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Greg Veliz
Executive Director
Florida Keys Aqueduct Authority

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PUMPS, LIFT STATIONS AND CONVEYANCE



ON THE COVER: Florida Keys Aqueduct Authority Executive Director Greg Veliz and his team are launching a decades-long modernization project on the 130-mile-long pipeline that supplies water throughout the Florida Keys. (Photography by Mary Martin)



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SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:

COLEpublishing

PO Box 220
Three Lakes, WI 54562



www.mswmag.com

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Office hours Mon.-Fri., 7:30 a.m.-5 p.m. CST

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EDITORIAL CORRESPONDENCE:

Send to Editor, *Municipal Sewer & Water*, P.O. Box 220, Three Lakes, WI, 54562 or email editor@mswmag.com.

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Luke Laggis

KEEP YOUR FEET DRY

Don't let a trickle of trouble turn into a flood you can't control

My sister has a book filled with little bits of funny life advice from my mom. The other day she sent me a photo of a page that said, "Occasionally the sewer water will lap at your heels, but never let it cover your feet."

There's a metaphor in there for sure, but it's also a joke in reference to the problematic sewer lateral at the antique shop she owned. It was a big Victorian house on a corner that was operating as a rooming house when she bought it and turned the main floor into her shop. She eventually lived upstairs. The building was old, and that lateral line had seen better days. Roots were a problem, and on occasion the line would back up into the basement. It was rarely a big deal if someone noticed it early on, thanks to the slope of

Regardless of whether you deal with water, wastewater or stormwater, there are good lessons to be learned from this project and approach.

the floor, but if it went unnoticed for a while it presented problems.

I had my share of experiences in that basement, and unfortunately the water topped my feet a time or two, so I saw the humor in the advice and fully understand the wisdom.

In your line of work, I think the advice holds up. Your collections systems will inevitably have maintenance and repair needs. There will be roots, clogs, cracks and other problems. If you're out in front of it, the water may lap at your heels, but it won't cover your feet. But if your utility is in reactionary mode, maintenance needs can turn into emergency calls, and then your boots better be waterproof.

The Florida Keys Aqueduct Authority doesn't deal with wastewater, but it's clearly looking well into the future with an ambitious 130-mile pipe replacement project. The utility, featured in this issue of *Municipal Sewer & Water*, is responsible for water distribution throughout the Florida Keys.

The decades-long modernization of the pipeline involves replacing a 30-inch ductile iron pipeline with a cathodically protected 36-inch steel line. While the existing pipe's 50-year life expectancy is nearing its end, replacement won't happen overnight. In fact, incremental steps will begin this spring and continue for two or three decades before the makeover of the waterline is complete. The tab for the first 4-mile increment is \$42 million, but the full project could cost a billion dollars.

The Florida Keys project is filled with challenges, but your jobs always are. The important thing here is that the utility is taking a big picture approach, tackling these challenges and restoring its system incrementally, methodically, before it's forced into the type of emergency repair cycle that can make it impossible to ever get ahead or take on a project of this magnitude.

Regardless of whether you deal with water, wastewater or stormwater, there are good lessons to be learned from this project and approach. You have to focus on the problems of today, but if your vision doesn't extend any farther you're headed for bigger problems.

Here's hoping you can keep your feet dry.

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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WATER EDUCATION

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“Whether it is extreme weather events, physical security risks or cyber threats, the nation's drinking water and wastewater utilities face a daunting environment.”

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SMART SEWERS

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DECADES IN THE MAKING

Historic pipeline project will revamp water distribution through the Florida Keys

By Giles Lambertson

Water, water everywhere and not a drop to drink. That would be the plight of many Florida Keys residents were it not for a 130-mile pipeline connecting their faucets to the Biscayne Aquifer in mainland Florida. In April, the water authority serving the Keys will begin a long-term project to upgrade the vital pipeline.

The Keys are a chain of islands that constitute the southernmost point of the United States. They have a tropical climate similar to Caribbean islands as well as native palm trees and practically no freshwater. The hundreds of thousands of annual visitors to Key West and nearby islands rely on water piped in by the Florida Keys Aqueduct Authority, which is headquartered in Key West.

Both the authority and the system have been dependable. “We lost water only one time that I remember, after a storm several years ago,” says Greg Veliz.

Veliz is a native of Key West who, except for some college years, has spent his entire life in and around the city. He worked for the city government for 16 years, including as city manager. Two years ago, he moved over to become executive director of the authority. As such, he’s responsible for the overall operation and management of the authority’s potable water and wastewater systems.

Urgent concern

This spring the authority will launch a decades-long modernization of the pipeline. It will involve replacing a 30-inch ductile iron pipeline with a 36-inch steel line that has been cathodically protected. The cathode treatment is a process in which an outer layer of the pipe is sacrificed to corrosion to insulate the core of the pipe against rust, enhancing its longevity.

Veliz says the cathode-treated pipe is a proven technology that ensures the waterline will be durable. “This new technology has a track record and we looked at that record before choosing it.” The steel pipe for the line will be made in the U.S., Veliz says.

The existing pipe’s 50-year life expectancy is nearing its end. That, coupled with some preventive repair work that Veliz says didn’t happen in a timely way, makes replacing the pipeline a fairly urgent concern. “It is what it is and now we must start putting in a new pipe.”



Replacement won’t happen overnight. In fact, incremental pipe work beginning this spring will continue for two or three decades before the makeover of the waterline is complete. The cost? Veliz threw out the sum of a billion dollars but only to make a point: It will be expensive.

What is known for sure is the tab for the first 4-mile increment is \$42 million, which will be expended over the next two years. Some \$35 million of that comes from state and federal grants, the rest from a low-interest loan. More grants will be sought to help fund future increments of the project.

First phase

The village of Islamorada, situated on six small islands, is the starting point for the project. That segment of the line is showing the effects of what Veliz calls “aggressive soils and subterranean tidal flows. Every single day, twice a day, tide goes in and goes out. The pipe is surrounded by salt and rock, very high salinity, and the shifting substrate affects the pipe.”

“The pipe is surrounded by salt and rock, very high salinity, and the shifting substrate affects the pipe.”

Greg Veliz

In other words, the pipe is being eaten away and pushed around by shifting pressures, both of which threaten its integrity. The executive director says something similar is happening all up and down the line.

For most of its 130 miles, the old pipe is either buried alongside U.S. Route 1 that serves the Keys or is strapped to the underside of the 42 bridges hopping from island to island. This time the new pipe will not piggyback on the bridgework.

Instead, a tunnel will be directionally drilled in the seafloor between each of the islands and the new waterline pulled through it. That placement will better protect the pipe from wind and storm surges. Two bridges in the inaugural Islamorada segment of the project will be bypassed that way.

