **Solution:**

Chris Davis, a member with Lower 48 Instruments, worked with Michigan-based Project Control Engineering to install dozens of In-Situ Mace Doppler Insert Velocity Sensors to measure flow from lift stations supplying three regional plants. The sensors, which are designed to operate in full pipes from 6 to 100 inches in diame-



ter, can directly and accurately measure flow at the discharge side of the pump. The Mace Doppler Insert Velocity Sensor connects to the Mace Flo-Pro XCi meter and uses an I/O card to deliver flow data to the plants' SCADA systems for 24/7 monitoring and alarming. In addition, a Web-Comm card can be used for remote meter management and to transmit directly to the cloud. As many as five Doppler sensors can be monitored with a single FloPro XCi meter.

#### **RESULT:**

"Mace sensors are quick to install, and for a relatively low cost, deliver really high-quality data," Davis says. "For a municipality on a budget, they're a great option that I've used for years." In Michigan, the data coming from the sensors via the meters has been exactly what the municipal customers need to get a more complete picture of flows from the stations. 800-446-7488; www.in-situ.com

#### A safe and reliable solution for clarifier upkeep

#### Problem:

The City of Florence, New Jersey, was in need of a more reliable system for their primary circular clarifier, which was frequently out of commission and required unsafe and unsanitary methods to get the system up and running again. For the health and safety of all those who work on the city's meters, it was best to find a solution that was safe and cost efficient.

#### Solution:

As repair and commission costs continued to rise, the city decided to purchase **Pulsar Measurement's Sludge Finder 2 Controller** and the corresponding **Viper Sensor Transducers.** The Sludge Finder 2 uses high-frequency ultrasonic technology through echo processing algorithms to reliably

identify the sludge interface level. Viper Transducers are self-cleaning, which reduces the need for regular inspection, saving time and money in the long run.

#### **RESULT:**

The trial results showed that the instruments can provide the proper sludge level readings that the city was expecting to see in the clarifier, producing a safe, reliable, cost-effective solution to reduce the amount time spent in the field for installation and maintenance. 888-473-9546; www.pulsarmeasurement.com

#### Weir solution prevents waterway flooding

#### **Problem:**

Situated in British Columbia, Kelowna's Wastewater Treatment Facility is responsible for a network of 370 miles of wastewater mains and 49 lift stations. On a peak day, treatment exceeds 11 mgd of domestic and industrial wastewater from homes and businesses. Kelowna's original SCADA system was ill-equipped to accommodate the rapidly growing population and increased challenges of monitoring creek flooding, cleaning optimization and hydrogen sulfide levels.



#### Solution:

Kelowna'a plant deployed **SmartCover** technology to

remotely monitor their creek diversion structures and mitigate downstream flooding while accurately managing hydrogen sulfide levels.

#### **RESULT:**

The city now has real-time visibility into their remote weir assets using instant infrastructure monitoring. This has resulted in significant savings, successful resource allocation and has minimized staff trips to the field. They use the versatility of their system to monitor surface water, manage inlet and outlet diversions, and monitor flow over weirs. For CSO sites, the start time, stop time and incident flow volume is logged and reported in real-time. The system can detect rising levels, notify when an overflow starts and stops as well as quantify volume discharged for regulatory compliance and public reporting capabilities. 760-291-1980; www.smartcoversystems.com ◆



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# Product Spotlight

Updated endpoints improve speed, accuracy of advanced metering networks

By Craig Mandli

he implementation of advanced metering infrastructure is dependent on speed and accuracy. Now with the addition of LoRaWAN Class B endpoints, the Mi.Net node from Mueller Systems brings advanced metering infrastructure to the next level.

LoRaWAN Class B endpoints provide flexibility to scale network coverage and integrate into remote disconnect meters, leak detection and pressure monitoring systems, unlocking greater network efficiency and improving data granularity. The Mi.Net node, implemented with LoRaWAN Class B specifications, is a bidirectional endpoint capable of transmitting secure data to and from a network server within seconds, as opposed to hours with a Class A endpoint. At this unprecedented speed of communication, on-demand reads can be commanded and delivered without delay, providing real-time data to customer service and operations to identify and resolve outages quicker than before.

"Beyond advanced reading, it improves water network management and reduces non-revenue water loss with leak detection," says Kenji Takeuchi, senior vice president, Technology Solutions at Mueller. "It can reduce energy consumption in the cost of water with water flow and pressure monitoring and control of pumping systems for the water supply."

