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ON THE COVER: Clear Lake City Water Authority Board President John Branch, Director of Utilities Curtis Rodgers and Project Manager Rafael Games (from left) at the completed Phase I of Exploration Green, a 180-acre eco-friendly stormwater detention facility. (Photography by Alan Lessig)



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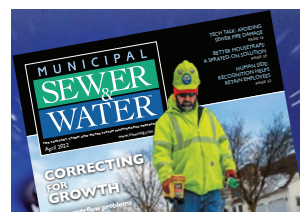
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Luke Laggis

TIME SLIPS BY

You never know what next year will bring, so now's the time to plan and prepare for whatever it holds

Spring likes to come late in Northern Wisconsin. It was the very beginning of May when the last of this year's snow and ice finally faded away. The thaw reveals all the branches and leaves in my yard, the sand built up in the driveway, and all sorts of other little things that require attention after the long months of winter. It's similar in many ways to what happens with your water and wastewater systems, especially if you live in a northern climate.

It's also similar — from a very different perspective — to what's happening in Nevada's Lake Mead, where plummeting water levels are revealing everything from sunken boats to dead bodies.

Lake Mead, formed by the Colorado River's Hoover Dam, is the largest

What people on the outside rarely understand, however, is the amazing level of technology in this industry.

reservoir in the United States by volume and is second only to Lake Powell in surface area. It has enough capacity to hold the entire average annual flow of the Colorado River for two years, according to the National Park Service. When full, it extends 65 miles from Hoover Dam to Pearce Ferry. Its greatest width is

9.3 miles and it has 700 miles of shoreline.

It is a significant body of water to say the least, and its significance extends far beyond its shorelines or those of the river that feeds it. Arizona, California and Nevada depend on it for water. Farming in California's Imperial Valley is heavily reliant on Colorado River water drawn at the Imperial Dam, downstream of Lake Mead. The Imperial Irrigation District delivers water to over 450,000 acres of cropland.

You don't have to be in the water industry to understand the significance. Regardless of whether you've visited a lush green farm in the desert or can spout statistics about annual flow, we all understand.

What people on the outside rarely understand, however, is the amazing level of technology in this industry, from sewer cleaning nozzles to the Carlsbad Desalination Plant. We can't make more water, but efforts to improve efficiency with the resources we have will continue to progress because technology and new approaches are driving it forward. Planning, obviously, is key, and that's where projects like the Carlsbad plant, or the Clear Lake City Water Authority's Exploration Green stormwater project (featured in this issue) really step into the spotlight. Exploration Green, the seeds of which were sown 17 years ago, is now a nearly 180-acre stormwater detention facility that has solved flooding problems and provides a variety of public amenities.

Thoughtful planning is the hallmark of a proactive and progressive utility. Those are the types of things we like to highlight in this magazine. Ideally you laid plans for this summer construction season well in advance and you're making headway on whatever system maintenance and improvement projects you have in progress. If not, now's the time to make sure the next season doesn't slip by. Hopefully these stories can help.

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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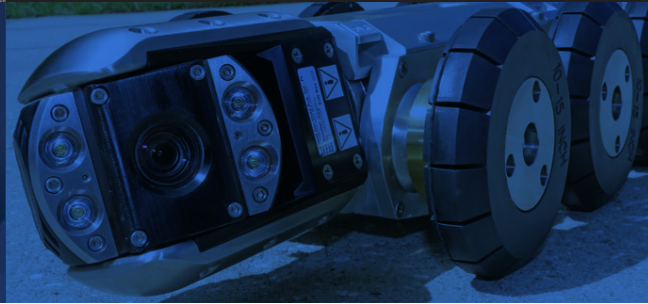
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Examining Pros and Cons

Municipal water distribution and wastewater treatment facilities rely on a variety of valves. The different categories of valves contribute to the overall efficiency and safety of pipelines. Butterfly valves are popular across water collection, supply and distribution pipelines. Check out the pros and cons of using them in this online article. mswmag.com/featured

NEW METHOD

Predicting Summer Rainfall

As reservoir levels dwindle in the arid southwestern United States, scientists have developed a method to estimate summer rainfall in the region months in advance. Such seasonal predictions can help state and local officials make key reservoir storage and water allocation decisions earlier in the season and support more efficient water management. mswmag.com/featured



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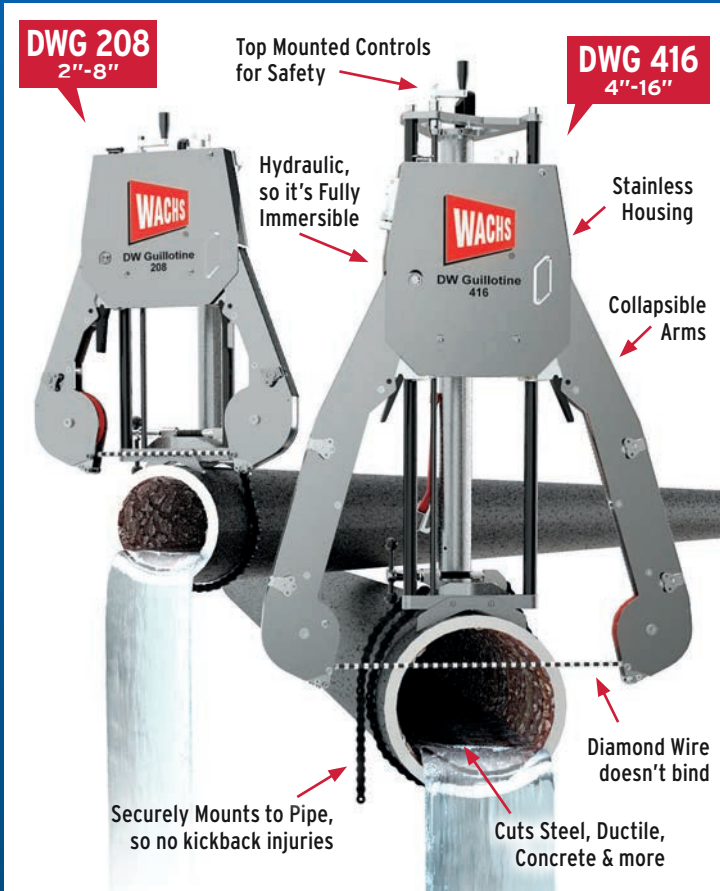
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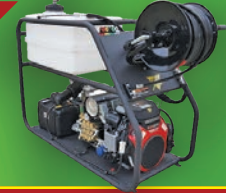


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ON THE GREEN

Texas utility turns golf course into a stormwater detention facility and eco-friendly public park

By Giles Lambertson

When golfers lost interest in playing the greens and fairways of Clear Lake (Texas) Golf Course in the early 2000s, its owner looked to sell the Houston-area property for redevelopment. That would have been par for a course, but the Clear Lake City Water Authority had other plans.

After area residents appealed to the City Water Authority to somehow preserve the green space, a movement began to transform the old golf acreage into an eco-friendly public park. Seventeen years later, a facility dubbed “Exploration Green” is in the final stages of creation. What once was a duffer’s delight with a water hazard or two is

now a nearly 180-acre stormwater detention facility featuring five ponds, islands of bird habitat, water-filtering wetlands, athletic fields and miles of walking/biking trails.


What Clear Lake residents don’t see as much these days is flooding. Exploration Green is doing its job.

Form and function

The name “Exploration Green” alludes to space exploration missions controlled at nearby Johnson Space Center and oil exploration in the region. The facility is first and last a heavy-duty stormwa-

ter detention facility. It was precisely engineered as such by personnel of Lockwood, Andrews & Newnam — known by the acronym LAN — with Kelly Shipley as its project engineer.

However, the dual nature of the project as a stormwater control area and a public park was apparent from the beginning. “Our assumption was that the water authority wanted to develop as much water detention capacity as possible,” Shipley says. “That was our assumption going in.

A photograph showing three men standing in a grassy field with a pond in the background. The man on the left is wearing a blue checkered shirt and jeans. The man in the middle is wearing a white button-down shirt and glasses. The man on the right is wearing a light blue polo shirt with a logo and a lanyard. The background features a large pond with a fountain, surrounded by trees and greenery.

Clear Lake City Water Authority Board President John Branch, Director of Utilities Curtis Rodgers and Project Manager Rafael Games (from left) at the completed phase 1 of Exploration Green, a 180-acre eco-friendly stormwater detention facility featuring wetlands, bird habitat, sports fields, five ponds and miles of walking and biking trails. (Photography by Alan Lessig)

But the board members made it clear they really wanted it to be a dual-purpose facility.”

Consequently, the fairly uniform depth of 6 feet for each of the five ponds was calculated to be deep enough to retain a large volume of water — 100 million gallons in each pond, to be precise — yet not so shallow as to encourage weed growth in the bottom of the lakes and mar the setting’s natural beauty. Function and form. Capacity and charm.

The focus on controlling flooding was not lost as the project developed. After Hurricane Harvey struck in 2017, the focus became even more sharply defined. Phase 1 of the project — comprising 15 acres of natural habitat and wetlands and a 24-acre pond — was only partly complete when the hurricane hit, yet the facility’s existence made a difference in weathering the storm.

“During Harvey, only two or three of them were flooded compared to 15 or 20 in earlier storms.”

Jennifer Morrow

“There are houses right on the edge of Exploration Green’s phase one that are repeatedly flooded, over and over,” says the water authority’s general manager, Jennifer Morrow. “During Harvey, only two or three of them were flooded compared to 15 or 20 in earlier storms, and they were only under 2 or 3 inches of water instead of 1 or 2 feet. And phase 1 was only 80% done at the time. We realized it would have an even larger impact on flooding when it was completed.”

Such clear-cut evidence of flood mitigation converted any project doubters among Clear Lake residents. The authority board also was impressed. The board had paid some \$6 million for the old golf course in 2011. Over the next 20 years, engineers estimated that construction of the facility would require another \$38 million in bond money.

