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# CORRECTING FOR GROWTH

Fixing overflow problems  
is a prerequisite  
for continued  
development  
in Back Mountain

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Seth Johnson  
Camera Technician  
Dallas, Pennsylvania

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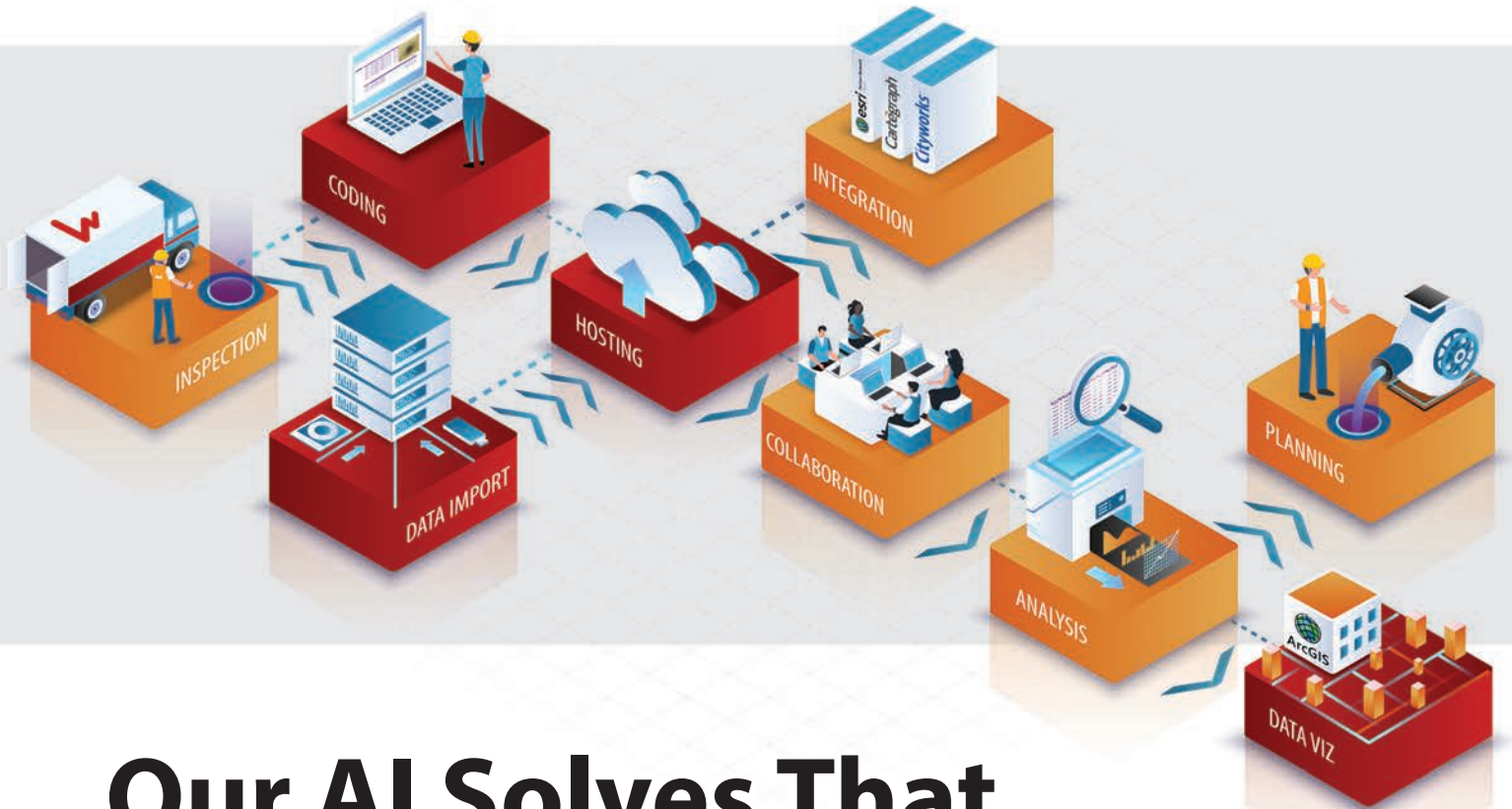
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Luke Laggis

## LEARN TO SWIM

Even if you're good at treading water, the tide can pull you farther from your objectives

Sometimes you need a reset. Success breeds complacency. When everything is humming along, it seems easy. And it's easy to relax. Your jobs bring constant pressure. Something always needs to get done immediately. So when you complete a major project or resolve an emergency situation, the natural reaction is to relax, to let your guard down, give yourself a break.

I don't work on waterlines, and I don't climb down manholes, but I know a thing or two about pressure and deadlines and the importance of moving from one task to the next and keeping a steady pace. Stories don't assign themselves. Or edit themselves. Photos don't just come in on their own. My phone isn't going to get in touch with anyone to discuss potential stories unless I make the call myself. Sure, no one's basement or business is going to flood if I'm not fully planned out, and no one will lose essential

services if I miss a deadline. But, every opportunity to get ahead that I skip or ignore adds pressure down the line. It makes it harder to maintain success. Taking advantage of those opportunities, even if just a simple phone call or email, is like adding a little buoyancy to my life jacket. Miss enough opportunities, and pretty soon you're kicking and flailing just to stay afloat.

**Treading water is better than drowning, but it'll never get you anywhere.**

Sometimes kicking to stay afloat, reacting to the most immediate challenge and doing it all again the next can bring complacency, too. You get accustomed to the daily stress. You realize you're pretty good at treading water.

You forget what it's like to stand comfortably on dry land. You fall into a routine and it keeps the anxiety of having no plan — or at least no way to realize your plan — off to the side just enough to ignore. Mostly.

I don't compare this magazine and the work I do with the significance of the work you do to protect and promote the health of your communities. If you never saw another copy of *MSW* again, you'd be OK. But if your customers suddenly lost water and wastewater service with no prospects of it ever coming back, the foundations of your communities would immediately begin to crack. Nonetheless, we're both in positions where everything we do affects people down the line. Everyone in the chain beyond me, from proofreaders to production staff and so on, depends on me to deliver strong material, on time. Their ability to do their jobs depends on it. Likewise, the people you serve depend on you for some of the most critical elements of life and health. If I fail in my job, a handful of people will be upset. If you fail, whole communities will suffer.

So sometimes you just need a reset. I've said before in this space that I'm not a fan of New Year's resolutions, but I've been treading water, fighting just to stay in place, and I've been upping my efforts since the start of the year to get ahead and bring you a better magazine and a stronger connection to the industry at large.

If you haven't stepped back lately to take a look at where you're at, now's the time, because if you wait until you have time, it'll never happen. There's always something that needs to get done. Treading water is better than drowning, but it'll never get you anywhere.

Here's hoping you make it to high ground.

Enjoy this month's issue. ♦

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

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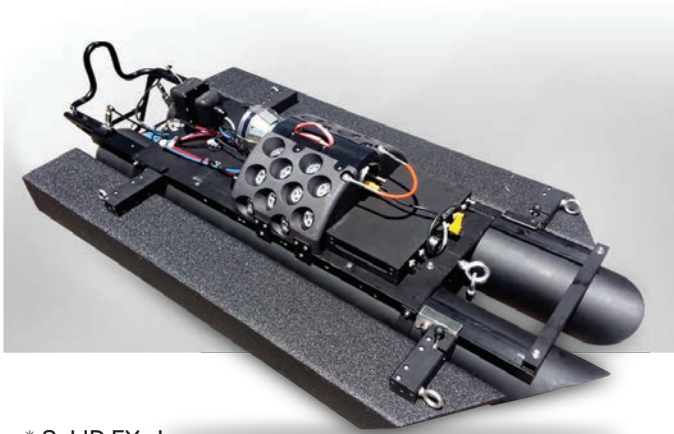
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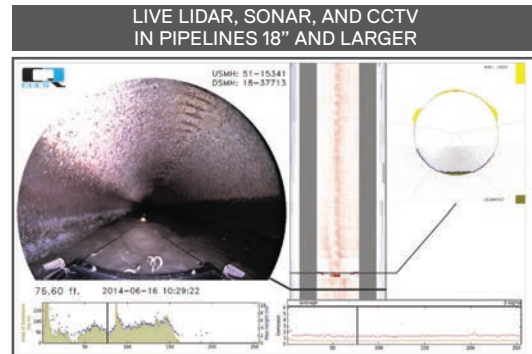


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3s Corrosion (in.) 0.4	3s Corrosion (in.) 0.5	3s Corrosion (in.) 1.8
Max Corrosion (in.) 0.8	Max Corrosion (in.) 0.7	Max Corrosion (in.) 2.2
Avg. Bulldap (in.) 0.3	Avg. Bulldap (in.) 0.3	Avg. Bulldap (in.) 0.4
Max Bulldap (in.) 0.9	Max Bulldap (in.) 0.9	Max Bulldap (in.) 1.4
Max Sed. Height (in.) 0.7	Max Sed. Height (in.) 7.2	Max Sed. Height (in.) 7.2
Sed. restriction % 5.9	Sed. restriction % 7.3	Sed. restriction % 7.5



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— **Eliminate Negativity From Your Workplace Culture**  
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## LEAD SERVICE LINES

### Newark Completes Replacement Program

The City of Newark, New Jersey's lead service line replacement program has completed nearly 24,000 replacements citywide in under three years at no cost to residents. The city celebrated this project milestone recently with several prominent figures including Mayor Ras Baraka, Vice President Kamala Harris, EPA Administrator Michael Regan, and Gov. Phil Murphy. [mswmag.com/featured](https://mswmag.com/featured)



## SENSOR DATA

### Setting Sewer Maintenance Priorities

An array of sensors in its combined sewers help the South Bend (Indiana) Wastewater Department keep the system flowing smoothly and prevent sewer overflows. The numbers generated by the sensors, along with data visualization tools, have allowed the utility to substantially reduce wet-weather overflows. [mswmag.com/featured](https://mswmag.com/featured)



## COASTAL SEA LEVEL

### Alarming New Data

A new interagency report, published by the U.S. Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Interagency Task Force, recently concluded that sea level along the U.S. coastline is projected to rise an average of 10 to 12 inches in the next 30 years. This will be as much as the rise measured over the last 100 years. [mswmag.com/featured](https://mswmag.com/featured)



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# A GRAND PLAN

Long-term master planning has been vital in helping the Macon Water Authority handle current conditions and prepare for the future

By Kyle Rogers

The Macon Water Authority is a testament to the value of master planning.