The LoRaWAN specification is a Low Power, Wide Area networking protocol designed to wirelessly connect battery operated "things" to the internet in regional, national or global networks, and targets key Internet of Things requirements such as bidirectional communication,



end-to-end security, mobility and localization services. Network architecture is

deployed in a star-of-stars topology in which gateways relay messages between end devices and a central network server. The gateways are connected to the network server via standard IP connections and act as a transparent bridge, simply converting RF packets to IP packets and vice versa.

Recently, the town of Florence in central Pinal County, Arizona, became the first water utility to benefit from this technology advancement. "The deployment of smart meters is accelerating our journey toward digital transformation and the foundation required to build out our smart city grid," says Town Manager Brent Billingsley. "We are confident that this open source network will provide new operational efficiencies, enhanced service opportunities and additional revenue streams."

Takeuchi notes that it's encouraging to see more cities and water utilities like the town of Florence at the forefront of the Industrial Internet of Things revolution.

"We understand that municipalities are facing challenges on many fronts," he says. "Our technology solutions can help drive a better focus on utility spending and return on investment while helping them operate more efficiently." 800-423-1323; www.muellersystems.com

#### Reed Mfg. Double Deep Oiler System

The Double Deep Oiler System from Reed Mfg. has a 20-gauge steel bucket, steel drip pan/chip tray plus a deep bucket at 8 1/2 inches. A turned-aluminum, sturdy oil gun includes a 60-inch industrial-grade hose. OLBUCKT1 also includes a gallon of



thread cutting oil. The optional OLGUARD splash guard reduces splashes and sloshes with a metal guard that has magnetic feet, interrupting the liquid's centripetal force to keep the oil in the bucket. For added protection during transit and weather situations, add the optional OLLID protective, clamping cover to further protect the oil and keep the mess to a minimum. The OLGUARD and OLLID fit Reed's current and prior oil buckets. 800-666-3691; www.reedmfgco.com

#### IBG HydroTech IBB16 pressure pipe liner

IBG HydroTech GmbH achieved the NSF/ANSI 61 certification for its IBB16 pressure pipe liner.

NSF International led the development of the American National Standards for all chemicals used to treat drinking water and materials/products coming into contact with drinking water. To obtain NSF/ANSI 61 certification, IBG HydroTech's IBB16 was subject to rigorous testing and evaluation to verify the product meets the requirements for use in potable water systems. The IBB16 technology is a trenchless pipe-in-pipe solution for all types of pressure pipe networks. www.ibg-hydro-tech.de/en

#### SPECIAL REPORT



#### Flomatic AIS Model 745 and Model 4082 valves

Flomatic Valves' latest addition to the Flo-Flex family is the AIS-compliant swing check valve Model 745. Manufactured according to ANSI/AWWA C508 standards, it provides the industry with one of the broadest lines of flexible rubber disc swing check valves available. Featuring a non-slam silent closure, it reduces potential water hammer damage over an extended period of time. Flomatic also expanded the AIS-compliant ball check valve

Model 4082. The valves are available in different ferrous materials: fusion-bonded, epoxy-coated ductile iron or 316 stainless steel. Designed according to ANSI/AWWA C508 standards and manufactured with a clean-out port, it permits fluids to pass through with minimum flow restriction. From proximity sensors to a variety of ball options, Flomatic offers a robust line of accessories to accompany the valve.

800-833-2040; www.flomatic.com

#### SPECIAL REPORT



#### Patterson Davit Cranes

Give your operations a lift with Patterson Davit Cranes, available in ½-ton and 1-ton capacities. The low maintenance, easy-to-assemble design offers adequate reach to accommodate lifting large loads within tight spaces, and a boom that can be adjusted to nearly 45 degrees to allow for clearance over obstructions such as handrails. Built for durability, it comes standard with a hot-dipped galvanized finish and stainless steel hardware to prevent rust and corrosion in wet work environments. Following Patterson's tra-

dition of safety-focused innovation, the davit features a reliable brake to keep loads in position without creeping. For over 160 years Patterson has been a trusted supplier of winches, rigging, fittings and custom products for lifting applications. Patterson Davit Cranes are made in the U.S.A. and deliver on the company's promise of helping businesses run safer, easier and faster. Find out how Patterson can improve employee safety and positively impact your bottom line. 800-322-2018; www.pattersonmfg.com/davit-cranes

#### Vermeer QuickFire HD connection system

Vermeer's Quick-Fire HD connection system for utility horizontal directional drills uses two heavyduty roll pins to secure the locking



collar over the non-torqued threaded connection. The system also allows the collar to be assembled at any orientation to avoid having to rotate the collar to align it with the retention bolt hole. The QuickFire is available in three sizes: HD300 for 10,000-pound drill range; HD400 for 24,000-pound drill range; and the HD 460 for 40,000-pound drill range. Weld-on connection options are also available to convert existing tooling to the QuickFire HD connection system. **800-837-6337**; www.vermeer.com

## Innovyze Info360 Asset performance monitoring tool

Innovyze's Info360 Asset, now available in beta, is the latest product to join the Info360 cloud platform. Info360 Asset serves as a cloud-based tool for the water industry's condition and performance monitoring and risk assessment processes.