But after Harvey, the board opted to move more quickly and compressed the project’s timetable. It scheduled development of one pond area after another after another. The project’s completion now is scheduled for 2023. The more urgent schedule tacked another \$10 million onto project costs. “We weren’t expecting to move quite that fast,” Morrow says.

A measure of the project’s popularity is the community support it has attracted both in terms of donations and volunteer time. Commercial entities like Texas grocery chain HEB have donated to the project. A local ecology group, Trees for Houston, donated 800-1,000 trees for each of the pond areas. Texas Parks and Wildlife has granted sums of up to a million dollars. And project volunteers number in the hundreds.



Above: Jose Banderas and Elder Arana from Serco Construction Group move a 3-inch water pump from Lance Rentals to remove stormwater from a Clear Lake City Water Authority construction site.

Right and below: Project Manager Rafael Games visits the phase 3 construction site of Exploration Green.



While bond money covers the project’s engineering and construction costs, contributions and grants have paid for all the amenities, including benches and sidewalks, grasses and trees. A nonprofit organization, Exploration Green Conservancy, manages these ecology



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WASTEWATER ACCOUNTS:
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MILES OF SEWER LINES:
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TREATMENT PLANT CAPACITY:
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EMPLOYEES:
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Wild muscovy ducks feed in new habitat while walkers make their way around the 180-acre eco-friendly Exploration Green stormwater detention facility.



aspects of the project in partnership with the water authority.

Learning together

Constructing a stormwater detention facility in the middle of a settled residential community is not the best way to win friends and influence people. All the equipment moving all that earth, loading it onto on-road tractor-trailers and carefully shaping the carved out banks of the pond — all that heavy equipment meant many hours of bellowing diesel engines.

“These used to be quiet neighborhoods. The amount of construction activity residents have seen and heard is the most they have ever seen and heard,” says Shipley. “Plus trucks pulling through neighborhood streets every few hours. The noise and disruption was one of the biggest issues we faced, but it has gotten better. Residents are more used to it now.”

In all, some 200,000 truckloads of soil have been carted away — an estimated 2.4 million cubic feet of earth. Phase 1 dirt was trucked to a developer’s job site relatively close by, but some of the soil has been relocated 20 miles away. “We try to dump the removed soil as close by as possible,” Shipley says.

The soil is mainly a clay compound and easily handled. Bore samples are taken so excavating contractors know what to expect when their blades and shovels dig in, but there have been surprises. The phase four project area contained the golf course’s water hazard. “The soil was a mucky mix of clay and nonclay. It was so wet, they had to turn and spread it and dry it out so they could work with it.” Different contractors have worked the phases of the project, with each pond area contracted separately.

Each pond was created with curving natural contours, rather than uniform oval-shaped depressions, for eye-appeal. Gentle slopes on the banks of the ponds function as wetlands, with planted grasses filtering runoff from nearby paved areas. Four of the ponds are interconnected by a stream. The phase 3 pond is a standalone facility because of elevation issues, according to Shipley.

The ponds receive runoff, but also are fed by stormwater pipes ranging from 2 to 5 feet in diameter, with a few box culverts as large as 8 feet by

4 feet. To maintain the 6-foot depth of the ponds between storms, treated water from the authority’s wastewater treatment plant sometimes is shunted to the linked lakes via a 12-inch line.

All that water is detained in the five ponds, but not forever impounded. Flow from the ponds when their capacity is reached follows natural contours, emptying into ditches that eventually deposit the water in Horsepen Bayou. Runoff at the golf course also emptied into ditches leading to Horsepen.

“The board members made it clear they really wanted it to be a dual-purpose facility.”

Kelly Shipley

Because the creation of a stormwater detention facility in the middle of a residential area was a novel approach to regulating flooding, the authority and its engineering partner learned together how to do it. The authority’s general manager says they sort of tiptoed into the project when construction began in 2017.

“There was a learning curve,” Morrow says. “We didn’t know quite what to expect. We hadn’t seen any other project quite like this. The first phase was divided into three smaller sections to make it easier for us so we could learn how to work the next phase.”

Moving the thousands of truckloads of excavated soil through school zones and local traffic was an ongoing challenge. However, before the first dirt was moved, the Clean Water Authority had established goodwill with the community and forewarned residents of disruptions associated with construction. The community embraced the project.

“When we had town hall meetings, the conservancy was formed,” Morrow says. “Someone would say, ‘I have an interest in trees,’ or ‘I’m a

naturalist’ and we would tap such people as resources. Groups formed to plant and maintain wetlands and trees and grasses, some from colleges and high schools. It has been an amazing community effort.”

Not every stormwater detention project is as celebrated as Exploration Green. But then not every detention pond is encircled by walking and biking trails or bordered by athletic practice fields. Most don’t have well-maintained wetlands and islands for bird life. Swimming and boating in the ponds is not allowed. One reason is the treated wastewater emptied into the pond. Another reason is the occasional alligator seen lounging on a bank.

IDENTIFYING POSSIBILITIES

How does an unused and closed golf course find new life as a community recreation area at the same time it fills a desperate need to stem local flooding? Look to the “Texas Flood Engineer,” Lawrence “Larry” Dunbar.

Dunbar is a seasoned water resources and environmental engineer, as well as a water and drainage attorney. He lives just southwest of Houston proper in Sugar Land, Texas, across Houston from Clear Lake. It was in the latter city that Dunbar took his expertise to testify to the Clear Lake City Water Authority about how to reduce flooding in the community.

The Clean Water Authority bought the golf course some years before to prevent the 180-acre property in a residential neighborhood from being developed into more houses, convenience stores and paved streets. Concerned residents of the area had approached the authority with their concerns about such disposition of the property and the authority had acted to thwart development.

When the Clean Water Authority went



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**“We didn’t know quite what to expect.
We hadn’t seen any other project quite like this.”**

Jennifer Morrow

looking for some answers about how to best utilize the property, it found Dunbar. As a consultant, Dunbar is a recognized expert witness, frequent speaker at conferences, and occasional lecturer. He has answers.

“They asked me if I had any thoughts about how to deal with the flooding they were seeing along a bayou and its tributaries,” he recalls. “I looked at the situation and suggested that a typical way to deal with it would be building regional detention ponds. I identified two areas where there was sufficient green space to excavate. One of those places was the old golf course.”

He subsequently worked up a report that showed where the ponds should be located and how effective they could be. “The board took the information to a full-fledged consulting firm to work on detailed plans.”

And Exploration Green became a reality.

Dunbar is pleased that the project he helped envision is looking like a success. “From what I hear, so far, the ponds are functioning as intended. Detention ponds tend to work.”

Work in progress

The stormwater facility is not the only focus of the Clear Lake City Water Authority’s work these days. For instance, it has a \$138 million bond issue on the ballot in May to fund, among other things, an upgrade of its wastewater treatment plant.

But Exploration Green still is a priority. Technically, some work remains on phases 3 and 4 of the project and the final phase five has just begun with expected completion a year from now. It is still a work in progress, albeit a heralded work. Organization representatives have visited Clear Lake from places as distant as Great Britain to see for themselves how the green infrastructure does its work. The project was singled out for recognition most recently



Exploration Green has transformed a former golf course into an eco-friendly public park with highly effective stormwater control features.

by the Association of Water Board Directors. Other awards include a Gold Medal Engineering Excellence Award by the American Council of Engineering Cos.

The awards remind anyone paying attention that Exploration Green was not a beautification project, its attractiveness notwithstanding. Shipley says ruefully that a storm of one kind or another coincided with each year of construction of the ponds, “which reminded everyone that this is not a game. The end goal is to have protections against flooding.”

She says the project continues to bring satisfaction.

“From an engineering point of view, this has been a very interesting way to give back to the community. I love that about the project. I love what we have been able to accomplish.” ♦

PUT OUT THE FIRE

Workers are burning out at record levels, but it doesn't have to be that way

By Ken Wysocky

The pandemic may be receding, but its impact still is profoundly felt in the workplace as employees — reeling from stress and overwork — continue to leave jobs in record numbers in what's being called the Great Resignation. As such, employee burnout is one of the leading problems facing organizations today.

"It was already an issue reaching a boiling point before the pandemic," says Jennifer Moss, a noted speaker and workplace culture consultant. "But now I'd say it's a bigger problem than ever before. The root causes of burnout have exploded ... and it's a global phenomenon.

"There's a lot of cynicism and hopelessness — employees are tired and disengaged."

In fact, about a year before the pandemic even hit, the World Health Organization classified employee burnout as an official disease in 2019, notes Moss, who also wrote a recently published book titled *The Burnout Epidemic: The Rise of Chronic Stress and How We Can Fix It*.

Moss says there are six major causes of burnout:

- Overwork, which is the leading factor.
- A lack of fairness, particularly in terms of discriminatory behavior toward women.
- Insufficient agency as employees have little or no chance to disconnect from work, even late at night, and often are asked to pick up the slack of departed colleagues.
- Insufficient pay or rewards for their extra efforts.
- Lack of community, which leads to feelings of loneliness and isolation as employees work from home and don't always get a chance to meet new co-workers or even new managers.
- Mismatched skills as employees take on additional duties that departed colleagues leave behind.

"We need to view burnout as a serious problem, not just whiny millennials complaining about their work/life balance," Moss says.

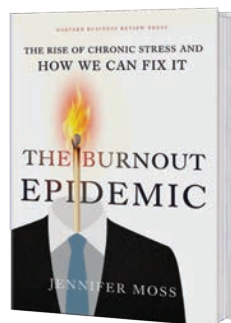
Self-care isn't enough

Many employers take steps to alleviate burnout. But while they're well-intentioned, these efforts often are off-target and misguided. As an example, Moss cites things such as meditation and yoga rooms and providing days off of work.



"We need to view burnout as a serious problem, not just whiny millennials complaining about their work/life balance."

Jennifer Moss



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.

These things can be helpful, she notes. But too often, people don't have the time or the energy to practice self-care.