In 2018, a new industrial customer, Irving Tissue, began plans to construct a production facility in the Georgia community, and a major reason why Macon was chosen was the detailed master plan it had recently adopted for its water system. Irving Tissue knew that the Macon Water Authority could accommodate its water needs now and into the future.

The combination of the Canadian-based company's arrival and the MWA master plan led to three major water projects the utility recently wrapped up: a 3 million-gallon elevated water storage tank, an accompanying water booster station and 7,000 feet of new 20-inch waterline. While the projects were largely driven by Irving Tissue's needs, they will also significantly help the utility as a whole going forward, says Ray Shell, MWA's assistant executive director.

"I'm convinced personally that if we didn't have the master plan and our distribution model to the quality it was, we would not have been able to attract an industry with a water demand like Irving Tissue," Shell says. "When you can sit down with (a new potential industrial customer) and show them a master plan for your community, it is a huge advantage. They can see

how that utility looks to the future and plans for the direction it needs to go in."


## New in town

MWA began crafting its water system master plan in 2015. It was completed in 2018, right when Irving Tissue came into the picture. The timing was ideal. Much of what MWA has accomplished in recent years was already included in the plan, which is why Irving Tissue was interested in the first place, but the utility was also able to quickly add amendments to specifically address the impact of its new high-demand customer.

"We were able to accommodate them and how they would impact our system and how we would consequently arrange our long-term contract with them to handle these capital improvements. How we would structure the rates for them," Shell says. "I think that shows the importance of master planning, whether it's on the water or wastewater side and regardless of the size of your system. It's not something required at the state level or by the EPA. You voluntarily do a master plan at the local level, but the payoff is really big for the future. Not a whole lot of folks are able to attract a customer like Irving Tissue."

Irving Tissue came in with an average water demand of 1.5 mgd, which MWA was able to immediately provide without any changes to its system. But as Irving Tissue progresses through the phases of the buildout of its facility, which officially came online in early 2020, its demand will eventually be upward of 4 mgd, necessitating a utility like

MWA that has a clear growth plan.



The Macon Water Authority's Atlantic Mills Water Tank will draw water from a newly built booster facility. The new tank is configured at an elevation and size to be able to step in and provide for the water system core in the event of an issue at the plant. (Photography by Matt Odom)



**“When you can sit down with (a new potential industrial customer) and show them a master plan for your community, it is a huge advantage. They can see how that utility looks to the future and plans for the direction it needs to go in.”**

**Ray Shell**

“They also have a certain situation where they have a brief demand of 6 mgd for not more than six hours to take a machine down and bring it back into service. We can’t meet that demand without the booster station,” Shell says. “All these new projects help tremendously with this customer, but they also have other benefits.”

Take the new 3 million-gallon elevated storage tank. The core of MWA’s water system has always been a single water treatment plant. That presented a problem if a pump went down at the plant.

“From the core, through tanks and booster stations, we provided for newer developed areas, but that core always remained pump-based,” Shell says. “If a pump wasn’t running at the plant, the core of our system didn’t have pressure.”

The new tank is configured at an elevation and size to be able to step in and provide for the water system core in the event of an issue at the plant.

“Service can be maintained by that tank in absence of pumps at the plant,” Shell says. “Not too long. Maybe about four hours under high-demand conditions, and under planned outages for maintenance and system changes we could get upward of 12 hours. But

before we couldn’t even de-energize the building that has the high-service pumps. This tank changes the way we run our water plant and is a big improvement for us.”

And the tank wouldn’t have been possible without a detailed master plan that was able to justify its construction.

### Sounds like a plan

Shell has been with MWA since 2005. He had his first experience with master planning in a previous position with a water utility in Johnson City, Tennessee. There he worked closely with a firm that was hired to create a master plan for the water system and he learned how to do distribution system modeling. Since then he’s been a proponent of the method and how it pulls various elements together in a single blueprint to best set up a utility for success.

For those not experienced with master planning, Shell suggests looking to state industry associations for any educational resources that can help.

“If you go to conferences for your state association, keep an eye out and see if there’s a presentation on system master planning. That’s a good starting point to just get an overview of what it is all about and how important it is,” Shell says. “The best way to convince yourself and your utility board is to be able to see someone who has experienced a master plan and the successes they have had from it.”

Shell says he would like to one day do a presentation at a state conference about how master planning has benefited MWA because the biggest hurdle is oftentimes the price tag for doing one properly.

“When you go to your utility board and say you want a master plan, they sometimes don’t see the value of it right off,” he says. “You’ll get an attitude of, ‘We’ve gone this long without one. It’s a waste of money.’ It is an expense. Our water system master plan was about \$300,000. A smaller system probably could do a good master plan for \$100,000 or less. The distribution modeling is the thing that really bumps up the cost. But it’s important. The successes you get out of it I think are worth it.”



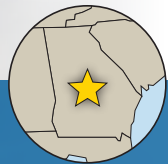
**Workers install a vertical turbine at the Macon Water Authority’s new booster facility.**

### Wastewater rehab

In addition to all the major water projects of late, MWA has also done a considerable amount of work on the wastewater side. Though much has been completed, there is still a lot left to do, and that is why Shell has his sights set on establishing a wastewater master plan as well. A major focus would be expansion of the utility’s two wastewater treatment plants, which are nearing max capacity. Shell estimates that average daily flows are at 80% treatment capacity at the moment. Irving Tissue has been a major contributor, as has other industrial growth in Macon in the past decade.

“I’ve cautioned our board that they don’t want to ignore this,” Shell says. “If you start today with an expansion and go through all the regulatory hoops and the design and the construction — if all goes well for you — it’s going to be a total of about five years before you’re done and have an expanded plant. If you ignore it, you’ll eventually start touching that max capacity on monthly reports and it will get the state’s attention. You could end up with a moratorium on your system, meaning no new taps. It can be devastating to a community because it can take several years to get out of that and achieve your expansion. In the meantime, you can’t have any growth.”

Expansion is that next step, but recently MWA completed about \$51 million worth of rehab work on its existing wastewater treatment infrastructure. Shell says it was long overdue. The older of the plants, Lower Poplar, was built in 1958. The



### PROFILE: Macon (Georgia) Water Authority

**POPULATION SERVED:**  
160,000

**SERVICE AREA:**  
Macon and immediate metro area

**INFRASTRUCTURE:**  
Two wastewater treatment plants (22 mgd and 28 mgd permitted capacity), one water treatment plant (60 mgd), 19 water storage tanks (elevated and ground storage), 1,664 miles of water mains, 1,000 miles of sewer mains, 55 lift stations

**EMPLOYEES:**  
250

**WEBSITE:**  
[www.maconwater.org](http://www.maconwater.org)





The new booster facility will push water out to local projects and communities.

## “The best way to convince yourself and your utility board is to be able to see someone who has experienced a master plan and the successes they have had from it.”

Ray Shell

Rocky Creek plant was constructed in 1975. Both had been expanded at least once.

“The equipment in each plant had seen service life, in some cases, of 40 years and it was flat worn out,” Shell says. “And some of the technology, like the aerated grit removal at both plants, never worked great in the first place. It had become so costly and time-consuming to keep the equipment operational that the top of the list was just to clean up both plants, replace worn-out equipment, and bring in new technology where appropriate. People might say, why did you spend over \$50 million and not address expansion? The reason is the plants had been ignored for so long that we had to first get to a baseline of reliability and just clean them up, knowing that a lot work still needs to be done in the future.”