FLORIDA KEYS AQUEDUCT AUTHORITY



PROFILE:
Florida Keys
Aqueduct Authority

PROFILE:
Florida Keys Aqueduct
Authority

SERVICE AREA:
Florida Keys, including 44
islands

NUMBER OF CUSTOMERS:
55,000

WATER VOLUME:
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Executive Director Greg Veliz in front of the Florida Keys Aqueduct Authority's new administration building. (Photography by Mary Martin)

Left: Crew members lay rebar for the FKAA's new generator building. Each piling is more than 3 feet in diameter to anchor the foundation in place if a catastrophic hurricane hits.

A photograph of construction workers on a site. In the foreground, a worker in a bright yellow-green long-sleeved shirt with a 'Reynolds' logo on the back, khaki pants, and a white hard hat stands with hands on hips, looking towards the left. In the middle ground, another worker in an orange long-sleeved shirt and a green hard hat is working on a dense grid of steel rebar. The background is filled with lush green trees under a clear sky. The scene is brightly lit, suggesting a sunny day.

Crew members work on the FCAA's new generator building.

ONE BITE AT A TIME

Greg Veliz says he is banking on being around to see the completion of the new waterline running the length of the Florida Keys, however long it takes. The 61-year-old executive director of the Florida Keys Aqueduct Authority approaches the decades-long project with the mindset of Desmond Tutu, the South African Anglican bishop, who famously said the only way to eat an elephant is one bite at a time.

"You just start a project like this and complete it in increments," Veliz says. "Right now, we're concentrating on the first 4-mile stretch. We will learn from that and keep going."

The scope and difficulty of the pipeline project says something about the authority's determination to keep water flowing to the people living in and visiting Key West and the islands leading to it. It also shows that the organization is willing to take on substantial projects.

Veliz says that, as a general rule, he likes to reach out to peers doing similar work, to exchange information and otherwise compare notes on respective projects. One can learn new tricks that way and gain important perspectives.

But when he tried to do that with the authority's latest undertaking, he came up empty-handed. Apparently, there aren't a lot of 130-mile-long waterline construction projects jutting out into the ocean. "It's sort of a unique situation."

(continued)



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The FCAA leadership team includes (from left) Director of Engineering David Hackworth, Director of Finance Cindy Kondziela, Executive Director Greg Veliz, COO Peter Gomez, and Director of Water Operations William Osterhoudt.



Fighting traffic

The pipe replacement work will be tricky. Besides the directional drilling, construction crews will have to contend constantly with two challenges. The first is the cluttered ground in which the new pipe will be laid. The highway's narrow right-of-way is crowded with other utility lines serving island populations.

"All the utilities are sort of laid on top of one another," Veliz says. "That makes repairing a leak in a pipe in the middle of a night a real challenge because there are four or five other buried lines down there you don't want to hit." The same problem will face those laying the new pipe.

The other major challenge is the narrow roadway itself. For most of its length, U.S. Route 1 is a two-lane highway. In construction zones, the southbound lane of the highway will be blocked by heavy equipment and construction personnel.

"The Keys is an incredible economic engine for the state of Florida. This project is going to impact all of that."

Greg Veliz

"Traffic on the highway is, I don't know, immeasurable," says Veliz. "The Keys is an incredible economic engine for the state of Florida. This project is going to impact all of that. For years to come, driving the highway at times is going to be uncomfortable." Veliz is very familiar with the situation, having traveled U.S. 1 for many years. "I feel like I've spent half my life on that highway."

The prime contractor for the first 4 miles of the project is Michels Pipeline, the highly rated Wisconsin firm that has been performing underground infrastructure work for more than 60 years. The Michels work plan is ambitious, according to Veliz.

"The contractor is scheduled to have crews on site 24 hours a day, five days a week, beginning at the south end of the project north of Tea Table Key. The plan is to spend four days laying pipe and the fifth day of each week performing inspections and trench restoration." Once the pipe is buried in the right of way, it will be tied in to the two directional drilled segments at each end of the project.

There will be necessary interruptions in the construction activity. The local economy demands it. The constant flow of tourists down U.S. 1 to the Keys is a reality that can't be ignored. The flow is heavy throughout the year, according to Veliz, with Key West's numerous hotels at 95% capacity on any given day.

"But there are days when blocking traffic on the highway simply cannot happen, on weekends when we can expect to double our population thanks to visitors. Those will be blackout days as far as laying pipe." Keeping traffic moving will be an ongoing concern as the project proceeds, he says. "This is one reason we've authorized extended working hours for the contractor, to reduce the overall project duration and, therefore, reduce the impact on traffic flow."

Busy as the Florida Keys are, they are getting busier — some 20 million gallons of water are pumped to Key West and adjacent villages each day, an amount that has increased over the last decade. That's not because Key West's population is growing, however, as the city's population of about 75,000 residents is more or less fixed. Not only is there no more land available on which to build houses and apartments, the number of building permits is strictly limited. The cap on building controls growth.

It also assures officials that the population remains a manageable size so it can be evacuated in a timely way when hurricane warnings begin to sound. The pipelines and highway have proven to withstand the storms reasonably well — though one section of the roadway is prone to washing out — but having tens of thousands of people crossing the bridges in hurricane winds would be a whole other matter.

Safety net

The new waterline will not be fully functioning for many years. The good news is that a new water treatment plant will come online much sooner. The authority has had two reverse osmosis plants operating for years, one on Stock Island, the other at Marathon. However, the plants have become outdated and are vulnerable to hurricane winds.



Construction of the FCAA's new desalinization plant on Stock Island is scheduled for completion within the next two years.

Consequently, a new desalinization plant is half-built on Stock Island, with completion expected within the next two years. It might have been finished sooner but the supply chain disruptions that hit many industries after the COVID economic shutdown impacted the plant's construction. A new Marathon plant is still on drawing boards.

Though reverse osmosis is a far more expensive way to produce drinking water than drawing it to the surface from an aquifer, the local water production is important. The plant can serve Key West in an emergency should the flow from the mainland ever be interrupted.

Veliz says the authority's goal with the plants is "to be able to produce drinking water as far south in the Keys as we can. If we ever experience a break in the pipeline, we can shut off a valve and still serve the area affected by the break. They will have water." ♦



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A WISE APPROACH TO WATER USE

Aurora Water's conservation programs include education and financial incentives to encourage water-saving landscapes

By **Steve Lund**

Many years ago Aurora Water started reaching out to the community about how to conserve water. Customers apparently drank in the information. Per capita water use in this Colorado city dropped nearly 39% from 188 gpd in 2000 to 115 gpd in 2020. As a result, the utility serves many more people with the same amount of water.