"And giving someone a day or two off from work doesn't resolve the workload issue, so they're just putting a Band-Aid on the problem," she says. "We're helping people downstream, but we need to help them upstream.

"We're giving people ice cream when they need water," Moss continues. "Everyone loves ice cream, but they can't survive without water."

Telltale signs of burnout

How can managers tell if their employees are suffering from burnout?

High turnover is one telltale sign, as is high-performing employees that suddenly become withdrawn and disengaged, underperform or call in sick frequently.

"When high-performing employees suddenly stop performing, managers tend to think they're just underperforming when they're actually burning out," Moss notes.

In addition, managers need to be attuned to the language employees use when they talk about work. If they use "fixed" terms, such as "always" and "never," that's another sign of burnout, Moss points out.

"Managers need to be much better at actively listening. They can play a huge role in identifying the language of burnout."

Superstar employees that leave high-paying jobs or that make sharp career pivots also are strong burnout indicators.

Policy-driven solutions

Because burnout is typically an organizational problem, not an individual one, and the root causes are institutional and policy-driven, it requires policy-driven solutions.

The good news is that organizational leaders have several strategies at their disposal.

"For example, we need more psychological safety for employees," Moss says. "Employees shouldn't be forced to answer emails at 11 p.m. and should be protected from bullying and sexual harassment."

Workers also need more equitable maternity leave and better child-care policies, she adds.

Furthermore, on a larger level, organizations need to think more about how to value, inspire and protect employees instead of trying to solve burnout with downstream, self-care tactics.

Setting boundaries helps, too

That's not to say that individual employees can't advocate for themselves, either, she points out. For example, high-performing employees generally tend to be perfectionists who think everything is important and needs their attention.

But it would behoove them to do some self-reflection and understand they must set up buffers that can help relieve stress. A good example is deciding to not attend certain meetings that aren't central to their jobs — and then not taking it personally when they're not invited to those meetings, Moss says.

"They need to look at that as a time blessing," she suggests. "If you're working on urgent needs all the time, then you're not actually working on priority needs — and that's simply not sustainable.

"So high performers need to create space and manage stakeholder expectations. They should use their out-of-office notification when they need a few hours and block off time on their calendars. We all need to learn how to better manage our technology."

Paradigm shift required

Employees also need to be more diligent about separating their work and home lives. Furthermore, team managers — as well as organizational leaders who create a culture that prizes employees who are responsive and connected to work 24/7 — need to change those expectations and honor employees' needs to focus on home and family, Moss says.

"Burnout isn't resolved unless everyone is committed to it. And if you have a conversation with your employer and nothing changes, then maybe it's time to quit."

Employees need to realize it's not a sign of defeat to take another job. And with record levels of job opening, it's actually a good time to be looking, she notes.

"But I'd also warn people to not just make a change for the sake of change. You need to ask potential employers the kind of questions that you need answers to. Do your research on things like levels of attrition, mental health policies and which industries are more prone to employee burnout.

"The last thing you want to do is take a new job and find the new company has the same culture as the organization you just left."

Despite the gloomy statistics about burnout, however, Moss is heartened by what she sees occurring in companies and organizations that recognize burnout as a legitimate issue and are doing something about it.

"We're giving people ice cream when they need water. Everyone loves ice cream, but they can't survive without water."

Jennifer Moss

"From what I'm hearing and seeing, there's a huge shift occurring across the board as organizations take more responsibility for their employees' mental health than ever before. That's a great sign and it bodes well for the future." ♦

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NAME:
George Milkowski

JOB TITLE:
Director of the Portable Products Group for the Americas

YEARS WITH COMPANY:
10

Pearpoint focuses on advanced systems for infrastructure inspection and maintenance

By Kim Peterson

It can be a challenge to find the right pipeline inspection equipment for your operation.

If you're looking for a system with a wide range of features and capabilities, Pearpoint might have your answer. Its fully modular range of inspection systems are designed to work in the most treacherous terrain of storm and sewer infrastructure as well as deliver condition assessment in pipelines from 1 1/4 up to 60 inches in diameter.

George Milkowski has been with CUES for 10 years, currently serving as director of the Portable Products Group for the Americas (Pearpoint and CUES are both brands under SPX Corporation). With 20 years of hands-on experience in entrepreneurial and leadership roles including strategic planning, business development and product management, Milkowski's role now includes sales, marketing strategy, communication and business development.

MSW spoke recently with Milkowski about Pearpoint's history, its development of high-quality inspection systems, and the company's dedication to supporting its customers in working to improve and maintain the nation's infrastructure.

MSW: Tell us a little about the history of Pearpoint.

Milkowski: Our history spans over 30 years in the municipal, industrial, manufacturing, petrochemical and residential pipeline inspection markets. We currently have our headquarters and manufacturing located in Orlando, Florida, with over 70,000 square feet of dedicated production capacity and over 400 employees worldwide to serve and support customers. Additional facilities include Bristol, England, with stocking warehouses and service personnel in California, Georgia, Wisconsin, Oregon, New Jersey and Toronto, Canada.

MSW: What differentiates your pipeline inspection systems from the competition?

Milkowski: The new and advanced Pearpoint flexiprobe P540c system stands out by integrating all of the most sought-after features, including survey reporting, video titling, digital

recording and portability, in an easy to use and intuitive package.

The controller features a high-definition 10.1-inch TFT display, intuitive user interface, and onboard Wi-Fi that allows you to share your reports via email or Dropbox. The 128 GB internal memory allows for more than two months' video recording in typical usage. The ruggedized, IP55 rated controller with built-in rechargeable battery provides reliability and usability in the most challenging environments.

The Pearpoint flexiprobe P540c series push systems consists of the P541 plumber reels, P541 mini reel, P542 reel and the P543 reel system with two different cameras to choose from, rated for withstanding water pressure of approximately 160 psi or over 300 feet underwater. Each system serves unique applications, but the line covers a majority of inspection needs within the sewer industry today, from 1 1/2-inch pipe up to 16-inch pipe.

Systems have been designed to work in the most treacherous terrain of storm and sewer infrastructure.



MSW: What's the philosophy behind development and innovation at Pearpoint?

Milkowski: Our focus on serving and supporting our worldwide customers started decades ago and continues today. This relentless pursuit to provide our customers with the most advanced pipeline inspection systems on the market delivers value for our customers daily. Our customers in the municipal, industrial, manufacturing, petrochemical and residential pipeline inspection markets have trusted Pearpoint to deliver best-in-class products for over 30 years.

MSW: Tell us about the inspection cameras and what applications they best serve.

Milkowski: We offer a fully modular range to meet all of our customers' applications. Systems have been designed to work in the most treacherous terrain of storm and sewer infrastructure, delivering condition assessment capabilities from 1 1/4" up to 60-inch pipelines.

MSW: What are some recommendations for customers shopping for pipeline inspection equipment?

Milkowski: We encourage customers shopping for pipeline inspection equipment to reach out to companies and request a field demonstration. We feel we have the best team in the industry to demonstrate the equipment, and customers always leave impressed by the extensive list of standard features and the value the equipment provides to allow them to do their work better and more efficiently.

MSW: What type of post-sale support or training do you offer your customers?

Milkowski: We understand that our customers work on the front lines supporting our critical infrastructure needs throughout the world. When equipment goes down, our team is here to help make sure they get back up and running as soon as possible. With one of the largest service and repair teams in the industry backed by an unmatched parts inventory, we are able to deliver with shorter lead times, which means less downtime for you.



We understand that our customers work on the front lines supporting our critical infrastructure needs throughout the world.

MSW: How has pipeline inspection advanced? How do you see the industry evolving?

Milkowski: The critical nature of water and wastewater infrastructure and the growing environmental awareness of infrastructure management have created an industry with rapidly changing needs. This constantly and quickly evolving industry creates a dynamic environment requiring acute awareness of critical needs. We at Pearpoint have the focus and determination to find those solutions for our customers' needs in a rapidly evolving environment.

MSW: What's new for Pearpoint in 2022? What can customers expect out of Pearpoint in the future?

Milkowski: As we continue to focus on our customers' needs, we remain dedicated today and into the future to ensuring our systems provide the deliverables for the needs of the rapidly changing infrastructure market. We have the most advanced condition assessment reporting to give our customers the competitive edge. Data transportability is the key to successful condition assessment and damage prevention programs.

MSW: What do you want your customers to think of when they hear the name Pearpoint?

Milkowski: Customer service. Customer service is our top priority. With the most dedicated sales and support teams in the industry, we will be there to support you through the life of your product — no matter what. ♦



NASSCO is located at 5285 Westview Drive, Suite #202, Frederick, MD 21703; 410-442-7473; www.nassco.org

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

ENSURING ACCURACY

NASSCO releases guidelines for quality control of PACP, LACP and MACP surveys

By Sheila Joy

Pipeline condition assessment has become of paramount importance for the worldwide underground infrastructure rehabilitation industry to ascertain critical condition states of a utility's assets. NASSCO's Pipeline Assessment Certification Program, Lateral Assessment Certification Program and Manhole Assessment Certification Program have enabled various industry groups and stakeholders to provide for standardization and consistency in the way a pipeline or chamber's condition is evaluated, and how visual inspection data is managed.

Qualified individuals, such as engineers, make renewal decisions based on the data collected are subject to the accuracy and quality of this data. Therefore, the need for quality control of PACP/LACP/MACP data is essential, and procedures for it should be easily applied and audited.

In April 2022, after several years of development, NASSCO's Infrastructure Condition Assessment Committee published *Guidelines for Quality Control (QC) of NASSCO PACP, LACP and MACP Surveys*. Available for free download at www.nassco.org (under "resources"), the document is meant to provide QC guidelines for two primary use cases: evaluation of an individual PACP-certified individual, such as a camera operator; or the evaluation

of a project submission, such as from a sewer services contractor to a utility or engineer.

The document details the general method and suggested process for NASSCO quality control, randomized sample population and QC procedures for PACP survey headers and details as well as procedures for MACP headers, component observation form and details.