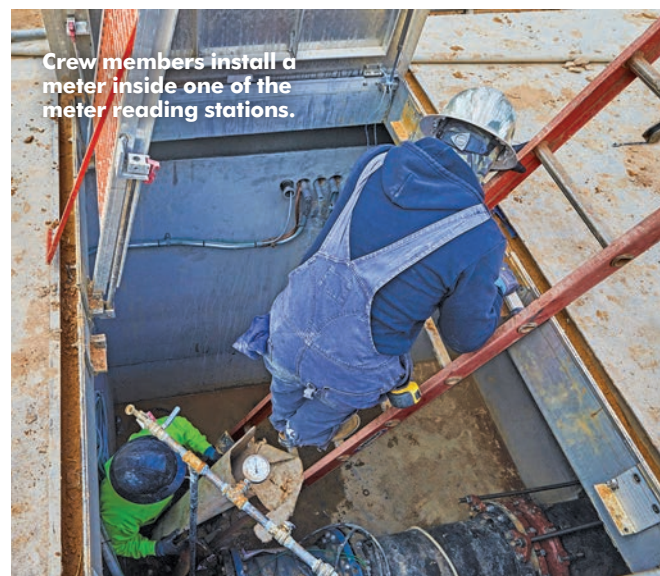
From new Duperon screens to improve trash and grit removal at the headworks to a change from belt presses to a rotary press product from Fournier, the rehab project touched countless areas of operations at the two treatment plants. Key to the process were MWA’s own maintenance workers and operators. In April 2017, when MWA had reached the design phase on the wastewater rehab

project, a list was created with all the equipment and processes being considered along with the manufacturers of those various options. From there, another list was created containing treatment plants using any of those products that were within reasonable driving distance of Macon. Over the span of about three months Shell, alongside small teams of four to six different operators and maintenance workers, took field trips to 34 different plants to get a firsthand account of their colleagues’ experience with the equipment and processes they were considering.

“We visited treatment plants all over the Southeast, mainly around Atlanta, but also several in Tennessee and several in southern Georgia all the way to the coast,” Shell says. “When we visited a plant, we weren’t there to talk to the upper management. We might chat to them a little bit, but our focus was

to talk to the operators and maintenance crews who had used and kept up that equipment the entire time it had been in service. I wanted our folks who handle that to talk to other plants’ folks who do that. We wanted to hear firsthand their experiences using the equipment we were considering.

“It was laborious to do that, to coordinate those trips and take time away from everything else we had to do, but it had a lot of value to it.”



Crew members install a meter inside one of the meter reading stations.

## I&I LEARNING CURVE

One issue that the Macon Water Authority hasn’t spent a lot of effort on is I&I reduction. But it’s something that Ray Shell, MWA’s assistant executive director, wants the utility to get a better grasp on as he knows it will be important to future expansion plans for MWA’s wastewater treatment plants.

“When you go to the state and say you want to expand a plant, one of the first things they’ll want to know is what programs and plans are in place for I&I reduction,” Shell says. “We’ve got to get a good snapshot of our I&I so we can see where we’re at. We’ve spent a lot of money on sewer rehab in the past 15

years, but our spending has not been focused on I&I reduction. It has been focused on response to structural failures in pipe.”

MWA is in the early stages of an I&I assessment for its system. Although the extent of the problem may not yet be known, Shell says he definitely knows it’s an issue.

“We have some interceptors that go through swamp areas that I know have been ignored because they’re hard to get to. We have an influent pump station at the Rocky Creek plant that receives those interceptors, and at any given time you can go in there and see frogs, turtles and salamanders that have come out of the sewer. That’s one way you know you have I&I issues. We have plenty to do.”



Aside from making informed decisions about what products to use for the treatment plant rehabs, an additional benefit from the field trips was MWA employees simply getting some general education about different processes.

“When people come to work for a utility and become operators, more than likely that’s the only wastewater plant they’ve ever been in,” Shell says. “Just letting them get out and go to these other treatment plants was valuable. They got to see a membrane plant, a sequencing batch reactor plant, and plants of all sizes up to 150 mgd. How else would they have ever seen that?”

### Ready for the future

As MWA finishes up the recent phase of vital projects for its water and wastewater systems, there remains a lot of activity for the utility. A new executive director, Joey Leverette, recently came on board, taking over for Tony Rojas, who had been in the position for two decades. MWA is also now responsible for a stormwater utility, the operation of which had formerly been under the purview of the local county government but transitioned over

**“When people come to work for a utility and become operators, more than likely that’s the only wastewater plant they’ve ever been in. Just letting them get out and go to these other treatment plants was valuable.”**

**Ray Shell**

to MWA last year and along with it another 40 employees.

All the while, MWA is looking toward the future, even with things that may not be a present concern. Take the issue of phosphorus removal at the wastewater treatment plants.

“As we look at what’s required for expansion, I want to consider phosphorus at both plants, even though we don’t have permit limits on it yet. We just have to test for it,” Shell says. “But having a permit limit is down the road somewhere. In time, I assume it will happen so I want both plants to

have accommodations for phosphorus removal. I like to look to the future.” ♦



**A crew member prepares a valve to relieve pressure.**

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# KNOW THY PIPE



A proofing skid keeps the nozzle centered in this vitrified clay pipe, helping to clean the pipe periphery equally. It also helps guide the nozzle, and indicates when there is a blockage. (Photos courtesy of Kent Carlson)

Safe jetting depends on an understanding of different pipe materials and their strengths

By Giles Lambertson

**D**id you know that high-pressure jetting of sewer pipes can damage some materials?

“All sewer pipe can be damaged,” says Kent Carlson, vice president of the National Clay Pipe Institute. Whether fabricated out of clay, plastic, iron, fiberglass, asbestos or some other material, a sewer pipe ultimately can only withstand so much pinpoint pressure from a nozzle before failing.

The real question, Carlson says, is *how much* assault a segment of pipe can withstand before it fails. The answer varies from product to product, and therein lies a problem for cleaners and those who maintain sewer system.

Because Carlson is an official of the national organization for clay pipe manufacturers, you may be thinking: I can see where this is going. But you would be wrong. Carlson spent 30-plus years with the Los Angeles sewer department, where he was the longtime operations manager. The man knows his sewer pipe.

**“Because they don’t know the impact of jetting on different pipes, they damage pipes and don’t even realize it.”**

Kent Carlson

Carlson joined the U.S. Navy right out of high school in 1978. After his Navy stint, he worked in shipyards up and down the West Coast before becoming an LA municipal employee as a machinist in a water treatment plant. Before long, he transferred to the wastewater side of municipal services and began his rise to the top. Two years ago, the 60-year-old industry veteran took his accumulated expertise to the National Clay Pipe Institute. He also serves on three ASTM technical committees.

The LA collections system — deemed the world’s largest — proved to be an expansive training ground for Carlson. The system contains 6,700 miles of wastewater collection pipe, the oldest of which dates to 1883. Working there, Carlson was able to become thoroughly acquainted with the industry and use his machinist skills to craft pipe-cleaning tools.

“Thirty-three years ago, there wasn’t much going on in sewer cleaning,” he recalls. “We had rudimentary nozzles, mechanical routers, hand rods — everything the same since the 1940s. The sewer industry was stagnant for a long





Flexible plastic piping like this truss pipe can be damaged by newer cleaning technology, like the nozzle damage shown here.

**“Spot repairs using pipe of a different material than the original are especially vulnerable to being damaged.”**

Kent Carlson

factorily for decades. Manufacturers claimed their products were convenient to install, compatible with other pipe materials, or resistant to corrosion and chemicals — and their claims were true. The difficulty was the pipe couldn’t

withstand rigorous maintenance routines, including mechanical, hydromechanical and high-velocity hydro cleaning.

Hydromechanical cutters and ceramic nozzles today are “incredibly more efficient and

time in respect to cleaning.”

As a submarine systems machinist, Carlson was immersed in the technology of handling human waste in an undersea craft. It was, he says, “very technical work.” Tutored in the necessity of keeping systems operating, even when they failed in the middle of the ocean, he brought to his work in LA a zeal for finding solutions.

“I love prototyping,” Carlson says. “At the city of LA, I started making my own designs for nozzles. I had my own in-house testing facility and constantly tweaked flow characteristics of nozzles so they would clean more efficiently. That was the thing: to have them clean more efficiently.”

Along the way, he began to see differences in the durability of pipe products. LA’s sewer system is 95% vitrified clay, but Carlson was open to any type of new or replacement pipe. The problem was that other types didn’t hold up as well in testing. “We had an aggressive approach to cleaning. We would be given other types of pipe — PVC, HDPE, plastic truss and so on. We’d run our cleaning tools through the pipe and it wouldn’t survive the test.”

The dilemma was not that the other kinds of pipe couldn’t safely carry sewage or function satis-

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**This blue PVC pipe was used in a demonstration to test pipe damage. Those holes in the pipe appeared after just 10 seconds of average pressure, 60 gpm at 2,000 psi.**



deliver water with more impact force,” Carlson says. “They can chop up roots and evacuate calcium. The number of jets has been reduced, but more water is coming out of each one. The angles have been increased from 6 degrees to much higher, reducing the jet stream distance to the pipe surface and increasing the force when the water strikes.”

All these advancements, however, are a double-edged sword, according to Carlson. “The dynamics changed. You started seeing warnings coming from agencies like the EPA saying, ‘Be careful. Nozzles can damage pipe.’” Yet the warnings were so muted, they were frequently unheard. Even today, the damage warnings are hard to find. The following are some that Carlson has ferreted out in recent years:

- Cured-in-place pipe “should never be mechanically cleaned,” according to an Insituform Technologies cleaning guide. More to the point, the guide says when CIPP is jetted, “the nozzle pressure should never exceed 2,000 psi or damage could occur.”