It helps asset management practitioners review, store and manage all inspection data effectively, assess conditions conveniently and determine risks accurately. It also provides non-technical stakeholders with access to an easy-to-understand web environment to help understand maintenance and renewal decisions. 626-568-6869; www.innovyze.com •

#### Duperon announces new marketing manager

Duperon Corp. announced the addition of Cynthia Camburn as marketing manager. With 20 years' experience she is an alumna of the University of Michigan, where she earned two Bachelor of Arts degrees focused in English and communications.



Cynthia Camburn

#### North Lauderdale selects Inframark for Lift Station O&M

Inframark announced that North Lauderdale, Florida, has granted the company a one-year contract for the operations and maintenance of 28 lift stations located throughout the city. The contract, which commenced on July 1, is renewable on an annual basis. The addition of North Lauderdale builds on Inframark's growing presence in Florida, where the company now operates 18 projects.

#### ADS partners with DHL Supply to expand footprint

DHL Supply Chain, headquartered in Westerville, Ohio, and Advanced Drainage Systems are expanding their existing strategic partnership. DHL will provide ADS its transport and logistics suite of services to execute ware-

see photos in color at www.mswmag.com

#### **JETTERS-TRAILER**



The Hot Jet II® is a best-selling hot- and cold-water drainline cleaner featuring a 35 hp Vanguard engine by Toyota and delivering 10 gpm @ 4,000psi that cleans drains up to 300' and 12" in diameter. Priced at \$39,995 the Hot Jet II® is American made using nonproprietary parts for affordability and ease in serviceability making its return on investment truly impressive. Prices subject to change. Financing available. sales@hotjetusa.com; 800-624-8186; (MBM) www.hotjetusa.com

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housing, fleet and e-commerce solutions enhancing ADS' production capabilities, ADS, based in Hilliard, Ohio, is expanding its distribution footprint amidst a pandemic-sparked growth that has seen homeowners investing in DIY renovations and repairs, the largest uptick in building permits since 2006, and municipalities investing in infrastructure.

#### Wilwerding joins Felling Trailers as sales manager

Felling Trailers appointed Michael Wilwerding as its southwestern regional sales manager. In this role, he will be responsible for all sales development, activity and dealer support within California, Nevada, Arizona, New Mexico and Hawaii. He will be taking over the region once served by Roger Magers, who retired at the end of 2020.



**Michael** Wilwerding

#### Brown and Caldwell appoint vice president for Midwest

Brown and Caldwell announced Tracy Ekola has joined the company as vice president and senior director of client services for the Midwest region. With over 28 years' experience, she has held executive and regional leadership roles and served as a design-build board member in past organizations.



Tracy Ekola

#### Six winners receive IWA awards

The winners of the International Water Association Awards were announced during the Digital World Water Congress. Marcos von Sperling won the IWA Global Water Award, which recognizes an innovative leader who has made a significant contribution to a water-wise world. The IWA Women in Water Award, which celebrates the work of women in the field of water, was won by sanitation advocate Nafisa Barot. Barot was recognized for using her role at NGO Utthan in Gujarat, India, to influence people and policies around water, gender justice and sustainable development. Malaysian sewage company Indah Water Konsortium won the IWA Professional Development Award for its record of developing and retaining talent in the sector. Scientist and engineer Siddhartha Roy received the IWA Young Leadership Award, which had been announced earlier this year. The award is granted to an exceptional young water professional for their achievements, leadership and future potential. Jiri Wanner, from the University of Chemistry and Technology in Prague, Czech Republic, and Mark van Loosdrecht from Delft University of Technology, in the Netherlands, received IWA Honorary Life Membership for their sustained contribution to the water sector and the association.

#### ABLOY names new channel partner

Accurate Corrosion Control, based in Glendale, Arizona, was named ABLOY Critical Infrastructure's newest distributor. Employee-owned, ACC has been based in the Phoenix area since 1984 and provides engineering, surveying, construction, testing and mitigation services primarily in six states: Arizona, Nevada, New Mexico, Texas, Utah and California, where they have a branch office located in Pleasanton.