In utilizing the guidelines, it is important to note that thresholds for "pass" and "fail," or those for selecting the size of a QC sample population, are NASSCO suggestions only. The asset owner or client should determine, based on their unique project goals or circumstances, specific QC thresholds, or, in the event of QC fail, next steps or remedies. The thresholds and resolutions should be included and outlined within contract specifications. Who is eligible to perform the QC should also be noted within the contract (i.e. a certified PACP/LACP/MACP user within the contractor's organization, within the client's organization, a third-party organization, etc.).

To download the guideline document, visit www.nassco.org and click the "resources" tab. ♦

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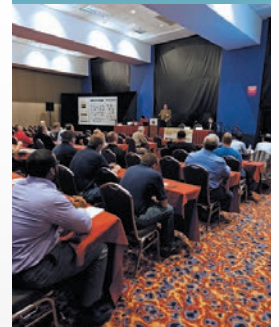
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GOING BIG ON INFRASTRUCTURE

In the quest to eliminate overflows, KC Water invests billions in wastewater system improvements

By Ken Wysocky

KC Water is in the midst of orchestrating a roughly \$2.3 billion, 30-year makeover of the sewer infrastructure in Kansas City, Missouri — a massive project that includes a new biosolids processing facility that will be the first of its kind in the Midwest.

The project, called the Smart Sewer Program, is aimed at significantly reducing chronic sewer overflows, primarily from the city's 1,060 miles of combined sanitary and storm sewer lines, some of which date back to the 1880s. Prior to 2010, the year the program kicked into gear, annual overflows from the combined sewers — primarily located in the oldest parts of the city's downtown district — typically totaled 6.4 billion gallons at 90 outfalls into local waterways.

When completed in 2040, the program will address mandates specified in a consent decree issued by the United States Environmental Protection Agency in 2010. The primary goal for the system as defined in the decree: Capture or treat 77% of com-

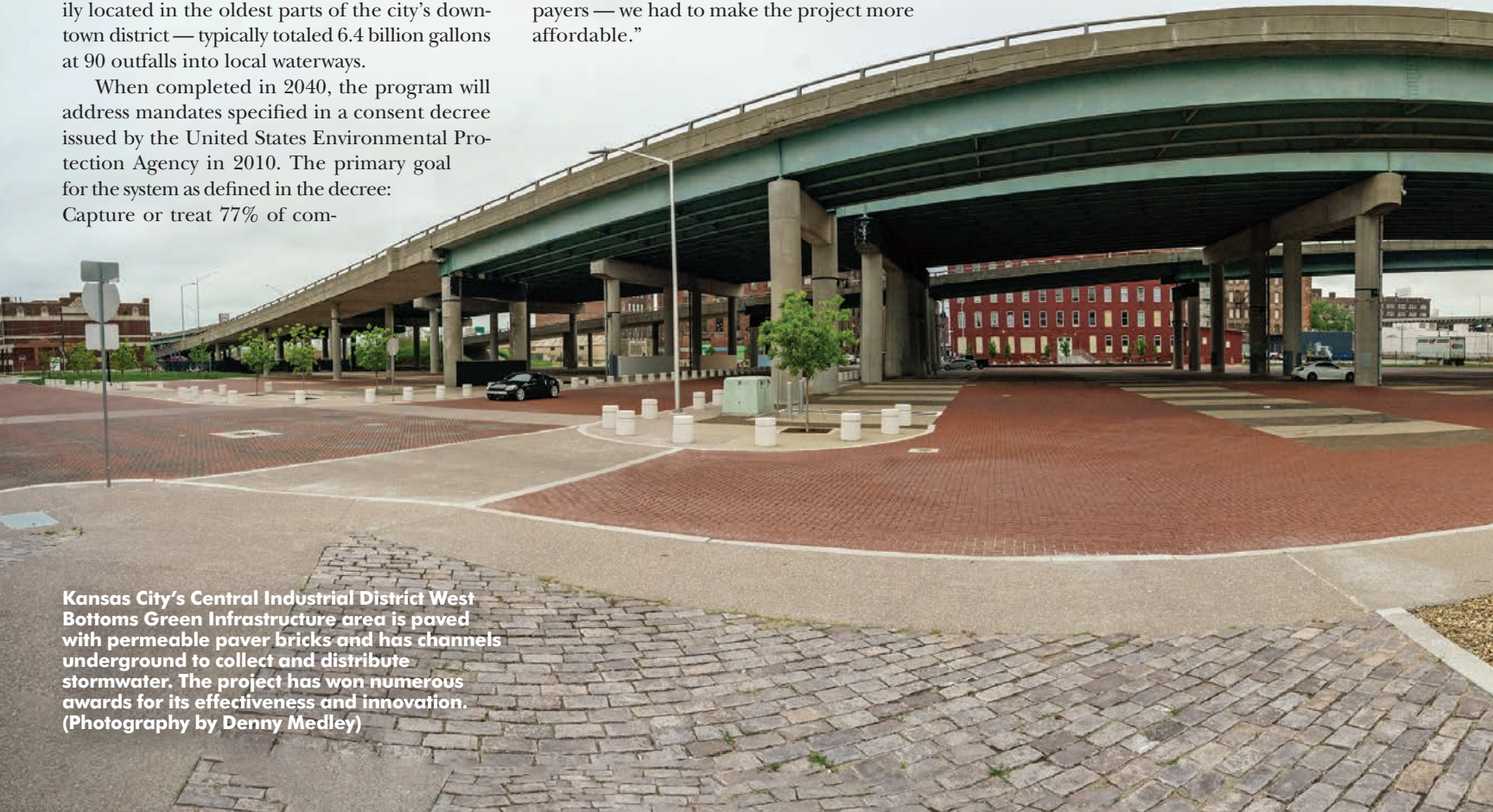
bined sewer overflows by 2035 and 85% by 2040.

The decree has been modified three times since 2010 — most recently in 2021 — to make the project more affordable for utility customers. The modifications also reflect the adoption of newer and better technologies and practices that have emerged since 2010, says Matt Bond, deputy director of the utility, which manages both water and sewer operations in the city.

"We've already spent about a billion dollars in the first 12 years of the Smart Sewer project," Bond says. "Renegotiating the consent decree allowed us to address the undue burden on ratepayers — we had to make the project more affordable."

The project is already the biggest investment in infrastructure ever made by the city, notes Brian Hess, head of the utility's Smart Sewer Division. "We're using a combination of different technologies and means to address the combined sewer overflows. Each of the city's seven major combined sewer basins is different, so we're trying to capture a certain percentage of stormwater in each one to minimize systemwide overflows and protect public health and the environment."

The program essentially consists of nearly 100



Kansas City's Central Industrial District West Bottoms Green Infrastructure area is paved with permeable paver bricks and has channels underground to collect and distribute stormwater. The project has won numerous awards for its effectiveness and innovation. (Photography by Denny Medley)

“We’ve already spent about a billion dollars in the first 12 years of the Smart Sewer project.”

Matt Bond

different projects of all sizes that embrace a variety of tactics and methods to reduce overflows, ranging from traditional “gray” capacity, storage and treatment improvements; pipe lining; manhole rehab work; and nature-based green infrastructure solutions. It also employs flow sensors that control gates inside pipes that can redirect sewage flow at multiple locations, Hess says.

Through 2021, about 234 miles of sewers have been rehabbed and 40 of the 98 projects have been completed through 2021. In 2022, 51 more projects worth about \$225 million in contracts will begin.

New treatment facility

A primary component of the project is a \$131 million rebuild of the solids-processing components at the Blue River Wastewater Treatment Plant, which is the largest of the city’s six wastewater treatment plants and handles almost all of the city’s wastewater solids. The new facility will be known as the Blue River Biosolids Facility.

When it goes online in mid-2024, the facility will be the first one in the Midwest and one of only a handful nationwide to use a process known as thermal hydroly-



Smart Sewer Division head Brian Hess (right) and team members Roger Leib and Lisa Treeese inside the Kansas City Water Department headquarters.

PROFILE:
KC Water,
Kansas City, Missouri

SERVICE AREA:
 About 318 square miles

SEWER CUSTOMERS SERVED:
 About 166,000

SEWER INFRASTRUCTURE:
 About 3,430 miles of sewer lines — 630 miles of storm sewers, 1,740 miles of sanitary sewers and 1,060 miles of combined storm/sanitary sewers; roughly 73,000 manholes; 46,745 stormwater inlets; 58 pump stations; 15 flood pump stations; nearly 14 miles of floodwalls and levees.

PRIMARY WASTEWATER TREATMENT PLANT:
 Blue River Wastewater Treatment Plant

WASTEWATER-TREATMENT CAPACITY:
 120 million gallons per day

WATER CUSTOMERS SERVED:
 About 172,000

WATER INFRASTRUCTURE:
 2,800 miles of water mains; 18 pump stations; 25,240 fire hydrants

WATER-TREATMENT CAPACITY:
 240 million gallons per day

MAIN WATER SOURCE:
 Missouri River

EMPLOYEES:
 About 850

WEBSITE:
www.kcwater.us

sis to treat wastewater solids. It will be capable of treating 94 dry tons of solids per day.

Built in the 1960s and upgraded in 1987, the old facility incinerated about half of the solid waste it took in; the ashes then were landfilled. The other half of the waste was treated with anaerobic digesters, then land-applied at a city-owned site, Bond explains.

But repeated problems with the aging incinerators, which would have cost about \$60 million to fix, coupled with increasingly stringent air-emissions requirements and unreliable landfilling options, prompted utility officials to seek a more cost-effective and eco-friendly solution.

“We needed a more stable and reliable long-term solution,” Bond says.

To ensure the project is as sustainable as possible, planners followed Envision guidelines developed by the Zofnass Program for Sustainable Infrastructure at the Harvard University Graduate School of Design and the Institute for Sustainable Infrastructure. (The latter is a not-for-profit education and research organization founded by the American Public Works Association, the American Council of Engineering Cos. and the American Society of Civil Engineers.)