- Glass-reinforced polyester, or fiberglass, pipe should be jetted “with due care to prevent the inner surface of the pipes from being damaged,” according to an operator’s manual by fiberglass pipe manufacturer Amiblu. To prevent damage, the manual goes on to limit pressure to the 870 to 1,450 psi range. It also says operators should “avoid stopping of the nozzle” during operation — blasting in place — and that the angle of the stream of water should be kept as small as possible.
- Plastic pipe used in gravity sewer systems should be jetted “with utmost care,” according to an instruction manual produced by nozzle distributor Enz USA. “Due to the new thin-walled pipe products being installed these days, possible pipe damage can occur if used with too high a water pressure. As a rough guideline, do not exceed 1,400 psi of water pressure at the tool.”

So, there are red flags out there. While all pipes can be damaged by waterjetting, some pipes are particularly endangered when pressures and water volume are in excess of 2,000 psi at 60 gpm — an average jetting pressure and flow. High-pressure jets can penetrate even vitrified clay pipe, though its manufacturers claim a damaging stream would have to exceed 5,000 psi flowing at more than 125 gpm.

This low-key treatment of jetting’s damaging potential sets operators up for failure. “I think a lot of people don’t know,” Carlson says. “Because they don’t know the impact of jetting on different pipes, they damage pipes and don’t even realize it. There’s a new generation of cleaning folk and they don’t know it.”

The fact is a sewer system using a mix of pipe is problematic when it comes time to clean it. “Spot repairs using pipe of a different material than the original are especially vulnerable to being damaged. Unless a system’s repair group is joined at the hip with the IT group that keeps the database current, the cleaning crew doesn’t know it’s there,” Carlson says. He notes that the Environmental Protection Agency has addressed this issue. An agency guide on maintaining sanitary sewer systems states that “a suitable pipe identification system should be in place to warn the operator where plastic pipe has been installed.”

Even when a cleaning crew correctly identifies a vulnerable length of sewer line in a system, it has to switch out a nozzle or throttle down the pressure to proceed. “Then you have lost the cleaning efficiency of that nozzle,” Carlson says. Consequently, at the end of a job, some segments of a system have been restored to full capacity while other segments are only partly cleaned.

“I do not blame the nozzle folks,” Carlson says of the dilemma. On the other hand, he believes pipe manufacturers should more fully disclose the danger to their products from certain cleaning procedures and equipment. “I’ve been looking at this a long time, and I don’t see a pattern of disclosure. But in the end, it’s up to owners of systems to research the matter and make sure a cleaning process works for them and doesn’t mess up their pipes.”

So the moral is: Know thy sewer pipe and have it cleaned in a way that will do it no harm. ♦



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# A SPRAYED-ON SOLUTION

Collaboration yields success using structural epoxy system for manhole rehabilitation

By Silvia Caputi

Topeka, Kansas, has approximately 760 miles of sanitary sewers, and despite a proactive approach to maintenance, the inevitable deterioration of certain infrastructure assets is still a problem. Like many other cities, Topeka perennially faces the common problem of manhole damage caused by H<sub>2</sub>S corrosion.

Today's market offers an unprecedented range of solutions for utility asset protection. For manhole rehabilitation in particular, solutions can range from quick, temporary fixes for emergency situations to a plethora of sound rehabilitation options that provide long-term solutions. When considering solutions, numerous factors come into play.

A "quick fix" in the form of a cement repair can sometimes serve the purpose and be cost-effective, but depending on the severity of deterioration of the structure, that is not always optimal. Investing in a long-term solution, while sometimes more costly upfront, ends up saving cities in the long run due to its long-standing effectiveness. Long-term asset protection was the city of Topeka's goal, ultimately leading officials to explore structural epoxy lining solutions for their manholes.

## The right approach

Topeka city engineers first met with Epoxytec, a company that specializes in manhole rehabilitation solutions, in the spring of 2020.

"Topeka's engineering meeting was one of the first COVID-19 virtual meeting sessions for Epoxytec that took place during the initial lockdown. For what had previously been in-person meetings, this new virtual platform gave me the opportunity to easily educate and inform engineers from the city of Topeka and throughout the nation about the growing field of structural liners," says John Thompson, Epoxytec's national sales manager. "Structural

liners have a unique place in the world of manhole rehabilitation. They provide long-term asset protection from environmental elements in greatly deteriorated structures where traditional liners have failed."

Epoxytec, which was recently acquired by Tnemec Company, has been manufacturing performance coatings for lining water and wastewater systems for over 30 years. Its product line has grown with specific attention to structural liners, specifically Epoxytec's CPP products. Unlike traditional thin film coatings, where outgassing and inflow and infiltration can wreak havoc, these structural coatings are designed for low-pressure resistance, to hold back I&I, and seal against hydrostatic pressure, all properties designed

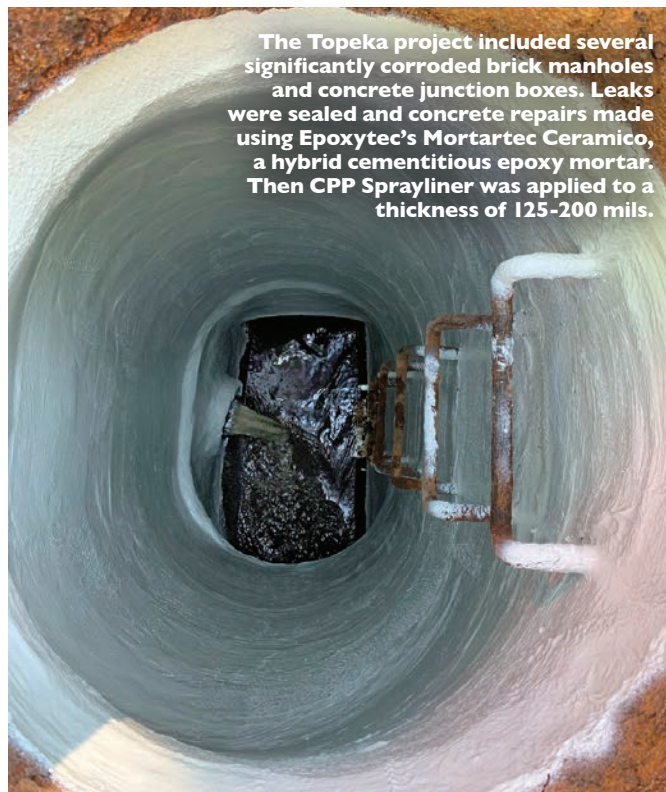
with manhole rehabilitation in mind. In addition to its structural properties, one of the product's most desirable features is that it can be spray-applied up to 3/8 inch thick (375 mils) using a heated rig. This method of application expedites the turnaround time for projects and supports a much faster return to service.

"These products have been highly engineered to be easy to use," Thompson says.

A spray-on system that would provide structural strength was exactly what the city was looking for. And the final determining factor in Topeka's decision was the certification process. To become certified in the application of Epoxytec's CPP Sprayliner, contractors must attend training sessions to ensure that they understand industry standards, specifically AMPP (formerly NACE and SSPC) for surface preparation and application in the water and wastewater industry.

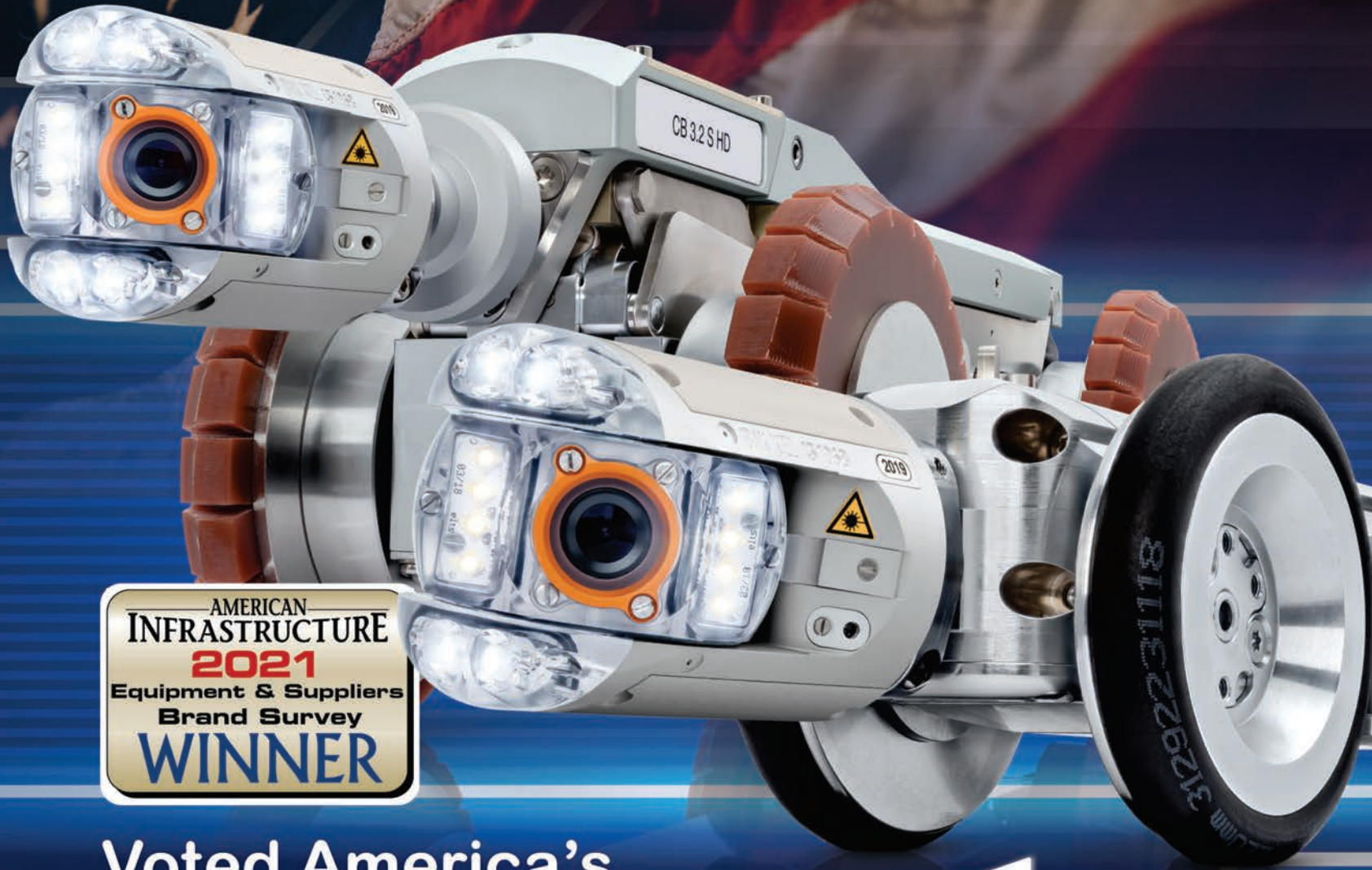
Having completed training and met Epoxytec's standards, Memphis-based Hill Services was well qualified for this project. The company has been providing industrial maintenance, services and repairs nationwide for municipalities as