## **WORTH NOTING**

#### PEOPLE/AWARDS

**Suhail Kanwar** was hired as the city engineer for the city of Houston (Texas).

**Mike Kelley** was promoted to director of engineering for the town of Christiansburg (Virginia). He previously served as assistant director.

**Jason Gallant** was hired as a structural engineer for Wright-Pierce (Connecticut), a multidiscipline engineering firm. Stormwater infrastructure is among his areas of expertise.

The **City of High Springs** received a \$45,000 grant from the Florida Department of Economic Opportunity and Enterprise Florida to prepare a downtown parking and stormwater improvement plan. ◆

#### **CALENDAR**

#### Oct. 6-8

Southeast Stormwater Association Regional Stormwater Conference, Hilton Head Marriott Resort and Spa, Hilton Head Island, South Carolina. Visit seswa.org.

#### Oct. 6-9

American Society of Civil Engineers 2021 Convention, Hilton Chicago Hotel, Chicago. Visit asce.org.

#### Oct. 12-14

American Public Works Association Public Works Expo (PWX) Plus, held virtually for those unable to attend in person the PWX event Aug. 29-Sept. I.Visit apwa.net.

#### Nov. 8-11

American Water Resources Association Annual Conference, Embassy Suites by Hilton, Kissimmee, Florida. Visit awra.org.

#### March 2-5

National Utility Contractors Association Annual Convention and Exhibit, Hyatt Regency Hill Country Resort and Spa, San Antonio. Visit nuca.com.

#### March 13-16

American Society of Civil Engineers Operation and Maintenance of Stormwater Control Measures Conference, Wilmington Convention Center, Wilmington, North Carolina. Visit asce.org.

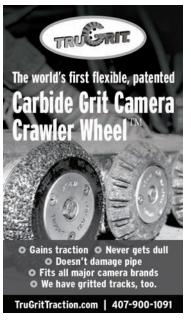
#### **April 24-27**

American Water Resources Association Spring Conference, Bryant Conference Center, Tuscaloosa, Alabama. Visit awra.org.

**Municipal Sewer & Water** invites your national, state or local association to post notices and news items in this column. Send contributions to editor@mswmag.com.



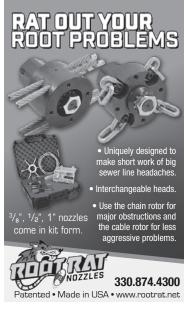




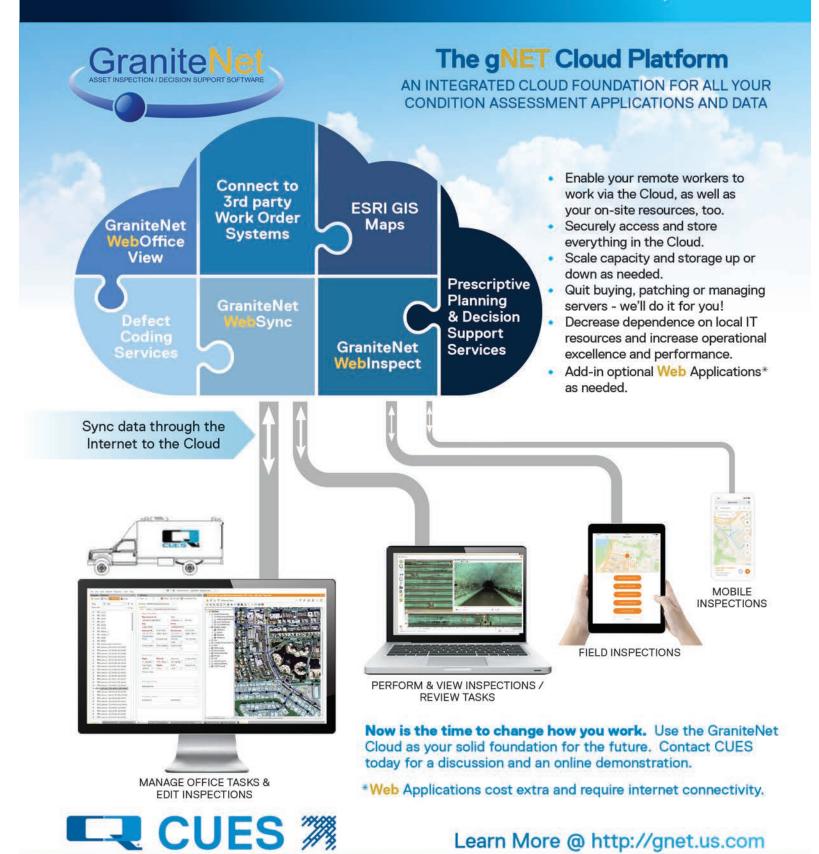








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