Aurora Water, which serves a city of about 386,000 and part of the surrounding area, has three water treatment plants that distribute about 28 mgd in winter and 75 mgd in summer. "It started mostly with education, and I believe there was a focus on youth education at the time," says Diana Denwood, senior water conservation specialist.

Numerous offerings

"It has grown to encompass adult education. We've got informal adult education programs, multiple water conservation classes that we teach every year. This year there were over 25 classes. We're kind of ramping things back up since COVID. Before COVID, we had over 30 classes per year."

The classes are held in the utility's demonstration garden, which shows off landscape plants that require little if any irrigation. Ranging from Sprinkler 101 to Installing Water Wise Landscapes and Building Your Own Drip Irrigation System, the classes are popular. Enrollment is capped at 30 people, and class registration is usually full.

"We also have things that are not obviously about water conservation but have something to do with having a water-wise landscape," Denwood says. "For example, we have a Bee Condo Workshop that I've taught a couple times now."

"The idea is that you want to have water-wise flowering plants to feed the pollinator population, so let's help that along by building bee condos. It's not all directly about water conservation, but it's adjacent, and it gets people into our water-wise demonstration garden."

Many motivations

Some participants are motivated by the chance to save on their water bills, but the classes draw

"People are realizing that water is a very precious resource, and they want to be part of a real solution."

Diana Denwood

people for other reasons, too. "A lot of people are interested in having a prettier, more vibrant yard," says Denwood. "You accomplish that by taking out boring Kentucky bluegrass and putting in xeric flowers. That's much more exciting."

Class participants also appreciate the different types of pollinators and other wildlife that are attracted to their yards after they remove some of their grass and plant flowers and shrubs that use less water. "Also, people are realizing that water is a very precious resource, and they want to be part of a real solution," Denwood says.

Aurora Water describes plants that need less irrigation as water-wise. That's defined as needing 15 inches or less of water beyond the 15 inches of precipitation the region usually receives annually. Some plants actually need no irrigation once they are established.

"Kentucky bluegrass in our climate needs 28 inches of supplemental water to thrive," Denwood says. "A water-wise plant needs half the water or less." The utility provides lists of plants that fit the criteria. They include more than 250 perennials, 200 shrubs, 40 grasses, along with seven trees.

"We don't really push people to plant trees because they need more water, even in the winter if temperatures are warm," Denwood says. "We don't have a lot of trees native to the eastern plains of Colorado. We have cottonwoods, but they only grow in riparian areas. They need a lot of water. We encourage drought tolerant trees, which is a smaller list."

Beyond education

The utility also provides free outdoor water use assessments. "It's basically a full sprinkler system checkup," says Denwood, "And we pro-



vide zone mapping, which is really important, especially for homeowner associations and large-property customers who often don't have that basic information of where their controllers are and where all their zones are."

Another outreach effort is the GreatScapes program for low-income property owners. Up to five properties per year receive water-wise landscapes at no cost. The landscapes use plants that require no irrigation once established, so the owners won't have ongoing expenses for watering.

The landscape program also includes rebates for switching to water-wise landscapes and for water-saving irrigation system parts such as smart controllers, rain sensors and soil moisture sensors.

Aurora Water also promotes water-efficient landscaping with contests. For one, called Dreamscape, people submit videos that explain why they want a water-wise landscape. The entries are narrowed to five finalists, and the winner is then chosen by random drawing. The prize is a front-yard conversion to a water-wise landscape.

Another contest, held every year since 2013, has customers submit photos of their converted landscapes. The winner receives a \$100 water bill credit. Twelve customers entered in 2022.

New lawns and new irrigation systems require a permit in Aurora. "We are checking on efficiency and making sure that the new seed or sod has the correct soil amendments to set it up for a healthy start, because healthy grass uses less water," Denwood says.

Lawn watering restrictions are in place from May through September: customers can water no more than three times per week, and never between 10 a.m. and 6 p.m., the hottest and windiest part of the day when evaporation is the highest. Water monitors enforce the restrictions, usually responding to complaints from neighbors.

Inside the buildings

Beyond the landscaping initiative, the utility offers commercial and residential customers rebates for water efficient appliances like high-efficiency toilets that require just 0.8 gallons per flush. For low-income residents, Aurora Water works with the nonprofit Mile High Youth Corps to provide water-efficiency upgrades like aerators, showerheads and toilets for free.

Indoor water assessments are offered for residential and commercial properties. Every water fixture in the building gets inspected. In Denwood's experience, some 75% of leaks are from toilets. "They waste thousands of gallons a month, sometimes quietly and sometimes not-so quietly," she says.

"They waste thousands of gallons a month, sometimes quietly and sometimes not-so quietly."

Diana Denwood

The city's latest conservation weapon is smart meters, which will eventually be installed on every account. "Smart meters can really dig into your use," Denwood

says. "You can see how much water is flowing through a meter per hour, down to 15-minute intervals if you want to."

Aurora also shares data and recommendations with customers. They can sign up for a Know Your Flow email, which gives them a monthly report card about their water use compared to the recommended use for that property, even considering irrigation: "Irrigation is complicated, because landscapes are complicated. It really helps people to compare their actual usage to recommended usage." ♦



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WORKING AT THE BOTTOM OF THE INDUSTRY

A water operator welcomes challenges and adventure in Antarctica

By *Dennis White*

Operating a water system is a tough job. Operating the McMurdo Station water system through Antarctica's bitter winter presents a whole other set of challenges.

For Coby Forth, it's been an adventure.

Forth graduated from Vermilion Community College in Minnesota with a degree in water quality science in May 2018. That fall he landed a job with PeopleService Inc., a water industry contract operation firm based out of Omaha, Nebraska. In October Forth began his career with PSI as a maintenance technician at the water and wastewater facilities in Riverside, Iowa. The job allowed him to gain experience and skills. After obtaining his Iowa certification, he took a promotion with PSI as lead wastewater operator for their LaPorte City, Iowa, operation in May 2020.

Antarctica wasn't on his radar at that point, but he enjoyed searching job sites and exploring the opportunities in other cities. Then in October 2020 he came across a listing for "Water Operator in Antarctica" that sparked his interest.

He says he was shocked to find an employment opportunity in the water/wastewater industry that would take him so far from home and provide such an adventure. In March 2021 Coby decided to leave PSI to pursue the Antarctica opportunity.

Physically qualified

The pre-employment process was intense. Besides the normal interviews and drug testing, there was a four-month process during which Forth had to show he was "physically qualified" to work in Antarctica. Pacific Architects and Engineers hires the water operators for Antarctica and many other locations around the world

through close contacts with the U.S. government.