(continued)



The Topeka project included several significantly corroded brick manholes and concrete junction boxes. Leaks were sealed and concrete repairs made using Epoxytec's Mortartec Ceramico, a hybrid cementitious epoxy mortar. Then CPP Sprayliner was applied to a thickness of 125-200 mils.





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Memphis-based Hill Services provided expertise in manhole rehabilitation and structural liners, applying the CPP Sprayliner with a heated spray rig. The completion time for each manhole was approximately two days, including one day for surface preparation and one day for coating.

well as industrial facilities and power plants for close to a century. As one of Epoxotec's certified contractors, Hill Services provides expertise in manhole rehabilitation with a focus on structural liners.

### **“Structural liners have a unique place in the world of manhole rehabilitation.”**

John Thompson

#### **Getting to work**

The Topeka project began in the fall of 2021 and lasted roughly three weeks from start to finish. The structures included several significantly corroded brick manholes and concrete junction boxes. Surface preparation started with hydroblasting to meet SSPC-SP13/NACE No. 6 standards, and a surface profile of ICRI-CSP 5 with a minimum pH of 9, a preparation standard required for proper application of the sprayliner. Leaks were sealed, and then concrete repairs were made using Epoxytect's Mortartec Ceramic,

a hybrid cementitious epoxy mortar.

“This [surface preparation] is one of the most vital aspects of successful manhole rehabilitation,” says Ed Ward, the Hill Services manager who oversaw the project. “Without a sound substrate, the entire project is jeopardized.”

Once the surface was prepared, CPP Sprayliner was applied, using Hill Service's heated spray rig to reach 125-200 mils. The completion time for each manhole was approximately two days, including one day for surface preparation and one day for coating.

#### **Quality and detail**

While a rehabilitation project like this may not be particularly glamorous, it's a good example of quality products and execution solving problems and bringing good results. Officials in the City of Topeka were highly involved in all aspects of the project and Epoxytect representatives were on site during various stages of the job. There was solid teamwork throughout, from the engineers to the applicators, all emphasizing quality and detail.

The end result of the rehab project was the return to service of the manholes, with protection for an estimated 10 years or more, and long-term cost-savings over other solutions. ♦

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<b>ENVIROSIGHT</b> <b>Envirosight</b> 111 Canfield Ave., Unit B3 Randolph, NJ 07869 866-936-8476 973-252-6700 (f) 973-252-1176 www.envirosight.com office@envirosight.com See ad page 2	Jetscan	Mainline Sewers	6" to 24"		160	2.6 lb		2-6	
	<b>Enz USA Inc.</b> 1585 Beverly Ct., Unit 115, Aurora, IL 60502 877-369-8721 630-692-7880 (f) 630-692-7885 www.enz.com sales@enz.com See ad page 22	Bulldog Antiblast	Anti-Toilet Blowing in Residentials	8" - 24"	55 to 80	1,500 - 1,800	17 lbs.	6	
Bulldog		Cleaning grease, roots, deposits, etc.	8" - 24"	50 to 120	2,000 - 2,900	17 lbs.	7	6	1" - 1 1/4"
Rotodrill		Cleaning blocked pipes, frozen pipes, heavy debris	2" - 14"	13 to 80	2,000 - 4,000	0.25 lbs. to 1.5 lbs.	1	6	1/2" - 1"
Grenade		Flushing heavy debris	6" - 12"	40 to 80	2,000 - 3,600	11 lbs.		10	1"
Chisel 60.100L		Penetrating clogs, root masses, frozen pipes	6" - 16"	50 to 80	2,000 - 3,600	6 lbs.	4	6	1"
10.125TR Chain Scraper		Root removal, hard grease, hard deposits	5" - 12"	14 to 80	2,000 - 3,600	6 lbs.		6	1"
10.300R Rotating Chain Scraper		Removal of root masses, clogs, hard deposits	8" - 20"	50 to 80	2,000 - 3,600	78 lbs.		6	1"
10.400R Rotating Chain Scraper		Removal of root masses, clogs, hard deposits	16" - 32"	80 to 120	2,000 - 3,600	105 lbs.		6	1"
14.200R Recycling Milling Cutter		Removal of concrete & mineral deposits, dropped liners	8"	80 to 120	2,000 - 2,200	70 lbs.		6	1" - 1 1/4"
Bulldozer 50.100G		Flushing debris from large pipe	16" - 40"	40 to 80	2,000 - 3,600	57 lbs.	1	8	1"
HydroX	Hydroexcavation	Surface Cleaning		8.4	5,000	0.58 lbs.	1		3/8", 1/2"
<b>General PIPE CLEANERS</b> <b>General Pipe Cleaners</b> 1101 Thompson Ave., McKees Rocks, PA 15136 800-245-6200 412-771-6300 www.drainbrain.com info@drainbrain.com	Chisel Point Nozzle	Penetrating, breaking up debris	4" - 10"	12	2,500	4 oz.	4	6	1/2"
	Traction Nozzle	Sand and mud removal	4" - 10"	12	2,500	8 oz.	1	6	1/2"
	Cleaning Nozzle	Maintenance Cleaning	4" - 10"	12	2,500	12 oz.		8	1/2"
	Spring Leader Nozzle	Guiding hose around tight bends	2" - 10"	1.5 to 8	1,500 - 3,000	4 oz.		3 to 4	1/8" - 1/4" - 3/8"
	Downhead Nozzle	Dropping down T's	2" - 4"	1.5 to 4	1,500 - 3,000	2 oz.		3	1/8"
	Chain Saw Nozzle	Cutting roots	4" - 10"	4 to 12	2,500 - 3,000	2 lbs.		2 to 4	3/8" and 1/2"
	Rotary Nozzle	Scour pipe walls clean	2" - 10"	1.5 to 12	1,500 - 3,000	2 oz. to 10 oz.		2 to 4	1/8" - 1/4" - 3/8" - 1/2"
<b>HYDRA-FLEX</b> <b>Hydra-Flex, Inc.</b> 8401 Eagle Creek Pkwy., Savage, MN 55378 952-808-3640 www.hydrflexinc.com sales@hydrflexinc.com	Marskman	Cutting through and removing debris at distances of 20-30 ft. Could be used in location like lift stations or manholes. To be used with a gun+Lance. Can up adapted up to a 1" inlet			2,500	1.93 lbs.	1		
	Reaper 3/8"	Cutting through and removing blockages and flushing debris in sewer lines.	3" - 6"		4,000		1	4	
	Reaper 1/2"	Cutting through and removing blockages and flushing debris in sewer lines.	4" - 8"		4,000	1.54 lbs.	1	4	
<b>Root Rat</b> PO Box 740, Bolivar, OH 44612 800-288-7873 330-874-4300 (f) 330-874-4448 www.rootrat.net kelly@chempure.com See ad page 45	Root Rat	Root & Encrustations	2" - 30"	4 to 150		0.5 lbs. - 5 lbs.			
<b>Sewer Equipment</b> 1590 Dutch Rd. Dixon, IL 61021 888-477-7611 (f) 815-284-0453 www.sewerequipment.com sales@sewerequipment.com See ad page 19	Mini Missile	General Cleaning	3"-12"	18 to 80	0 - 4,000	5 lbs.	1	3	1/2", 3/4", 1"
	Weisel	General Cleaning	3"-15"	18 to 80	0 - 4,000	2 lbs.		8	1/2" - 3/4" - 1"
	Dual Degree	General Cleaning	4" -18"	18 to 80	0 - 4,000	5 lbs.		8	1/2" - 3/4" - 1"
	Tri-Star	Penetrating	3" -24"	18 to 80	0 - 4,000	3 lbs.	4	6	1/2" - 3/4" - 1"
	Avanti	Penetration - Rotational	3" -24"	18 to 80	0 - 4,000	4 lbs.		6	1/2" - 3/4" - 1"
	RDS	Heavy Cleaning	3" -28"	18 to 150	0 - 4,000	4 lbs.		6	1/2" - 3/4" - 1" - 1 1/4"
	Mega 5 & 6	Flushing	12" - 120"	18 to 80	0 - 4,000	35 lbs.		11	1/2" - 3/4" - 1" - 1 1/4"
	HW	Flushing	4" -18"	18 to 55	0 - 4,000	3 lbs.		8	1/2" - 3/4" - 1"
	Combi	Cutting	4" - 24"	18 to 80	0 - 4,000	6 lbs.	3	6	1/2" - 3/4" - 1"
Patriot 1	Root & Grease Cutting	4" - 24"	40 to 80	0 - 3,000	25 lbs.		5	3/4" - 1"	