“Envision is like the LEED (Leadership in Energy and Environmental Design) guidelines for buildings, but designed for sewer and water infrastructure,” Bond says. “All of our projects use Envision as a framework for creating sustainable projects.”

Innovative process

Thermal hydrolysis uses a two-step process that essentially pressure cooks solids at a temperature of 329 degrees and makes them more amenable to anaerobic digestion.

The process produces two usable byproducts: biogas and a nitrogen-rich fertilizer. Both byproducts could be sold to create additional revenue for the utility, Bond points out.

Moreover, the utility will save money through reduced landfilling costs and other efficiency gains, as well as reduce greenhouse gas emissions from the facility produced by the incineration process.



DEMOLITION WITHOUT THE DEBRIS

Demolition projects generated about 540 million tons of debris in 2018, the latest year for which statistics are available from the United States Environmental Protection Agency. That's nearly twice as much as all the municipal waste collected nationwide, EPA figures show.

But the demolition of KC Water's Blue River Wastewater Treatment Plant, which will be replaced by a state-of-the-art biosolids-treatment facility, is contributing very little to those figures.

In fact, thanks to a very intentional demolition process designed by Black & Veatch, a construction engineering company, about 98% of the demolition debris from an incinerator smokestack and a four-story, 21,000-square-foot building will be recycled, according to officials at KC Water, which operates the water and sewer systems in Kansas City, Missouri.

That fulfills a goal to make KC Water projects as sustainable and eco-friendly as possible, says Matt Bond, deputy director of the utility.

As of Dec. 31, 2021, about 1,200 tons of bricks, 90 tons of concrete and 40 tons of metal have been recycled. In total, roughly 1,600 tons of debris have been recycled, according to utility statistics.

"It requires a very organized approach to how we demolish, how we arrange for transport and finding out who is able to reuse materials cost-effectively," says Brent Herring, wastewater division manager. "This results in an overall project that's beneficial not only in terms of efficiency and processing, but also in terms of impacts on our ratepayers."

The utility is meticulously tracking the amount of material recycled in order to attain a gold rating from the Envision program. Developed by the Zofnass Program for Sustainable Infrastructure at the Harvard University Graduate School of Design and the Institute for Sustainable Infrastructure, the program provides a framework of guidelines for building sustainable water and sewer infrastructure.

The amount of materials recycled is one of 60 criteria used to determine a project's rating. Any extra costs associated with the slower and more meticulous process required to recycle debris is marginal, Bond says.



The primary goal of the Smart Sewer Program is to treat 77% of combined sewer overflows by 2035 and 85% by 2040. The utility has already spent about a billion dollars in the first 12 years of the project, and 51 more projects worth about \$225 million in contracts will begin this year.

"We needed a more stable and reliable long-term solution."

Matt Bond

"We'll no longer have to purchase large amounts of natural gas (for the incinerators) and will be able to harvest energy from the thermal hydrolysis process," he says. "We're looking at using the biogas to co-generate electricity or deliver that clean gas to a natural gas pipeline.

"We do believe there's a market for the fertilizer, too. But the main goal is to reliably take care of biosolids 24/7. After we establish an operational track record, we can decide if it's worth creating a market for these Class A biosolids."

The project requires complete demolition of the existing treatment building down to its foundation. When the old facility is offline, the existing anaerobic digestors will continue to treat some of the waste while the rest is treated on site through temporary dewatering and a lime stabilization process. That waste then will be land-applied at permitted sites.

The demolition now is complete and the project is about one-third finished.

"When completed, it will allow us to sustainably and reliably handle our biosolids essentially for perpetuity," Bond says.

Green infrastructure

Wherever possible, the utility is embracing upstream green infrastructure to minimize sewer overflows. Examples of green infrastructure include bioswales, rain gardens, permeable pavers, bioretention cells and detention basins.

When completed, the Smart Sewer Program will integrate green infrastructure with structural solutions to manage stormwater coming from 480 "green" acres. (A green acre is 1 acre of an impervious surface — everything from rooftops to parking lots to streets — that drains to a green infrastructure site.)

Nearly two dozen green-infrastructure sites

that manage stormwater from 302 green acres have already been completed.

These alternative measures are significantly more cost-effective and less disruptive than excavating streets to separate sewers in the oldest, most-developed part of the city. And in many cases, they enhance and beautify neighborhoods by adding green spaces and recreational amenities, Hess points out.

"Green infrastructure is a great tool for hitting those points where you're trying to save money but still accomplish the goals in the consent decree," he says.

Natural components

A good example of green infrastructure is located in the historic West Bottoms neighborhood in the city's central industrial district. This project combined traditional "gray" solutions with cost-effective and eco-friendly stormwater-infiltration techniques.

"This project captures stormwater and then redirects it or allows it to infiltrate the ground," Hess explains. "It keep stormwater from the combined sewer system so its capacity isn't overwhelmed."

This project employed a variety of solutions to collect and manage stormwater, including retention basins; a roughly 5-acre bioswale landscaped with native plants, shrubs and trees; two underground cisterns (18,050 gallons total capacity) that capture stormwater from an interstate highway overpass; a dry-well infiltration system; and a plaza made from permeable paving bricks laid on a deep course of gravel that stores excess rainwater until it drains into the ground or escapes via under-drain pipes, says Srini Vallabhaneni, smart sewer officer of the utility's Smart Sewer and Stormwater Divisions.

Completed in 2020, this \$8.5 million project — which won a national award for best environmental project from the American Public Works Association in 2021 — is designed to reduce combined sewer overflows in the area by more than 20%, Hess says.

In addition, the project helped create new public spaces, including pedestrian walkways and a covered outdoor space for festivals and other events. Another popular component is a boardwalk through the swale and enhanced pedestrian and bike paths and rest areas. By making the space more attractive, city officials hope to spur more development in the area.

Overall, the project's native plants included 338 trees, 1,104 shrubs, 316 grasses, 7,063 wildflowers and three acres of native seedlings, Vallabhaneni says.

Alternative methods

At another problem site located south of downtown, the utility used diversion structures and consolidated sewers to handle overflows. Initial plans here called for installing 9,400 feet of 30- and 36-inch-diameter sewer line to carry combined sewer flows to an interceptor line that connects to the Blue River Wastewater Treatment Plant.

The goal: Stop an annual average of 3.2 million gallons of combined sewer overflows into a local stream that eventually flows into the Missouri River.

But such a project would've been extremely disruptive. So the utility instead decided to build the more sustainable, \$10.6 million Trolley Trail Storage Basin, an open, 3 million-gallon earthen detention structure located in a largely unused portion of South Oak Park.

Completed in June 2021, this basin — about the size of a football field — now captures combined sewer overflows during heavy rainfalls, then gradually releases the stored overflow back into the combined sewer system within 24 hours after a storm ends, Hess says.

In addition, the utility worked with KC Parks to enhance and expand an existing walking trail around the nearly 20-acre park. This included widening and resurfacing the walking trail, building two pedestrian bridges and creating a new section of trail that connects to the existing trail.

To determine when to release the stored flows, utility officials rely on three sensors in the Trolley Trail basin that monitor sewer flow levels and close gate structures accordingly: one upstream, one downstream and one at the storage basin.

During heavy rains, the sensors automatically instruct the gates to adjust and direct overflow sewage to the basin. When the flow level in the combined sewers subsides sufficiently, another

gate opens to initiate a controlled release from the basin back into the sewer system, Hess says.

Sensors are installed at around 250 locations systemwide.

Overflow reductions

While the completion of the Smart Sewer project is still 18 years away, it's already having an impact. Typical annual combined sewer overflows have now decreased to 4.48 billion gallons from 6.38, nearly a 30% decrease, Vallabhaneni says.

"Our Smart Sewer Program remains firmly committed to fulfilling best-practice outcomes and consent-decree mandates through adaptive management, learning as we go and adjusting investments for best results," he says. "Projects of all sizes and scope are in place or continue to take shape.

"More than 10 years into the initiative, Smart Sewer outcomes are right for public health and safety while safeguarding wastewater sewer system infrastructure for future generations." ♦



In addition to both green and gray infrastructure, Smart Sewer projects have revamped and created new public spaces, including the plaza outside the Kansas City Water Department headquarters.

When completed, the Smart Sewer Program will integrate green infrastructure with structural solutions to manage stormwater coming from 480 "green" acres. Nearly two dozen green infrastructure sites that manage stormwater from 302 green acres have already been completed.

"Green infrastructure is a great tool for hitting those points where you're trying to save money but still accomplish the goals in the consent decree."

Brian Hess

Product Spotlight

Mainline inspection system keeps operators on the job

By Craig Mandli

Technological advancements in sewer and pipeline assessment are constantly enabling operators to do more. Aries Industries follows suit with its next-generation advanced sewer and pipeline assessment technology — the Voyager HD Mainline Inspection System. The sophisticated unit combines a rugged tractor, high-zoom HD camera and ergonomically advanced controller for ease of use, keeping the operator on the job.

The Voyager operates in pipes from 6 relined to 72 inches and provides high-end video quality through a fully HD 1080p WiperCam camera. This pan-and-tilt HD camera with 120x zoom delivers a vivid, detailed analysis of pipe conditions. With Aries' in-the-pipe lens cleaning technology, operators are able to keep the camera clear without needing to retrieve it from the pipe, saving time and maximizing productivity.

“Our research and development team gathered customer input, performance data and years of past Aries product experience to design the best-performing mainline video inspection system in the industry,” says Jim Kraschinsky, vice president of sales at Aries Industries.

The tractor provides maneuverability, with a compact profile and all-wheel drive to navigate tough terrain. It comes equipped with a rear-viewing HD camera to monitor retrieval. Multiple wheel configurations and a standard remotely operated integral camera lift give operators flexibility to adjust to a variety type of pipe conditions and sizes. Both the camera and



cable can be attached/detached without the need for tools.