The location Forth applied for was McMurdo Station on Ross Island, Antarctica. The U.S. National Science Foundation, which oversees these operations, has three year-round locations in Antarctica. McMurdo Station is the largest on the continent. In summer months (October to March), the population can be over 1,200 at this location and in winter (March to October) the population can drop below 200. At the beginning of winter 2022, the population was 126, including primarily support staff to keep the station open and get ready for the summer rush. The other two locations that are manned year-round are Amundsen-Scott South Pole Station and Palmer Station, which is located on the peninsula side of the continent in Antarctica.

The certification requirements for the water operator position in Antarctica are based on Colorado water operations requirements as this is the home base for this section of PAE. They also recognize licenses from other states. Forth's Grade 2 Iowa licenses, along with his training and experience, were recognized and deemed acceptable for the position.

That prior training and experience has proved invaluable as he's been able to offer

Minnesota native Coby Forth and co-workers spend some time outside at McMurdo Station on Ross Island, Antarctica. (Photos contributed by Coby Forth)





“This has been a real adventure and career builder all while getting paid to use my skills as a professional water operator.”

Coby Forth



insights and suggest improvements in both the water and wastewater plants at McMurdo.

Crossing oceans

Before he could start his new job, Forth first had to get to McMurdo Station — another challenge on its own. He started from O’Hare airport in Chicago, arriving in San Francisco where he had to quarantine for five days. Then it was onto a 17-hour private charter flight with Antarctica employees and flight staff heading to Christchurch, New Zealand. Once there, he had to go through Managed Isolation Quarantine before moving on to Antarctica. Everyone going to McMurdo Station goes by way of Christchurch, either by boat or plane. The final leg was a 5.5-hour flight on a New Zealand government plane. He says there’s nothing quite like flying over open water and then suddenly being over Antarctica.

Forth was the only certified water operator on site, working with two other water plant mechanics. One previously worked on Navy ships and the other was on his third season at McMurdo.

The water treatment system in McMurdo is a reverse osmosis system similar to the one Forth worked on in Riverside, Iowa. One of the main differences with the McMurdo system is the use of heat exchangers to warm up the water because the intake/raw water comes from the frigid Ross Sea. This offers some complications when it comes to pulling pumps and the occasional power outage. All lab work is performed on site at the plant.

As long as there are no issues with water production, there are no restrictions on water use. They are required to keep at least 160,000 gallons of water in their storage tanks at all times. If a major issue requires work that takes the system out of production for a day or two, they go into water restrictions when reserves hit the 160,000-gallon mark. The maximum storage capacity is 204,000 gallons and typically never falls below 170,000 gallons. All the buildings at McMurdo are connected to water, sewer, power and internet, and all are above ground.

Being outside here has its own set of challenges but some workers are outside every day depending on needs and the weather conditions. Forth is outside at least twice a day to go to and from work. It’s about a three-minute walk from his dorm to the water plant. People are allowed to go anywhere on station outside alone at any given time, but that changes and there are restrictions when the weather conditions are what is called Condition 1:

- Winds greater than 55 knots (63-plus mph) sustained for one minute, or
- Visibility less than 100 feet sustained for one minute, or
- Wind chill greater than -100 degrees Fahrenheit for one minute

Forth has seen Condition 1 four or five times and says it can get a little hairy to say the least.

Supply lines

Any supplies and materials required for operation are resupplied around the same time each year. There will be some light cargo coming in on the August and October flights. The main resupply operation happens in January. That’s when the big cargo ship sails, packing more cargo than the air-planes can carry.

Forth says his accommodations are a lot like a motel or a dorm system. In the winter most dorm rooms are not shared, and Forth has a room to himself. During the summer, most people have roommates. Meals provided are buffet style with cold and hot food lines, with fresh bread and dessert for every lunch and dinner.

“If you get hungry for a late-night snack, there’s a 24/7 deli where you can make wraps and sandwiches for yourself. There’s also a 24/7 cooler where you can get previous days’ buffet line leftovers.” Room and board are provided for the staff at no cost, and Forth says he’s been pleasantly surprised with the food quality.

Fighting isolation

Working in extreme and harsh environments can take a physical toll, but the station is set up so the crew can relax, have some fun and enjoy some of the comforts of home.

The saunas are popular, especially after a cold walk outside the station. A gym provides exercise opportunities. There’s also a bar called Gallagher’s where people go to unwind, have a drink and play darts, pool, foosball and old arcade games. One of Forth’s favorite things to do is watch movies in the back of the galley, which is converted into a movie theater equipped with a 65-inch flatscreen, couches, comfy chairs, surround sound and a popcorn machine in the low-population winter months.

Forth also enjoys reserving “Hut 10,” which is a small ranch home furnished with a full kitchen, two bathrooms and a nice dining area. It’s a great place to get about 10 people together and cook dinner and socialize. McMurdo also has its own general store full of souvenirs, snacks and essentials. The store is also where everyone gets their weekly alcohol rations — the one item that is controlled.

There are hikes that can be done alone outside, like climbing up the 750-foot Observation Hill. There are two other hikes permitted during winter but they require at least two people and adherence to strict requirements. One trail is about 1.5 miles up a small hill range opposite Observation Hill which offers a view of the entire McMurdo Station. The other is about a 7-mile hike to an area known as Castle Rock. This hike offers great views of the night sky, Auras and the milky way. Straying off the marked trail here presents the very real possibility of falling into a glacial crevasse.

Forth says he loves the almost unimaginable beauty this continent has to offer. “The community lifestyle we live is amazing,” he says.

“This has been a real adventure and career builder all while getting paid to use my skills as a professional water operator. I may consider doing a summer tour at USA/NSF Amundsen-Scott South Pole Station, or Palmer Station to see and experience the other operations. But for now, I want to get back closer to home and be around family and friends. I must say, this has been one of the great adventures of my life.” ♦

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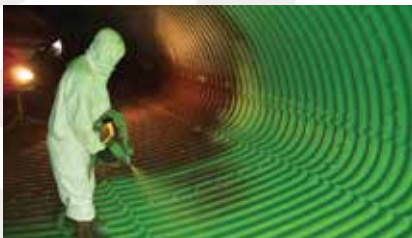
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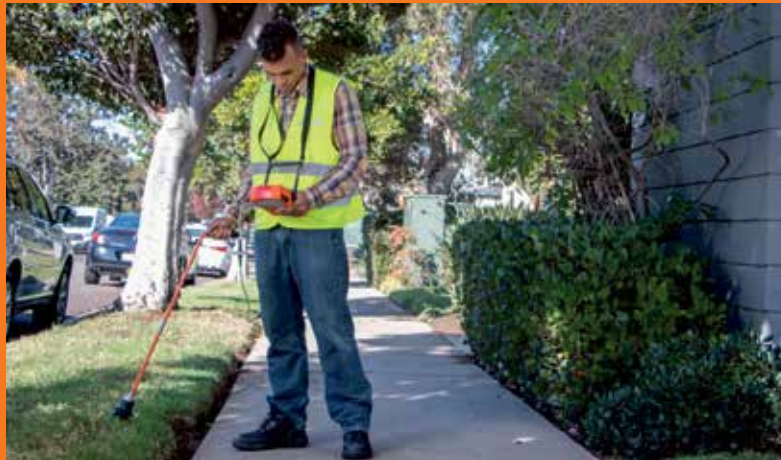