MANUFACTURER	NAME OF NOZZLE	APPLICATION	PIPE DIAMETER	FLOW RATE (GPM)	MAX OPERATING PRESSURE (PSI)	WEIGHT	NUMBER OF AVAILABLE FRONT JETS	NUMBER OF AVAILABLE REAR JETS	HOSE SIZE/CONNECTING THREAD
 <b>SewerProShop LLC</b> 11061 Triad Ct., Marietta, GA 30062 877-864-9394 470-592-1717 (f) 770-984-2802 www.sewerproshop.com info@sewerproshop.com	Viper Chain Cutter	Roots, Grease, Scaling	10" - 48"	40 to 100	2,000 - 4,000	45 to 70 lbs.		8	1" - 1 1/4"
	Power Pull Nozzle	Mud, Sand, Silt	4" - 12"	18 to 80	2,000 - 4,000	1.5 to 9 lbs.		8	1/2" - 1 1/4"
	Spear Nozzle	Penetration of Clogs, Root Masses, Frozen Pipes	8" - 24"	50 to 80	2,000 - 4,000	6.2 lbs.	4	6	
	Emperor Nozzle	Flushing heavy debris from large lines	12" - 32"	80 to 120	2,000 - 2,500	19.8 lbs.		12	
	Penetrator Nozzle	Flushing heavy debris in lines with offsets.	6" - 16"	50 to 80	2,000 - 4,000	15.4 lbs.	1	8	
	Stealth Nozzle	Flushing heavy debris	8" - 24"	60 to 80	2,000 - 4,000	17.6 lbs.		8	
	Raptor Nozzle	Penetration of clogs, Root/Grease Masses, Frozen Pipes	4" - 24"		2,000 - 4,000	2.4 to 5.5 lbs.	3	3 (1/2") 6 (1")	
	Big Foot Nozzle	Flushing debris from the floor of large pipes	16" - 48"	40 to 120	2,000 - 3,600	33 to 56 lbs.		6 - 14	
	Twister Nozzle	Cleaning grease, roots, mineral deposits, etc.	4" - 24"	18 to 120	2,000 - 4,000	3 to 15.4 lbs.	5	4	
	Milling Cutter	Removal of concrete, tuberculation failed liners	4" - 20"	60 to 120	2,000 - 2,500	18 to 44 lbs.	4	4	1" - 1 1/4"
 <b>Spartan Tool</b> 1618 Terminal Rd., Niles, MI 49120 800-435-3866 www.spartantool.com sales@spartantool.com	Warthog	Roots, Grease	2" - 18"	12 to 35	2,000 - 4,000	1 - 5 lbs.			3/8", 1/2"
	Sandshoe	San, Dirt and Rocks	4" - 18"	12 to 18	2,000 - 4,000	7 lbs			3/8", 1/2"
	Rotating	Scrubbing Pipe Walls	2" - 12"	4 to 18	2,000 - 4,000	1 - 3 lbs			1/4", 3/16", 3/8", 1/2"
	Q Nozzle	Downstream Jetting	4" - 12"	12 to 18	2,000 - 4,000	1 - 2 lbs			3/8", 1/2"
	Rocket Nozzle	Long Distance Jetting	4" - 12"	12 to 18	2,000 - 4,000	2 lbs			3/8", 1/2"
	Closed Nozzle	Standard Jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb			3/8", 1/2"
	Open Nozzle	Standard Jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb			3/8", 1/2"
	Brass Ball	Stainless Steel Hose Jetting	2" - 8"	4 to 18	2,000 - 4,000	1 lb			3/16"
	Chain Scraper	Roots, hard grease, scale	2" - 8"	8 to 50	5,075				3/8", 1/2", 3/4"
	<b>Suttner America Company</b> 14864 W Ridge Dr., Dubuque, IA 52003 800-831-0660 563-556-3212 (f) 800-821-0660 www.suttner.com sales@suttner.com <b>See ad page 33</b>	Non-Rotating Mini Sewer Nozzle	Various	Various		7,252	various	various	various
Non-Rotating "Compressor" Sewer Nozzle		Various	Various		7,252	Various	Various	Various	Various
Non-Rotating "Predator" Sewer Nozzle		Various	Various		7,252	Various	1	3	Various
Non-Rotating "Root Ram" Sewer Nozzle		Various	Various		7,252	Various	1	6	Various
Non-Rotating "Grease Ball" Sewer Nozzle		Various	Various		7,252	Various	0	8	Various
Non-Rotating "Hydro Mole" Sewer Nozzle		Various	Various		7,250	Various	4	3	Various
Non-Rotating "Negotiator" Sewer Nozzle		Various	Various		7,252	Various	Various	Various	Various
Non-Rotating "Ball Type" Sewer Nozzle		Various	Various		4,200	Various	Various	Various	Various
Non-Rotating "Bullet" Sewer Nozzle		Various	Various		7,252	Various	Various	Various	Various
Warhead & Warhead Radial Nozzles		Various	Various		7,250	Various	Various	Various	Various
 <b>USB-USA LLC</b> 7565 Owl Creek Dr., Douglasville, GA 30134 844-285-5770 www.usb-usa.com usbusallc@gmail.com <b>See ad page 43</b>	Primus 3D	Grease, Crusts, Light Roots	4" - 24"	18 to 120	2000 - 4,000	2.6/7.0/8.3/20.1	1	3/4/5/6	1/2 - 3/4 - 1 - 1 1/4
	Rocket 3D	Sand, Silt, Large Debris	4" - 24"	12 to 120	2,000 - 4,000	6.2/6.4/8.5/11.4/44		6/8/10/12	1/2 - 3/4 - 1 - 1 1/4 - 1 1/2
	Pipe Wolf 3D	Total Blockages from Roots, Grease & other Organic Matter	4" - 24"	14 to 120	2,000 - 4,000	2.4/5.7/11.9		6	1/2" - 3/4" - 1" - 1 1/4"
	Bagger Max 3D	Sand, Silt, Solids, Sludge & other Heavy Debris	18" - 96"	50 to 120	2,000 - 3,000	33/53/66/114.5	5	6/8/10/12	3/4" - 1" - 1 1/4" - 1 1/2"
	Chisel	Total Blockages from Roots, Grease, etc.	2" - 15"	8 to 120	2,000 - 4,000	.22/.33/.66/1.54	4		1/4" - 3/8" - 1/2" - 3/4" - 1" - 1 1/4"
	FS 3D	Total Blockages from Roots, Grease & other Obstructions	2" - 15"	8 to 80	2,000 - 4,000	.22/.44/.66/1.54/3.7	4	6/5/6/8	1/4" - 3/8" - 1/2" - 3/4" - 1"
	Tri-Jet 3D	Mud, Sand, Silt - Everyday Cleaning	4" - 48"	60 to 120	2,000	4.8/12.1/17.6/23.1/44		12/15	1" - 1 1/4"
	FD 2 3D	Half-Open or Complete Open Drains - Mud, Sand, Silt	4" - 12"	14 to 120	2,000 - 4,000	2.6/4/8.3/14.3		6/8	1/2" - 3/4" - 1" - 1 1/4"
	3D Extreme	Mud, Sand, Silt	6" - 15"	40 to 120	2,000 - 3,000	9.4	1	8	3/4" - 1" - 1 1/4"
	3D Cleaning	Everyday Cleaning - Sand, Mud, Silt, Grease	4" - 15"	14 to 80	2,000 - 4,000	6.12/1.17/6.23.1	1	6/8/10/12	1/2" - 3/4" - 1" - 1 1/4"