The Voyager's ergonomic desktop joystick controller makes operation easier and more efficient, according to Kraschinsky. Its digital CANbus controller delivers instantaneous crawler and camera response, giving operators unmatched fingertip control during inspections. Real-time diagnostic monitoring metrics supply the operator with key crawler and camera information. A handheld pendant is included to enable control of the system from the manhole. Its 1,200-foot cable reduces setup time and includes simple reel termination, quick one-button downrigger deployment, spring-loaded retractable cable rollers and field-serviceable slipping to save both labor and logistical costs. The tractor has autonomous time-saving functions such as auto-drive to waypoints and auto-retrieve. The camera also includes field-replaceable wipers to keep crews up and running on the job site.

“The Voyager is a completely new ground-up design that is made in America, and is further proof of Aries' dedication to leading the industry,” says Kraschinsky. “We are excited to have it out in the marketplace.” **800-234-7205; www.ariesindustries.com**



Asahi/America Type-57P CPVC butterfly valves

Asahi/America added to its Type-57P butterfly valve line to include 10- and 12-inch sizes in a CPVC body and disc model. The valve is available in ANSI wafer-style connection or with 316 stainless steel lug inserts in the 10- and 12-inch sizes. Both options are offered with a Plasgear operator only. Addition-

ally, the Type-57P CPVC can be actuated both electrically and pneumatically, and various manual accessories can be installed. The larger butterfly valves are best suited for chemical processing applications. **800-343-3618; www.asahi-america.com**



Xylem Edge Control analytic system

Xylem's Edge Control is designed to help wastewater utilities achieve compliance targets while cutting energy consumption from aeration by up to 25%. Edge Control applies analytics to real-time data to provide rapid process recommendations to optimize chemical usage and aeration. The platform can oper-

ate with any programmable logic controller under various communications protocols and connect to existing hardware, including sensors and probes. It can be used as a standalone process or as a connected, subscription-based enterprise with fees based on efficiency and savings. **855-995-4261; www.xylem.com**



Mueller Water Products Singer in-line strainer

Mueller Water Products' Singer in-line strainer is designed to protect valves and regulators from pipeline debris, so utilities don't have to worry about costly maintenance, downtime and repairs. Manufactured in ductile iron with a corrosion-resistant stainless steel screen, the design provides a smooth laminar flow, which is ideal for locations ahead of

automatic control valves. The strainer is now available in eight sizes: 2-, 2 1/2-, 3-, 4-, 6-, 8-, 10- and 12-inch. It is also supplied with flushing ports on both sides of the strainer, and an air-bleed connection and connections across the screen for the installation of a differential pressure gauge if required. **800-423-1323; www.muellerwaterproducts.com** ♦



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PRODUCT NEWS

SPECIAL REPORT



OZ Lifting Dyno-Hoist lever hoist

OZ Lifting Products introduces the first lever hoist with an integrated dynamometer to the North American market, the Dyno-Hoist. It gives users a real-time reading of the load — in kilograms or pounds — they are applying to the hoist, whether during a lifting or pulling application. An overload alert is triggered at 126%. The hoist is available in .75-, 1.5-, 3-, 6- and 9-ton capacity, matching the ranges of the company's industrial and premium (overload protected) lever hoist offerings.

Dyno-Hoist's dynamometer fitting can also retrofit to either of the industrial or premium lever hoists. Other features include all-steel construction, steel handle with rubber grip, zinc-plated load chain, forged alloy steel hooks and fully enclosed gearing. Dyno-Hoist meets or exceeds CE, ASME B30.21 and AS 1418.2 standards. Standard AA batteries offer a runtime of 150 hours, but the product can be plugged into a 115/1/60 outlet. Each hoist is load-tested and arrives with a test certificate, one-year warranty and a free set of latches. 888-617-3579; www.ozliftingproducts.com

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CHEMICAL AND MECHANICAL ROOT CONTROL

By Craig Mandli

CABLE MACHINES

Duracable DMI175

Duracable's 3/4 hp **DMI175** comes equipped with a 100-foot-long, 11/16-inch DuraFlex cable and a churn-through-anything heavy mainline blade. It demolishes roots and heavy grease buildup with a 10-1 gearbox ratio at 175 rpm. It includes a power cable feed and return, foot-pedal operation, stair climbers and well-planned transport features. **800-848-3375; www.duracable.com**



Electric Eel Model C

The **Model C** from **Electric Eel** is suitable for tougher blockages such as tree roots and for longer runs in main sewer lines. It runs up to 200 feet of 1 1/4-inch self-feeding dual cable in 8- or 10-foot sections that require no handling when rotating. It spins cable at twice the rpm of a continuous cable machine for maximum cleaning power in 3- to 10-inch-diameter lines for distances up to 200 feet. One-person operation means less time and labor expense. A heavy-duty 1/2 hp motor comes standard, but a 3/4 and 1 hp motor are also available. A custom-designed and manufactured gearbox ensures higher quality, lower cost and parts availability. The heavy-duty, fully adjustable safety clutch keeps cable and tool breakage to a minimum and provides overload protection. A fold-down handle allows for easy transportation, storage and use in crawl spaces. Its carry handle allows for balance and easy transport. **800-833-1212; www.electriceel.com**



General Pipe Cleaners Sewerooter T-4

General Pipe Cleaners' Sewerooter T-4 midsize drain cleaner packs the punch and portability to unclog 3- to 6-inch lines up to 100 feet long. It carries 100 feet of 9/16-inch Flexicore cable to clear stubborn stoppages in 3- to 4-inch inside lines. Heavy-duty 9/16-inch cable provides more torque than traditional 1/2-inch cables offer, yet it can clean the same size drainlines. Need to clear tree roots and other tough clogs from 3- to 6-inch lines? Simply switch drums to 75 feet of 5/8-inch Flexicore cable. The unit has a variable-speed Power Cable Feed, fold-down handle, stair climbers and truck loading wheel. Its strong, reinforced frame rides smoothly on big 10-inch wheels. Flexicore cable offers kinking resistance and strength with the right amount of flexibility. **800-245-6200; www.drainbrain.com**



Gorlitz Sewer & Drain Model GO 68HD

The **Model GO 62HD** machine from **Gorlitz Sewer & Drain** is available in two different versions, either with an open steel reel or enclosed polyethylene drum, and it can be outfitted with an optional power feeder. Standard configuration is 150 feet of 11/16-inch hollow core cable, which should reach most blockages with a single reel. The overall weight of this machine is 185 pounds. Adding a loading ramp and electric winch to any vehicle makes transportation quick and simple. It is designed to clean pipes from 3 to 8 inches in diameter. **877-446-7548; www.gorlitz.com**



Milwaukee Tool MX FUEL Sewer Drum Machine

Milwaukee Tool's MX FUEL Sewer Drum Machine has POWERTREDZ lift-assist technology, which makes it easier for one person to transport the machine up and down stairs and in and out of service vans. The machine has the power to clear roots 200 feet out while containing the mess with a fully enclosed drum. The POWERSTATE brushless motor provides full power at the maximum capacity of the machine, the REDLINK PLUS intelligence improves control with an integrated drum brake, and the MX FUEL REDLITHIUM battery pack can power through multiple jobs on a single charge, delivering easy setup and transport. **800-729-3878; www.milwaukeetool.com**



MyTana M224 High-Speed Flexible Shaft Cleaner

The **M224 High-Speed Flexible Shaft Cleaner** from **MyTana** quickly powers through blockages in 2- to 4-inch lines. It has a robust internal drive so the user can have two-handed control of the cable. They can completely focus on the resistance coming from the blockage, while starting or stopping the machine with the foot pedal. The SmartDrive electronic controller auto-adjusts the torque limit to the obstruction in the line. The flexible shaft cable is 75 feet long and has a slip-joint fitting so it can accept a variety of attachments. Users can quickly change sizes of cutting blades or attach specialized tools like the one-piece chain-knocker sets. A universal whip lets them add a tool of their choice. Transporting the unit is easy thanks to a luggage-style handle that telescopes to 43 inches, easy tilt and wide-stance wheels. The quiet unit is powered by standard household current. **800-328-8170; www.mytana.com**



RIDGID FlexShaft Drain Cleaning Machines

RIDGID FlexShaft Drain Cleaning

Machines quickly and efficiently deliver wall-

to-wall clean in 1 1/4 to 6-inch residential and commercial pipes up to 125 feet. Lightweight and fully contained machines, they are used in conjunction with a full suite of specialized accessories designed for clearing grease, sludge,

small tree roots and soft blockages with less mess and enhanced speed. They utilize various chain knockers that expand to the size of the pipe to quickly clear the entire pipe circumference. The chain knockers are connected to a flexible, nylon-sheathed cable that is housed in a fully enclosed drum. The K9-102 and K9-204 are powered by a cordless drill attached to a drive-shaft. The K9-306 is powered by an internal 1.5 hp motor equipped with an I-Clutch for additional cable protection. Nylon and nylon/steel brushes for final pipe cleaning and relining preparation are also available for each machine. Designed with efficiency and cleanliness in mind, the machines allow for inspection cameras to remain in-pipe throughout the entire drain cleaning process for maximum efficiency. **800-474-3443; www.ridgid.com**



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Spartan Tool Model 1065

The **Model 1065** is **Spartan Tool's** original professional-grade cable machine. It offers a 250-foot range to clean pipe from 3 to 10 inches in diameter. The Dial-A-Cable power feed allows for quick cable changes and feeds cable in and out easily, while the blockage-sensing smart motor senses the need for more power when encountering a difficult blockage. A fully enclosed drum helps keep customer's living areas clean, while the rugged design means it can tackle even the toughest jobs. **800-435-3866; www.spartantool.com**