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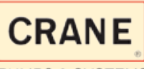






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Product Spotlight

Dedicated coupling designed for easier installs

By **Craig Mandli**

The use of dedicated or flexible couplings enables a contractor to join same-size plain-end pipes without the need for welding and/or special pipe fittings. They can sometimes be cumbersome to install, however, as not only must they be disassembled prior to installation and then re-assembled during installation, they require tightening anywhere from six to 24 bolts. Those issues are eliminated with the HYMAX Pro Dedicated Size Coupling from Mueller.

Applicable to the water and wastewater, irrigation and industrial markets, HYMAX Pro dedicated size couplings are available in 4- to 24-inch sizes. The smaller 4- to 10-inch sizes feature an industry-first, two-bolt, stab-fit construction, while the larger sizes feature a four-bolt pattern. All couplings from the HYMAX Pro line conform to the AWWA C219, NSF 61, and NSF 372 standards for drinking water system components. The couplings are designed to connect multiple pipe materials, including fiberglass, PVC, ductile and steel.

“Having only two or four bolts to tighten as compared to the competition, which has six to 24 bolts, makes the HYMAX Pro much faster and easier to install,” says Ken Alessi, HYMAX strategic product manager for Mueller. “It is an excellent product for use on wastewater force mains, as the standard epoxy coating and stainless hardware provides excellent protection against sewer gases and other atmospheric conditions associated with sewer applications.”

The 304SS stainless-steel hardware, fusion-bonded epoxy coating, and



EPDM gasket are built into the standard product specifications of this line without additional cost. This provides corrosion resistance, superior quality and affordability for all water and wastewater utilities. In addition, every HYMAX Pro is labeled with an asset registry QR Code so that the products, size, time of installation, location and other pertinent information can be easily recorded. Installation also does not require any special tools.

“The HYMAX Pro hardware tightens from the bolt head, allowing the installer to use standard-end wrenches or shallow socket wrenches,” Alessi says. “Many other dedicated couplings tighten from the nut, which requires more expensive deep-well, or sometimes special-order sockets.”

According to Alessi, the HYMAX Pro represents the first significant improvement for pipe couplings in decades. “Most comparable products are utilizing basic designs that date back over half a century,” he says. “The HYMAX Pro coupling is lighter weight, it has an integrated handle that makes installations much easier and is designed to install much faster.”

800-423-1323; www.hymaxusa.com

SPECIAL REPORT



OZ Lifting XR Series davit cranes

OZ Lifting Products has launched its XR Series of davit cranes for wastewater and water operators. The Winona, Minnesota-based manufacturer has released the model in 500 and 1,000-pound capacities, but the long reach of the range is a standout benefit for operators. Where other davit cranes typically have reduced capacity when it is in the longest reaching position, this series maintains its maximum capacity rating in all configurations. This means wastewater and water professionals can lift more weight, further out, which presents many benefits for numerous lifting and material handling applications. The smaller crane weighs only 57 pounds and the larger crane weighs 95 pounds. Both have a maximum 62-inch reach and maximum hook height of 87 inches.

800-749-1064; www.ozliftingproducts.com

PRODUCT NEWS

Festo VZXA actuated angle seat valves

The Festo VZXA family of pneumatically actuated angle seat valves delivers installation, maintenance, operational and inventory benefits thanks to a unique modular design. When a VZXA actuator is removed for maintenance or changeover, the stem, seat and seal stay inside the valve body, allowing the process system to remain pressurized. In applications containing hazardous materials, those materials reside safely within the system, saving cleaning time and lowering health and safety risks of contamination. The actuator does not have to be pressurized, which eliminates strain on the stem, seat and seal and lowers the potential of damaging the valve seat. The modular design is ideal for valve manifold applications where speedy assembly, ease of maintenance and compact size are advantages. The universal fit between actuators and valve bodies simplifies ordering and inventory management.



800-993-3786; www.festo.com

IDEC Corp. BTBH-H surface-mount terminal blocks

IDEC Corp.'s new BTBH-H easy-stack product line of surface-mount terminal blocks provide any number of connection poles without special tools or fittings. BTBH-H blocks are available in four different amp ratings — 10A, 15A, 30A and 50A — and can be ordered as individual components, or as complete assemblies by amp rating for 2 to 30 poles. The terminal blocks are assembled in a twist-and-snap-together fashion, without the need for special tools, connecting rods, or DIN rails, resulting in a very low installation height. Users can easily add or remove terminals at any time, as required by specification changes or maintenance work. Terminal blocks with different current values can be combined for applications with different wire diameters, and the blocks are mountable to the surface of any electrical or control back panel with standard M4 self-tapping screws.



800-262-4332; www.idec.com

Vermeer vacuum excavator with optional water kit

Vermeer expands the capabilities of its CS GT vacuum excavators with an optional water kit. The optional water kit for the Vermeer CS GT comes with a 100-gallon freshwater tank and a pump capable of delivering 2,500 psi at a flow rate of 3.5 gpm. The water kit is factory installed and available on all new CS GT models.



352-728-2222; www.vermeer.com

Cherne heavy-duty poly lift line

Cherne Industries, part of the Oatey family of companies, introduced its heavy duty poly lift line, engineered to outlast the harshest environments as pipe plugs are inflated or deflated. Available in lengths ranging from 10 to 50 feet, the poly lift line is designed with a 3/8-inch heavy-duty inside diameter hose, covered with an industrial grade, heavy-duty spiral wrap. Its hardware and fittings are made of stainless steel, and a heavy-duty rubber cover protects the line's gauge. The lift line comes with clear-coated zinc-plated steel hooks and industrial quick disconnects. 800-843-7584; www.cherneind.com



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BRILLIANT DISGUISE

If you feel like an imposter at work, it's time to reframe your mindset

By Ken Wysocky

We invite readers to offer ideas for this regular column, designed to help municipal and utility managers deal with day-to-day 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.

There's an insidious virus infecting the American workplace and it doesn't start with a C and end with 19.