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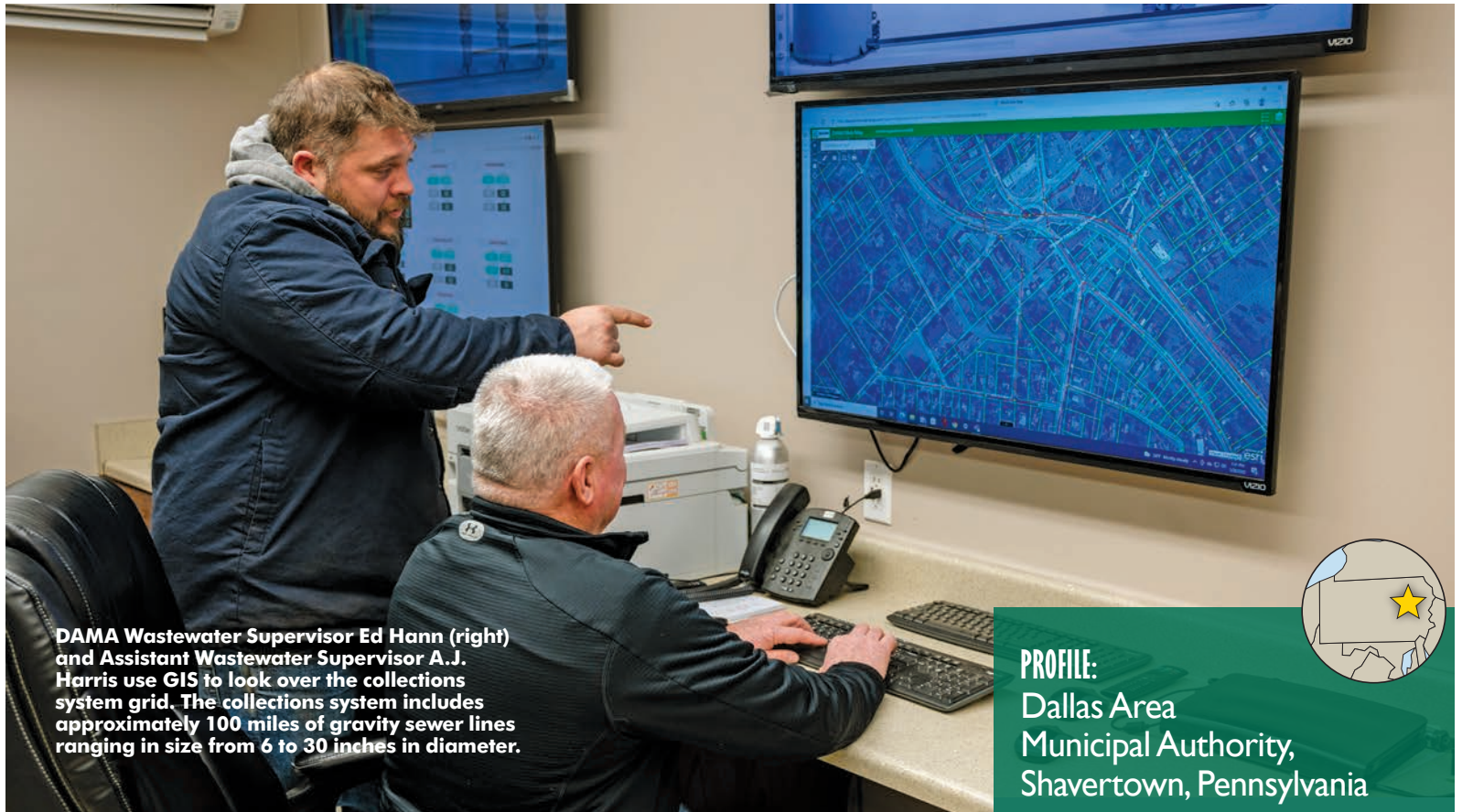


# CORRECTING FOR GROWTH

Fixing overflow problems is a prerequisite for continued development in Back Mountain

*By Ken Wysocky*





**DAMA Wastewater Supervisor Ed Hann (right) and Assistant Wastewater Supervisor A.J. Harris use GIS to look over the collections system grid. The collections system includes approximately 100 miles of gravity sewer lines ranging in size from 6 to 30 inches in diameter.**



**PROFILE:**  
**Dallas Area  
 Municipal Authority,  
 Shavertown, Pennsylvania**

**SERVICE AREA:**  
 About 46 square miles in Luzerne County

**SEWER INFRASTRUCTURE:**  
 100 miles of sanitary sewers, a 6-mile interceptor line, 16 remote pumping stations, 2,500 manholes, one primary pumping station, 4-mile force main that carries sewage to a non-DAMA treatment plant.

**DAILY WASTEWATER TREATMENT:**  
 About 3.5 mgd

**EMPLOYEES:**  
 10

**WEBSITE:**  
[www.damaonline.org](http://www.damaonline.org)

The Dallas Area Municipal Authority in northeastern Pennsylvania is in the midst of a \$4 million manhole-rehabilitation project aimed at significantly reducing stormwater infiltration and inflow in its sanitary sewer system.

The project is designed to stop sewage overflows that primarily occur at the authority’s main pumping station during heavy rains. And it’s coupled with programs designed to find illegal sump-pump connections to sewer laterals and failing lateral lines that add to I&I woes in the system, mostly built in the 1970s.

Fixing the problem is critical to economic growth in the area, a five-municipality area known as the Back Mountain, because it would ease limitations on residential and commercial development imposed by the Pennsylvania Department of Environmental Protection (PaDEP). In 2017, the agency issued an order that effectively banned additional connections to the sewer system, he says.

“While a negotiated consent order and agreement now allows for some connections as work to alleviate the I&I problem continues, future growth

**Left: Camera technician Seth Johnson readies the camera and crawler for a sewer line inspection. Local regulations require a lateral inspection with the sale of any home or business. (Photography by Mo Devlin)**

in the Back Mountain is contingent upon correcting the problem,” says DAMA Executive Director Tom Keiper. “This is the largest single project to alleviate I&I that we’ve ever undertaken.”

The flooding occurs about five to 10 times a year and lasts anywhere from an hour to a couple of days. The main culprit? Roughly 2,250 of the system’s 2,500 manholes that leak because they rest below pavement grade. Most of them also feature covers with holes in them that allow stormwater entry, Keiper says.

**“This is the largest single project to alleviate I&I that we’ve ever undertaken.”**

**Tom Keiper**

“That was the technology at the time,” he notes. “They thought the holes were necessary for better drainage and venting. Plus they weren’t as concerned about I&I back then.”

Furthermore, many of the brick manhole chimneys are starting to fail, which exacerbates the I&I issue. Because the area’s terrain is so hilly, the depth of the chimneys fluctuates from 3 inches to 3 feet, says Ed Hann, wastewater supervisor.

The project started in spring 2021 and is expected to conclude this fall. The authority

floated municipal bonds to fund the manhole project, as well as upgrades to the main pumping station and a 2.8 million-gallon equalization tank. The addition of a second equalization tank is also a possibility, Keiper says.

**Wastewater services**

Based in Shavertown, north of Wilkes-Barre, the authority has 10 employees and serves about 8,600 households in a roughly 46-square-mile area that includes five boroughs and townships in Luzerne County. DAMA manages and maintains about 100 miles of gravity-fed sewers, made primarily from 6- to 30-inch-diameter clay pipe; a nearly 6-mile-long interceptor line, made from



## UTILITY TARGETS LATERALS AND ILLEGAL CONNECTIONS

Significant stormwater infiltration in manholes is the primary reason why the Dallas Area Municipal Authority in northeastern Pennsylvania has embarked on a roughly 1-1/2-year-long, \$4 million project to rehabilitate about 2,250 manholes. But the authority also is taking a two-pronged approach to stopping I&I in other areas.

The first prong is an ordinance adopted in 2018 by the five boroughs and townships DAMA serves. It requires a lateral and a sump pump inspection every time a home or business building is bought, sold or ownership is transferred, says Tom Keiper, executive director.

The inspections must be performed by a certified pipeline inspection contractor. Residents can choose from a list of approved contractors provided by DAMA.

The results of flow tests, performed to determine the parameters of the manhole-rehab project, tipped off DAMA management that I&I in laterals also might be contributing to I&I issues.

“We noticed the longevity of some of the higher flows, usually in spring,” Keiper explains. “So we knew it wasn’t just rain – it indicated groundwater I&I, which has to come from the laterals.”

“I think this program is one of best things we’ve done in last four or five years, especially with the housing market so hot right now and homes selling so quickly,” he adds. “It’s a very cost-effective program because the seller, not DAMA, pays for the lateral inspection.”

“So far, we’ve found considerable (I&I) problems with laterals that need repairs or other problems that need to be addressed, such as tree roots in lines.”

The lateral inspections also revealed another problem: illegal sump pump connections to laterals, plus a smattering of illegal downspout connections.

“Out of all the houses sold, we’re finding that 7 to 8% have sump pumps connected to the sewers,” Keiper says. “When they run, some sump pumps are putting as much as 50 gallons of stormwater per minute into laterals.”

“We estimate that 40 sump pumps running just half the time put about a million gallons of water into the sewer system a day.”

That led to the second prong of DAMA’s I&I-reduction strategy: Hiring a company to inspect all buildings for illegal sump pump and downspout connections. The authority sends residents letters that ask them to schedule inspections with a specific contractor hired by the authority.

The authority pays those contractors a flat fee for the sump pump inspections.

As one might expect, many residents are reluctant to do so. So far, only about 1,000 homes out of more than 8,000 in the authority’s service area have been inspected. Furthermore, the program is currently on hold because of the COVID-19 pandemic, Keiper points out.