CUTTING NOZZLES

Arthur Products Cnt-r-KUT G2 EMAX2

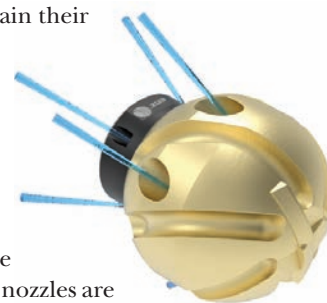
The **Cnt-r-KUT G2 EMAX2** from **Arthur Products** is an interchangeable cutter nozzle to clear roots and debris. The centering devices can be modified for custom applications. They help operators tackle tough jobs, including when using drain cleaning nozzles in tight spaces in damaged sewers, and technicians can expect to achieve maximum cleaning spread in drains and other pipes. **800-322-0510; www.arthurproducts.com**



Enz USA Cutting Ball

The **Cutting Ball** range from **Enz USA** is equipped with a carbide root knife or penetrator blade for pipes that are clogged by more than 50%. The CB90 and CB70 work without impact but are equipped with a plug that can be removed that creates a vibration in the tool when rotating. The cutters

on the side are self-sharpening and maintain their sharpness over their entire service life. The area of application of the cutting ball is diverse. Due to its spherical shape, it can easily navigate bends without damaging the pipe. The braking system ensures a lower rotation speed. They are leakage-free and can be operated with recycled water. They are particularly suitable for roots in seepage pipes, mineral deposits and lime scale. All nozzles are supplied in a custom case. **877-369-8721; www.enz.com**



Root Rat cutting nozzle

Root Rat cutting nozzles are used with jetters from 11 hp to large truck-mounted models. The cutters are made of hardened stainless steel and come with a toolbox with two interchangeable rotors — one with cables and the other with chains. The combination kit includes extra chain, cable and bearings. They need no repair or rebuilding other than bearing replacement, which can be completed in less than two minutes for under \$10 in parts. **800-288-7873; www.rootrat.net**



Warthog Nozzles by StoneAge WGR Magnum Root Destroyer

The **WGR Magnum Root Destroyer** from **Warthog Nozzles by StoneAge** is optimized to clear roots quickly and efficiently. Its multi-tjet configuration is designed to take out roots at the source, helping eliminate the use of mechanical tools that could damage the pipe. It is compatible with existing WGR nozzles for pipes ranging from 8 to 36 inches. **866-795-1586; www.warthog-nozzles.com**



JETTERS

American Jetter 51T Series 4020

The **51T Series 4020** trailer jet from **American Jetter** offers 40 gpm at 2,200 psi. Consistent power is provided by dual Kohler electronic fuel injection gasoline engines creating 76 hp, saving up to 20% fuel



while avoiding problems associated with carburetor engines. Low water shut-off prevents pump damage if the optional 600- to 800-gallon tanks run low. The main reel holds up to 800 feet of 3/4-inch hose, and speed control allows for precise cleaning in both directions. A long-range wireless remote option *(continued)*

allows for water ON/OFF, engine shutdown and hose reel control. The heavy-duty square tubing trailer offers standard electric brakes on both axles. **866-944-3569; www.americanjetter.com**

Cam Spray CV Series

The **CV Series** cargo van drain jet from **Cam Spray** offers diesel-fired hot water for added jetting power. Several models are available up to 4,000 psi and 12 gpm. A triplex plunger pump with power pulse valve provides an extra push when needed. Air purge and recirculation to the tank are provided for freeze protection. It comes with a 5-gallon fuel tank, heavily built, powder-coated frame with full deck, 130-gallon water capacity, 12-volt DC reel with 2-1 clutch drive allowing for free spooling and a powered hose return. It's controlled by a push-button or foot switch. Accessories include a set of four nozzles, storage box, tip cleaner, tiger tail, safety shield, rubber gloves, high-visibility safety vest, 50-foot washdown hose and trigger gun. **800-648-5011; www.camspray.com**



GapVax G7 Jetter

The **G7 Jetter** from **GapVax** is built on a heavy-duty, contractor grade NATM-certified trailer. Several engine choices, including Cummins diesel, are certified and sized appropriately for the water pump combinations. The unit's hose reel is hydraulically powered with a direct-drive gearbox and variable-speed control. The hose reel offers a 3-foot (curbside) articulation from center of bearing, 180-degree rotation and a capacity of 800 feet of 3/4-inch jetter hose. The polyethylene plastic water tank is available in 300-, 500-, 600- or 700-gallon capacities. The water pump is center-fed for optimum performance. The controller is interlocked with safety features that will show low fuel levels and low water, and is capable of a complete engine shutdown in an emergency. **888-442-7829; www.gapvax.com**



HotJet USA Drain Line Cleaning Business Package

The **HotJet USA Drain Line Cleaning Business Package** features the HotJet II jetter that offers 10 gpm at 4,000 psi with a 35 hp Vanguard engine (made by Toyota). Including everything needed to clean drains from 2 to 12 inches with hot or cold water, the package comes with a choice of a handheld or roll-around electric jetter, inspection camera and locator. This package also includes safety and operational training at the company's facility in Salt Lake City, Utah. A cold-water drainline cleaning business package is also available. Customized vacuum/jetter combo units and jetting equipment build-outs for trailers, skids, trucks and van installs are also available. **800-624-8186; www.hotjetusa.com**



Jettors Northwest Eagle 4020

The 20 gpm, 4,000 psi **Eagle 4020** trailer-mounted jetter from **Jettors Northwest** is ideal for powering root-cutting and grease-cutting nozzles, especially for spot work at locations that require several return visits during

the year. Powered by emissions-friendly Kawasaki fuel-injected/liquid-cooled engines, these jettors are built on industrial-duty trailers with brakes for safety and can be towed with a full water tank. Choose between two water tank sizes: two-axle Eagle-600 (600-gallon) or one-axle Eagle-300 (300-gallon). With up to 600 feet of jetter hose, the 12-volt powered hose reel sits on a swiveling base and operates even if the jetter runs out of fuel. The wireless remote offers safe control of jetting on/off, engines on/off, throttle/pressure up/down and reel-wind, plus local/manual controls are mounted on the swiveling hose reel. Twin fender-mounted tool bins allow for significant storage-space and aluminum wheels provide a sharp appearance. Pulsation control helps the jet-nozzle pull through long runs. Four jetting nozzles are provided and several root/grease nozzles are optional. More upgrades and nozzles are available. **877-901-1936; www.jettorsnorthwest.com**



Mongoose Jettors by Sewer Equipment Model 184

The **Mongoose Jettors by Sewer Equipment Model 184** comes with a run-dry pump offering 18 gpm at 4,000 psi, a tubular steel frame, corrosion-resistant prepainted subassemblies, state-of-the-art controls, strong hose reel and high-quality gas engine. It is suitable for drain cleaning and sewer jetting, remote access locations, mainlines up to 12 inches in diameter and commercial and industrial lines. The trailer unit comes with a water tank capacity of 300 gallons and standard hose reel capacity of 600 feet of 1/2-inch hose. The trailer setup consists of a 6,000-pound-rated single-axle trailer, and the addition of a wireless remote-control system makes this equipment a true one-man operation. It is also available as a van pack or truck-mounted unit. **815-835-5566; www.sewerequisite.com**



Super Products SuperJet

The **SuperJet** truck-mounted jetter from **Super Products** is used to blast debris to clear blockages and maintain sewer lines when vacuuming extraction is not required. It uses a strong and smooth single-piston water pump to create consistently high water pressure. Units come standard with rotationally molded polyethylene water tanks in a modular design to accommodate water capacities ranging from 1,080 to 3,240 gallons. Additionally, they offer convenient standard curbside and street-side fill. The hose reel has 1,000 feet of 1-inch-diameter sewer hose, 200-degree rotation and a digital monitor. This allows operators to work efficiently while positioning themselves out of traffic and away from other hazards. The monitor displays a hose footage count, offers 20 saved settings for hose reel payout and is designed with LED panel lights to enable readability in a variety of environments. **800-837-9711; www.superproducts.com**



Vac-Con VJ Series

The **VJ Series** of jetters from **Vac-Con** is designed to provide operators with an economical, portable and powerful system in two configurations. The VJ375 offers a 375-gallon water capacity on a single-axle trailer. The VJ750 boasts 750-gallon water capacity on a tandem-axle trailer. Standard features include Tier 4 diesel engine, cold-weather recirculation and air purge system, hydraulically driven hose reel and a reel-mounted, weatherproof electronic control panel. Units are available in multiple water pump pressure and flow configurations. Optional features include gas engine, wireless remote and an antifreeze tank system for cold-weather use. **904-284-4200; www.vac-con.com**



Vacall AllJet

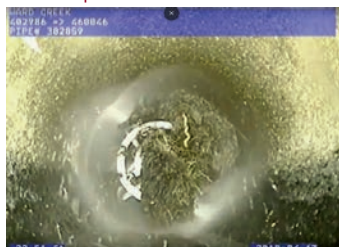
Vacall's AllJet truck-mounted jetter is an easy-to-operate, efficient sewer root maintenance machine. The hydraulically powered triplex plunger water pump is capable of 87 gpm at 2,000 psi with other power options available. The hose reel telescopes out 54 inches from a retracted position and swivels 200 degrees to properly direct the 600-foot jetting hose. It uses a single-engine PTO design, and a 1,600-gallon UV-resistant polyethylene water tank. Operator-friendly features include four locking aluminum tool storage cabinets, a rear-view camera, roll-up doors and a washdown system, with options including LED lighting packages, an extendable rear canopy and a heating and insulation package inside the all-aluminum rear compartment. **800-382-8302; www.vacall.com**



MECHANICAL ROOT CUTTERS

Sewer Pro Shop Blue Star Raptor and Viper

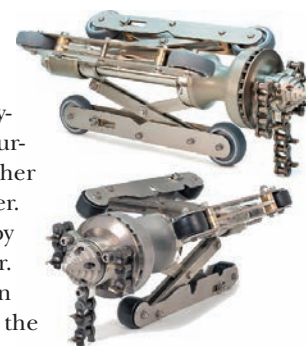
Blue Star Raptor and Viper chain cutters from Sewer Pro Shop are made of high-grade stainless steel and are furnished with ceramic nozzle inserts. With the Raptor, choose from 4- and 6-inch ridged skids or a 6- to 12-inch flexible guide skid, along with cutting chains and carbide bits to achieve quick solutions. Viper chain cutters are designed to remove heavy obstructions caused not only by roots, but grease, mineral deposits and other solid organic material. The unit is driven by a high-performance turbine, which doesn't require any lubrication. Chains spin at speeds of 4,000 to 12,000 rpm. Multiple guide skids available in various sizes provide a service range of 4 to 48 inches. The Viper can be operated with recycled water. **877-864-9394; www.sewerproshop.com**