It's called imposter syndrome, which generally is defined as the unconscious belief that we aren't as intelligent, capable or competent as people think we are — yet we somehow manage to fool people into thinking otherwise.

"We even do it in the face of concrete evidence to the contrary about our abilities," says Valerie Young, a nationally recognized speaker and expert on the subject and co-founder of the Imposter Syndrome Institute. "People with imposter syndrome chalk up their accomplishments to things like luck, great timing, good connections and so forth.

"They externalize their achievements and live in fear of being found out," adds Young, who says she got interested in the topic because she's experienced imposter syndrome herself. She even wrote a book about it titled *The Secret Thoughts of Successful Women: Why Capable People Suffer from Impostor Syndrome*.

"Imposters downplay their accomplishments by believing if they can do something, anyone can do it," she points out. "A classic example is the person who says if he or she can get a Ph.D. in astrophysics from Caltech, then anyone can."

"Imposters downplay their accomplishments by believing if they can do something, anyone can do it."

Valerie Young

Studies show the syndrome is fairly widespread, afflicting anywhere from 60 to 90% of workers. Some studies show it's more prevalent among women and certain ethnic groups and professions, while others indicate it's an equal-opportunity

affliction that affects all genders, ethnicities, income levels and so forth.

"The research on this is very mixed," Young says. "But in my experience, people in highly competitive environments are prone to imposter syndrome. The medicine and higher-education fields are two prominent examples."

Adverse side effects

One thing is certain, however: Imposter syndrome creates negative costs and consequences that hurt organizations in the long run in terms of less productivity and innovation and poor employee mental health.

"Some employees might either hold back and not share great ideas, avoid asking good questions or reject opportunities for promotions because they just feel safer where they are," Young explains.

Others might go in the opposite direction and over-prepare and over-work all the time, driven by the belief that they have to work harder to cover up for their ineptness. This creates strong potential for burnout and wasted time. For example, consider the employee charged with putting together a meeting agenda and instead writes a five-page report, Young says.



"All jobs are dependent on other people doing their jobs, so there's a domino effect when employees suffer from imposter syndrome," she notes.

Five imposters

Young says her research shows there are five classic types of imposters:

- The perfectionist. These people expect a flawless performance all the time, and when they inevitably make a mistake — after all, no one is perfect —

(continued)

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it feels like a monumental failure. “They operate with unrealistic and unsustainable notions about what it means to be competent,” Young says.

- The expert: This is the knowledge version of the perfectionist. Picture someone who’s totally focused on earning one more certificate, one more degree, one more accreditation, etc., because they never know enough. “It’s an eternal quest because they feel they never know enough.”
- The natural genius: These employees believe that if they really were intelligent or competent, things wouldn’t be so hard. “They expect to pick things up quickly and hit the ground running, then find themselves sorely lacking when they don’t,” she explains.
- The soloist: Things only count if these imposters do them on their own. They believe that asking for help is a sign of incompetence, so they’re liable to waste a lot of time trying to solve things themselves when they could’ve asked someone in the next cubicle or office.
- The superhuman: These imposters are similar to perfectionists except that they expect to excel in multiple areas.

Deeply ingrained reasons

Why do people feel like imposters? The answer to that could easily lead down many different rabbit holes, including parental and societal expectations ingrained in people from childhood.

“I maintain that deep down, we all feel we can do anything we set our minds to,” Young says. “But the debris of imposter thinking gets in the way.”

“To me, the only difference between people who feel like imposters and those who don’t is that in the exact same situations, they think different thoughts.”

More specifically, people who don’t feel like imposters think differently about competence and what it means. They have a realistic understanding of their capabilities and respond healthily to failure, mistakes and negative feedback.

“They understand that fear and doubt come with the achievement territory,” she notes. “Those are the people we should be studying. ... We call them humble realists.”

“Genuinely humble realists think different thoughts and there’s much we can learn from them.”

Mind over matter

Reframing imposter-ish thoughts is the key to moving past the syndrome. In other words, the next time someone finds themselves feeling like an imposter, it’s time to “hit the pause button” and think how a humble realist — someone who’s never felt like an imposter — would think in that situation.

“You may not believe this new thought at the time, but at least you’re starting

“Employees need to better understand it because there are costs and consequences.”

Valerie Young

to work on recognizing there’s a different way to reframe those thoughts. Consider sports, for example; intellectually, we understand that someone wins and someone loses. But the losers don’t hang up their uniforms and quit. Instead, they watch game tapes and practice and say, ‘We’ll get them next time.’”

This change in mindset can normalize imposter-related thoughts and help people work through them. For example, a person who feels like they aren’t good enough to be at an important meeting needs to contextualize things a bit.

“When they have an imposter moment, they need to zoom out and get the big picture to understand that it’s normal to feel like they might be out of their element,” she says. “Make it less about you and your feelings and more about the situation.”

Managers must lead the way

Managers can help, too, by creating a team culture where people feel safe about, say, asking questions without feeling stupid or feel like they belong. And since criticism often is hard for imposters to take, managers can do a little reframing themselves and make a point to instead talk about areas of improvement.

“They can talk openly at a team meeting, for instance, about how everyone always has room for improvement,” Young explains. “They need to bring it into the open because it’s in the shadows right now.”

Managers also can talk to employees who exhibit classic imposter-syndrome symptoms, she says. “You can take a deeper dive and tell them how it’s showing up in their work and even impacting the organization.”

Of course, managers shouldn’t tell an employee that they have imposter syndrome. But if managers see the signs — like someone with potential but who never applies for promotions, or is burned out or over-prepares for just about everything — it’s OK to pass around an article about imposter syndrome to a team, bring it up as a topic at a meeting or even hire a speaker.

“Employees need to better understand it because there are costs and consequences,” Young says.

Change is hard

Anyone who has played sports knows that muscle memory is difficult to change, whether it’s shooting a basketball or adjusting a golf swing. Changing deeply ingrained thought processes is no different, so don’t feel discouraged if it takes time. And taking that first step is critical, Young says.

“People with imposter syndrome often say that they’ll wait to start changing until they feel more confident. But that’s not how it works. You first have to change the thoughts, then act like you believe the thoughts — even though you may not initially.

“And over time, you’ll start believing it and your confidence will catch up. It might really suck the first time you try it, but you have to allow yourself the luxury of a learning curve.”

Young understands this is easier said than done. But it’s a place to start, she points out.

“My mantra is the only way to stop thinking like an imposter is to stop thinking like an imposter.” ♦

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CASE STUDY

PUMPS, LIFT STATIONS AND CONVEYANCE

By **Craig Mandli**

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COMPLACENCY IN THE WORKPLACE

Don't let little things slip in the name of saving time and money

By **Ronnie Freeman**

What is complacency in the workplace? It can be defined as self-satisfaction, especially when accompanied by unawareness of actual dangers or deficiencies. Complacency is extremely dangerous in the workplace. You get so used to things being done the same way that you do not always look at the hazards in your surroundings.

One of the dangers of being complacent is that we become so accustomed to being around hazards that they no longer seem to pose a threat to our safety. Many workers are aware of the risks they are exposing themselves to but have accepted the risk and don't feel threatened by the risks. This is a dangerous mindset and a reason for many workplace injuries.

This is a dangerous mindset and a reason for many workplace injuries.

There is a reason complacency is called the "silent killer." At the workplace the name fits. When our mind is not on the task at hand and the hazards that exist, we can drift into thinking about other things. This is when the real danger can get you. It just takes a split second and many times you have little to no time to react.

Part of our human nature is that we become "creatures of habit" and we get comfortable doing the same thing day in and day out. We perform the same job tasks over and over and when nothing bad happens we begin to believe we are in a good place and think nothing of the hazards we have exposed ourselves to.

Overcoming Complacency

- Get back to how safely you once worked when you recognized the hazards before complacency set in. That time when you always wore your personal protective equipment always followed the safety policies in place to protect you.
- Ask co-workers if there are areas in which you may be complacent when it comes to working safely. You might be surprised by the responses you get.
- Refuse to take the easy way out, which is often the case when you get into a hurry or feel the pressure to get the job done. The safety policies are in place for a reason, follow them for your protection.
- Fight the desire to rationalize why you should cut corners, which can leave



you open to hazards. Saving costs or time are usual rationalizations that may sound like good ideas but are not worth the risks in the end.

- Be willing to take the extra steps to make being safe a habit that will keep you from becoming complacent in the first place. Once it becomes a habit you are less likely to become complacent when a hazard exists.

We all must fight complacency at different times whether it is at work or some other areas in our lives. The best way to combat complacency is to self-monitor yourself and see if there are areas where you can improve in, especially when it comes to workplace safety. The good news is complacency can be overcome. With enough effort you'll always be working in a safe environment. ♦



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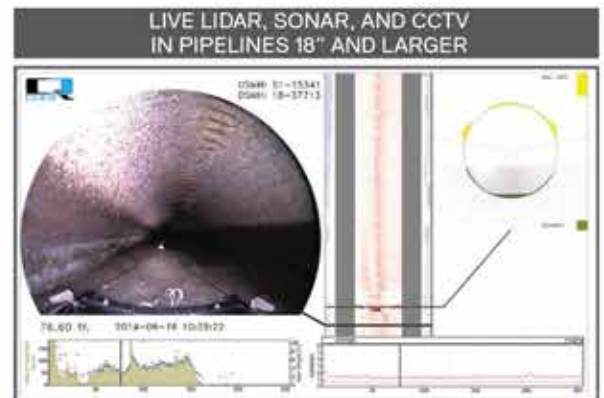


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Sheila Joy is executive director of NASSCO. She can be reached at director@nassco.org.

A PLAN FOR THE FUTURE

NASSCO's new strategic plan addresses strengths, weaknesses, opportunities and threats

By *Sheila Joy*

I am often asked the question “Why isn’t safety one of NASSCO’s core values?” My answer is always the same — because that just isn’t enough. Our core values of adaptability, camaraderie, efficiency, fairness, knowledge and support are either talents we possess or behaviors we exhibit, based on different circumstances. To us, safety means action, practiced continually.

As a result, NASSCO’s approach is to weave health and safety into everything we do. For example, when the question of potential safety risks of styrene emissions used in the CIPP process was introduced to our industry a few years back, NASSCO immediately formed an industry-wide workgroup and funded the first phase of independent research through the Center for Underground Infrastructure Research and Education at the University of Texas-Arlington. CUIRE conducted a thorough and comprehensive evaluation of all published reports.

When the findings came back inconclusive, NASSCO forged on with the Phase 2 study, this time conducted by the Trenchless Technology Center at Louisiana Tech, to measure styrene emissions in the field. TTC’s findings and recommendations were to include a 15-foot perimeter around exhaust manholes and make sure emission stacks are at least 6-feet high. These recommendations were then promptly shared with our industry by NASSCO. While this permitted NASSCO to improve industry safety standards, the Phase 2 study findings presented additional questions regarding styrene emissions in or around the refrigerated truck. NASSCO then moved forward by funding the Phase 3 study, again with TTC, to measure the breakthrough time of various coating and resin combinations, and to create a mathematical model showing emission concentration versus time for different coatings and thicknesses.

NASSCO’s Health and Safety Committee is involved in nearly everything NASSCO does.

Speaking of the NASSCO safety pages on our website, NASSCO’s Health and Safety Committee, chaired by Dennis Pivin, CSP, and co-chaired by Tad Powell, P.E., has launched a “Vital Safety Updates” page to keep industry professionals current on the latest health and safety news, recommendations and concerns. NASSCO’s Health and Safety Committee is involved in nearly everything NASSCO does. Some of the committee’s other activities include the production of health and safety videos, oversight of research such as the CIPP styrene safety studies mentioned above, review of all NASSCO specification guidelines and other published materials, ensuring that health and safety concerns are incorporated in NASSCO’s Workforce Development Committee’s trenchless technology curriculum, keeping a pulse on other industry health and safety initiatives, presenting at industry conferences and seminars and so much more.

Safety goes way beyond a poster on a wall or guidance on where the nearest exit is located at the start of a meeting. While it can never be enough, NASSCO does everything we can to weave health and safety into everything we do. To learn more, visit nassco.org/safety. The safety section on www.nassco.org includes all phased studies, reports, findings and recommendations, as well as resources, styrene safety materials for download, confined-space entry information and how to prevent fall protection violations, with much more content planned in the future.

To submit a question to our Health and Safety Committee, please email safety@nassco.org. Above all, please stay safe. ♦

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Description

In this webinar, Tod Ebetino, Director of Vacall Products at Gradall Industries, discusses the importance of sewer cleaning equipment operator training with workforce turnover to optimize machine performance and deliver immediate returns with a new, younger workforce

Presenter:



Tod Ebetino

Tod Ebetino has been in the sewer and water industry for over 30 years. Tod started his career working for a water and sewer contractor before becoming the Midwest Account Manager for Vacall products at Gradall Industries. Today he is the Director of Vacall Products. Over his career, Tod has been involved with various trade organizations including training presentation to municipalities and contractors, and utilizes a commonsense approach with real life applications.