USB-USA Turbo Chain Cutters

The heavy-duty **Turbo Chain Cutter** series from **USB-USA** are tough and powerful. These cutters continuously adjust from 8- to 15-inch (Turbo S200) or 12- to 24-inch (Turbo S600) and easily fit into the pipe. Turbine technology powers the durable chain retainer on a robust body to remove

roots, concrete, calcium deposits, hardened grease and tuberculation from sewer lines. They are designed to be very aggressive for the hardest materials. The beefed up, heavy-duty cutters have double the amount of turbine driving water jets as the company's other cutters, generating tremendous cutting power. Easily adjust the cutter to within 1/16 inch by spinning the rear to make it larger or smaller. Internal 3D fluid mechanics in conjunction with one-piece ceramic nozzle inserts allow the cutter to be used with recycled or clean water. **844-285-5770; www.usb-usa.com**



ROOT CHEMICALS

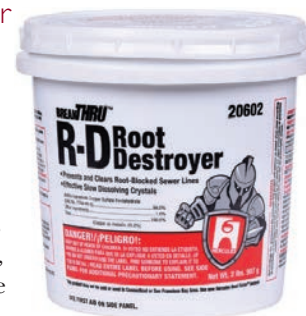
Lenzyme Trap-Cleer foaming root control

Foaming root control from **Lenzyme Trap-Cleer** has double the active ingredient dichlobenil of previous solutions, along with a latex base designed to help it stick to roots longer. It is easy to apply and provides a slower foaming action to coat the entire pipeline and eliminate fast-foamover messes. **800-223-3083; www.lenzyme.com**



Oatey Hercules R-D Root Destroyer

Hercules R-D Root Destroyer from **Oatey** is a slow dissolving, nonacidic, non-caustic herbicide formulated to eliminate and prevent root growth in sewer-type lines. By preventing sump and ejector pump root damage, it eliminates overflow damage, sewage flow restriction and backup odors. It is safe to use in lines leading to septic tanks, cesspools and dry wells, and is harmless to the environment. **800-321-9532; www.oatey.com**



RootX Foaming Root Control 40-pound boxes

Foaming Root Control in 40-pound boxes from **RootX** is designed to foam on contact with water and can be applied using a jetter or by directly pouring from the package into the sewer. With sufficient flow and gravity users can use the direct pour application into the existing flow to carry the root-killing foam down the line, coating the roots. The vacuum method consists of running a jetter nozzle at the downstream manhole to create the vacuum effect at the upstream manhole. Then pour in the RootX at the upstream and just add water to activate the foam. Using a jetter and the FDU 300, the user can efficiently treat longer sewer lines with larger diameters. **800-844-4974; www.rootx.com** ♦



Aries expands its network in Kentucky

Aries Industries announced it has added Kentucky-based 502 Equipment to its dealer network.

Based in Louisville, 502 Equipment distributes durable, high-performing brands for pipe cleaning, pipeline rehabilitation and hydroexcavation. The five-year-old dealership's team serves Kentucky, Indiana and Tennessee.

Singapore utility contracts with EVS Water

Envirosuite announced its agreement with the Public Utility Board Singapore for its EVA Water Optimizer, the first application globally for EVS Water in the drinking water sector. Envirosuite won the utility's Global Innovation Challenge in June 2021 for coagulant dosage in water treatment processes from a field of 104 applicants. Since then, Envirosuite has been working closely with PUB to map out the implementation for its current project. The Optimiser will be used to help PUB determine the required coagulant dosage in water treatment processes that will make the process faster, more connected and automated.

SJE acquires Massachusetts-based Horlick Co.

SJE announced it has purchased Randolph, Massachusetts-based Horlick Co., a manufacturer of custom control panels and motor-generator sets for commercial and industrial markets. Horlick will continue to operate out of its current facility in Randolph, marketing under the Horlick brand. Shawn Hennessey, who has managed the day-to-day business for the past 27 years, will continue as director of operations.

Vortex and IMS Robotics Group sign distribution agreement

Vortex Co. and IMS Robotics Group announced that Vortex is the exclusive North and South American distributor of IMS' mainline UV curing systems and products. The agreement allows Vortex to distribute the Hurricane Trenchless Technologie CityLight UV Curing System, designed for large interceptor sewers or projects with longer pipe segments. Hurricane Trenchless Technologie is an IMS affiliate.

Hyundai announces three new team members

Hyundai Material Handling, North America, announced the hiring of three new team members. Cecil D'Antignac will join the company as district sales manager for the Southeast region. D'Antignac brings over 28 years' material handling industry experience to Hyundai. Jeffrey Mathews brings over 20 years' material handling experience in his new role as national accounts manager. With over 20 years' experience as a professional technician, Jason Taylor will support Hyundai dealers as technical trainer for the brand.

Liberty Pumps building new material handling center

Liberty Pumps announced its new material handling center is under construction and on track to be completed by the end of 2022. The 107,000-square-foot expansion will house both raw and finished component inventory, and allow for more efficient tracking and flow of components to manufacturing. The expansion will also allow for additional manufacturing space in Liberty's current building when material storage is moved over to the new facility.



Mueller Systems AMI system selected by Florida utility

Mueller Systems has been selected by Pace Water System in Santa Rosa County, Florida, to deploy a pilot program for its water meter system. The system includes new features that allow customers to control their meters from a mobile phone. The pilot program, already underway, is expected to include 350 customers. Pace Water System provides service to 18,000 customers in Santa Rosa County.

Milwaukee Tool opens office in Chicago

Milwaukee Tool opened a new office in Chicago. The location will serve as an engineering design and innovation space to accommodate the company's continued investments in new technology. Over the last decade the company has experienced double-digit growth globally, and the company currently employs more than 10,000 people in the U.S. Chicago's pool of technical talent is one of many reasons Milwaukee chose to expand to the city.



Inframark names new chief growth officer, announces acquisition

Inframark named Greg Guard as its new chief growth officer. He will be responsible for managing and growing all aspects of Inframark's business across its four divisions: water infrastructure operations, infrastructure management services, municipal utility districts and SCADA technologies. He will report directly to Chief Executive Officer/Chairman of the Board James Devlin.



Greg Guard

The company also announced that it has acquired BLTI, a provider of integration solutions for instrumentation and control systems for municipal, commercial and institutional clients. BLTI specializes in large-scale SCADA systems as well as control panels, fire alarms and security systems. Financial terms of the transaction were not disclosed.

Watson-Marlow changes name

Watson-Marlow Fluid Technology Group, part of Spirax-Sarco Engineering, has changed its name to Watson-Marlow Fluid Technology Solutions. The name change aligns with a strategic commitment to providing end-to-end fluid management solutions for customers.

APWA board selects new president-elect

The American Public Works Association's board has selected a new president-elect, long-time active member Keith Pugh. Citing ongoing health issues, previous president-elect Dan Hartman stepped down from his role. Pugh, active with APWA for over 20 years, has served on national committees and has been active in leadership in the North Carolina chapter. He is a client success manager with WithersRavenel in Asheville, North Carolina, and will assume the office of president at the Public Works Expo, scheduled to be held in Charlotte Aug. 28-31.

VMAC named Manufacturing Business of the Year

VMAC was named Manufacturing Business of the Year at the 21st Annual Grant Thornton Vancouver Island Business Excellence Awards. VMAC previously has won the Manufacturer of the Year category in 2018 and 2019 and was named Business of the Year in 2020.

120Water winner of EPIC's Water Data Prize

120Water has been named a winner of the 2022 Water Data Prize awarded by the Environmental Policy Innovation Center, a nonprofit that seeks to spur innovation around lead service line replacement.

120Water was awarded for its lead service line inventory solution that enables utilities to identify and track service line material inventories and avoid expensive digs. ♦

PEOPLE/AWARDS

The **Lake Tahoe Environmental Improvement Program** received an Honorable Mention from the Nevada Taxpayers Association for the Cashman Good Government Award. Stormwater management projects are among the efforts in which the program has produced results.

Benton County received a \$192,150 Community Development Block Grant from the Arkansas Economic Development Commission. The funds are for the Gentry Stormwater Drainage Project. ♦

CALENDAR

Aug. 28-31

American Public Works Association Public Works Expo 2022, Charlotte Convention Center, Charlotte, North Carolina. Visit pwx.apwa.net.

Aug. 29-31

Smart Water Summit, Hyatt Regency Hill Country Resort & Spa, San Antonio. Visit www.smartwatersummit.com.

Sept. 11-14

American Water Works Association Water Infrastructure Conference, (hotel TBA), Portland, Oregon. Visit www.awwa.org.

Sept. 26-28

StormCon and National Rural Water Association WaterPro Conference, Gaylor National Resort and Conference Center, National Harbor, Maryland. These events are being held as parallel conferences. Visit www.nrwa.org or www.stormcon.com.

Oct. 10-12

Water Environment Federation Technical Exhibition & Conference, Ernest N. Morial Convention Center, New Orleans. Visit www.weftec.org.

Oct. 19-20

Wisconsin Association for Floodplain, Stormwater and Coastal Management Annual Conference, Kalahari Resort, Wisconsin Dells. Visit www.wafscm.org.

Oct. 24-26

California Stormwater Quality Association Annual Conference, Palm Springs Convention Center, Palm Springs, California. Visit www.casqa.org.

Nov. 7-9

American Water Resources Association Annual Conference, Hyatt Regency Lake Washington, Seattle. Visit www.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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