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Franklin Electric welcomes new team members



Andrew Ross



Marty Lehmann

Franklin Electric welcomes three new customer-facing team members to its Industrial & Engineered Systems business unit. Andrew Ross will take on the role of senior business unit manager — aftermarket, while David Gray and Marty Lehmann will serve as business unit sales managers for the Industrial Distribution and OEM business units, respectively.



Dave Gray

Ross will lead the company’s growing aftermarket parts business, working with fleet and industrial distribution teams to provide critical parts and help customers maintain and increase the lifespan of their equipment. Lehmann joins the IES team with more than 25 years’ sales and business development experience and will focus on bringing Little Giant’s growing product line to OEM customers. Utilizing his 20 years’ industry experience, Gray will take over responsibility for the company’s industrial distribution customers across the Southwest region.

Plast-O-Matic guide to multivoltage actuators

Plast-O-Matic Valves has released a comprehensive operator’s manual for its line of new CAFE and CAFE NITRO multivoltage actuators. Engineered for quarter-turn valves requiring torque up to 20 Nm, the CAFE Series represents the company’s return to in-house actuator design and electromechanical manufacturing after a 15-year hiatus. The new 58-page manual covers complete installation, wiring, operations, menus, running codes and other controls with comprehensive instructions, diagrams and illustrations for both the base CAFE and the LED/Keypad controlled CAFE NITRO Series.

Vortex appoints Matt Timberlake to new role as SVP shared services



Matt Timberlake

Vortex has appointed Matt Timberlake to the newly created role of senior vice president of shared services to streamline processes and improve overall response time to bring its trenchless products and services to market. As the former president of the Ted Berry Co. (now Vortex Services, Northeast), Timberlake will bridge the gap between back-office support and day-to-day operations. He will work closely with Vortex’s new COO Wes Kingery, and the executive management team.

EPIC announces lead service line replacement initiative

The Environmental Policy Innovation Center announced it will support 50 overburdened communities across the country over the next three years in their lead service line replacement efforts. This announcement builds off EPIC’s work over the past two years on the Lead-Free Water Challenge and is also part of an ongoing effort to connect more communities to federal funds for water infrastructure projects through EPIC’s role as a Funding Navigator and a National Environmental Finance Center.

Global water and business leaders join TWC’s board



Scott Clawson



Stephen Guy

The Water Council named three new members to its board of directors who will help the organization achieve its mission to solve global water challenges by driving freshwater innovation and advancing water stewardship. The new members are Scott Clawson, chairman and CEO of Culligan International; Stephen Guy, managing director of Baird Global Investment Banking; and Kim Marotta, global vice president of environmental sustainability at Beam Suntory. Clawson and Marotta are based in Chicago, while Guy is based in Milwaukee, Wisconsin, The Water Council’s hometown. ♦



Kim Marotta



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PEOPLE/AWARDS

Robb Fellows received the Andy Aldax Carson River Watershed Award, which is given by the Carson Water Subconservancy District. Fellows was the Carson City (Nevada) chief stormwater engineer and floodplain manager before retiring this year.

Sandy Weinel was hired as the Town of Braselton (Georgia) public works director. She had most recently served as the town's director of stormwater and roads.

The city of Sand Springs (Oklahoma) presented Stormwater Excellence awards to resident **Cathy Peters** (first place) and **Sand Springs Public Schools** (second place). Peters was honored for her dedication to keeping the detention pond clean at the Villas at Stone Creek Estates. The school district was honored for its efforts to educate students about watersheds, floodplains and stormwater pollution prevention. ♦

CALENDAR

May 1-3

International Erosion Control Association Municipal Wet Weather MS4 Stormwater Conference, Doubletree by Hilton Hotel, Chattanooga, Tennessee. Visit www.ieca.org

May 7-11

Association of State Floodplain Managers Annual Conference, Raleigh Convention Center, Raleigh, North Carolina. Visit www.floods.org.

May 10-12

Ohio Stormwater Association Conference, Kalahari Conference Center, Sandusky, Ohio. Visit www.ohioswa.com.

June 11-14

American Water Works Association ACE23, Enercare Center, Toronto. Visit www.awwa.org.

June 27-29

Water Environment Federation Stormwater Summit, Kansas City Convention Center, Kansas City, Missouri. Visit www.wef.org.

July 17-19

American Water Resources Association Summer Conference, Hyatt Regency Denver Tech Center, Denver. Visit www.awra.org.

August 29-31

StormCon 2023, Sheraton Dallas Hotel, Dallas. Visit www.stormcon.com.

October 4-6

Southeast Stormwater Association 2023 Regional Stormwater Conference, location TBA. Visit www.seswa.memberclicks.net.

October 17-20

Utah Floodplain and Stormwater Management Association 2023 Conference, Cedar City Courtyard Marriott Hotel, Cedar City. Visit www.ufsma.org.

November 1-2

Wisconsin Association for Floodplain, Stormwater and Coastal Management 2023 Conference, Hyatt Regency Hotel, Green Bay. Visit www.wafscm.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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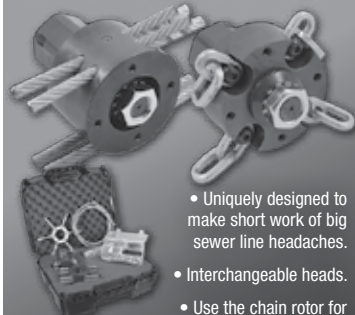
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- 1-10,000 10,001-50,000 50,001-100,000 100,001-200,000
 200,001-500,000 500,001+

How many vehicles do you currently have in service?

- 1-5 6-10 11-15 16-20 21+

What is your annual equipment budget?

- Under \$50K \$51K-\$100K \$101K-\$200K \$201K-\$300K \$301K-\$400K
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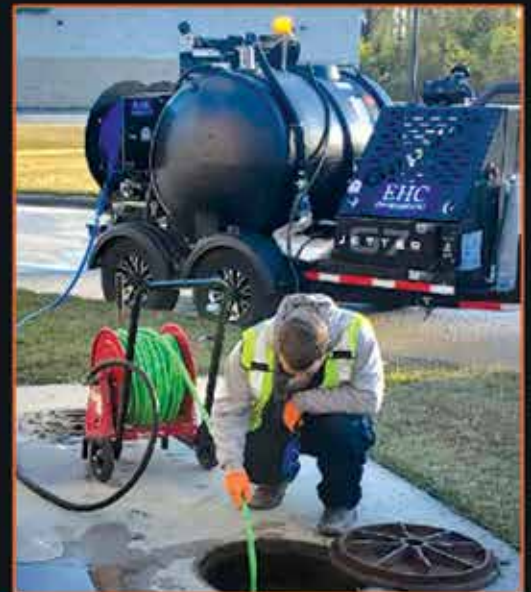
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