“But it’s been a great program overall,” he says. “We’ve found a lot of illegal sump pump connections for a minimal amount of money.”



Lou MacMillan pours CIP epoxy resin to begin the wet-out process for a liner that will be used to rehabilitate a damaged pipe.

**“We save a lot of money by doing things ourselves.”**

**Ed Hann**

20- to 30-inch-diameter concrete pipe; and 16 remote pumping stations.

The main pumping station handles an average daily flow of 3.5 million gallons per day. During heavy rains, peak flow reaches 8 mgd.

The pumping station sends waste via a 4-mile-long, 18-inch-diameter ductile iron, cement-lined force main to a treatment plant operated by the Wyoming Valley Sanitary Authority. The authority used to own a treatment plant, but it was abandoned in the early 1990s because it required extensive upgrades the authority couldn’t afford, Hann says.

Heavy snow melt in spring, combined with rain, also produced overflows. The overflow is chlorinated and screened as it passes through a paved channel that drains into Toby’s Creek. The creek eventually flows into the Susquehanna River and then into Chesapeake Bay, hence PaDEP’s concerns, Hann notes.

“We try to minimize the effects of overflows as best we can,” he says.

To determine the sources of the I&I, the authority hired a company to install Flo-Dar flow meters from Hach USA in 12 manholes — one in each of 12 designated drainage basins in the utility’s service area. A consultant in Pittsburgh then analyzed the results.

“Lo and behold, all 12 basins contributed to the problem,” Keiper says.

### Wrapping it up

The first step in the manhole-rehab process is removing the brick chimneys. The general contractor on the project, Sikora Brothers Paving, is using hydro-excavation to expose the chimneys and minimize pavement destruction. Workers then rebuild the chimneys with concrete rings to bring them up to grade.

Next, crews enclose the rebuilt chimneys with Wrapidseal from CCI Piping Systems. It’s essentially a heat-shrinkable sleeve designed to conform to irregularly shaped structures and seal them with an impermeable exterior barrier. It also provides structural integrity and accommodates structural movements.

*(continued)*

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"To shrink the wrap, you heat it with a propane torch," Hann explains. "Instead of sealing it with an epoxy coating from the inside, for example, where it's subject to freeze and thaw cycles, this product wraps around the outside and stops water from coming in altogether."

The rehab concludes with the installation of a bolt-on lid with O-ring seals that provide a watertight seal between the frame and the new manhole lids. Made by E.J. Manholes, the lids feature closed pick holes that limit water entry.

Sikora Brothers is rehabbing 1,750 manholes and DAMA employees are handling the remaining 500.

"We're concentrating on manholes located on improved surfaces, where they're at a level where water can run into them," Hann explains. "We're not as concerned right now with the remaining right-of-way manholes that stick up above the ground."

### Self-sufficient operation

The authority decided to rehab the 500 manholes with its own employees because it reduced project costs. This decision reflects an overall operating philosophy that favors self-sufficiency and cost reductions wherever possible.

"For anything that costs more than \$20,000, we have to put it out for bid and pay prevailing wages set by the state," Keiper says. "So sometimes it's more advantageous to do work ourselves. But

in this case, we couldn't do that many manholes that quickly, so we hired a contractor."

The authority also cleans, inspects and rehabilitates/repairs its sewers. To do so, DAMA has invested about \$1.4 million in a camera truck outfitted by RapidView IBAK; a Vactor 2100 combination sewer truck featuring a 12-cubic-yard debris tank, 1,200-gallon water tank and a vacuum pump made by Roots (a brand owned by the Howden Group). The utility also owns a steam-cured pipe lining system and a lateral-lining system for wye and tee fittings from Trelleborg; a robotic lateral-reinstatement machine from Dancutter A/S (a Halma company); a robotic cutting machine manufactured by Schwalm Robotic; and a RIDGID SeeSnake pipeline-inspection camera.

"We save a lot of money by doing things ourselves," Hann explains. "Plus, it comes down to timing, too. It can be very time-consuming to put projects out for bid. And contractors aren't always available when you need them. And when they are available, rain or bad weather might stop them from working."

"So we figure it's more cost- and time-effective to handle things ourselves, on our own schedule."

### Making progress

As of mid-January, nearly 1,100 manholes have been rehabbed. Hann says Sikora Brothers is rehabbing an average of 12 to 15 manholes per day. However, workers started with remote manholes

on lightly traveled roads, so he expects that average to drop when they start working on much more heavily traveled roadways, which will decrease productivity.

Nonetheless, Keiper says initial indications show the project is already having a positive effect.

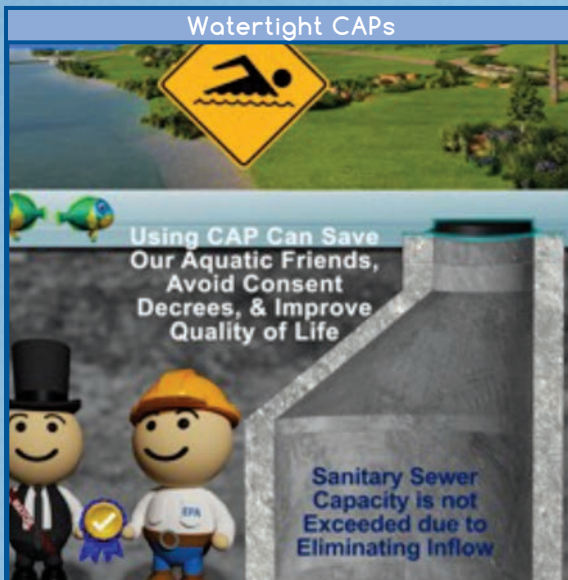
"It seems like the few overflows we've had recently aren't as long in duration," he says. "But we still have a long way to go." ♦

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# STEMMING THE GREAT RESIGNATION



**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](mailto:editor@mswmag.com).

Recognition programs can be an effective employee-retention tool

By Ken Wysocky

**R**ecord-breaking numbers of employees continue to quit their jobs — an average of 4.3 million a month from July through November in 2020, according to United States Bureau of Labor Statistics. And as this so-called Great Resignation ripples through the workplace, perplexing employers nationwide, it also underscores the need for organizations to make employee recognition a staple of their cultures.

Why? Studies have shown that lack of recognition at work leads to higher employee turnover and conversely, receiving recognition increases employee engagement and job satisfaction. In fact, in one study, 54% of respondents said they'd rather work for a company with a recognition-oriented culture than one where they'd get a higher salary increase, but no recognition.

The bottom line: If your organization doesn't already have an employee recognition program, it's a great time to start one. And if it already does, it's a great time to re-evaluate it — determine if it's accomplishing what a good reward program should do: Align with a company's mission and values and drive employee performance.

"Rewards and recognition are valuable tools for managers, but they often overlook them or don't recognize their value," says Carol Hacker, the owner of Carol A. Hacker & Associates and a nationally known business consultant, keynote speaker and author. "To employees, rewards and recognition are comparable to oxygen — everybody needs it to survive.

"If you're not willing to reward and recognize people, you'd better look around because a lot of other companies already are ... and your employees are going to jump ship and go to where they can find those things," adds Hacker, the author of *450 Low-Cost, No-Cost Strategies for Recognizing, Rewarding & Retaining Good People*.

It's not always about monetary rewards, either. In fact, some studies show that employees would gladly forego monetary bonuses for more freedom and decision-making power. As such, delegating more responsibility to employees who want it, or giving them the power to make decisions about

things that impact them directly, are both powerful motivators, Hacker says.

When considering rewards and recognition, managers also must consider the individuals involved. Older baby boomers, for instance, would appreciate certain rewards that Gen Xers or Yers would disdain, and vice versa. The bottom line: To make sure you're hitting the right reward-and-recognition buttons, there's nothing wrong with asking employees what rewards they find meaningful.

## Tailored rewards

A generic approach to recognition isn't a good strategy, says Kathie Sorensen, co-owner of the Coffman Organization, an employee- and management-development consulting firm.

"According to our research, an employee wants to be known as a unique human being, not copy writer number three or accountant number four," says Sorensen, who co-authored the book, *Culture Eats Strategy for Lunch: The Secret of Extraordinary Results Igniting the American Workforce*. "One size doesn't fit all. That kind of recognition rarely gives you the kind of lift that you're after.

"People connect to their local work team and immediate supervisor and experience the company through that connection," she explains. "And in that local work unit lies the chance for that immediate supervisor to figure out what you do best — what your goals are and what you believe in.

"I like recognition programs that are flexible enough and adaptable enough that the local manager can use them in a way that fits each person — gives them a lot of different ways to recognize people."

## Individual insights

To do so, however, requires managers to develop good relationships with employees — even delve a little into their interests and personal goals. "It's one of the simplest and most powerful tools managers have," Sorensen explains. "Have you ever been in a restaurant and the waiter knows who you are and brings your favorite drink before you even ask for it? That's what I'm talking about."

That's not to say that managers should start rewarding employees with martinis and margaritas. But managers who know their employees well can develop keen insights into things that they find valuable.

For example, a good manager would never "reward" a harried, time-pressed worker with four children by taking them on a business trip, for



**“Recognition needs to be strategic ... aimed at motivating the type of behaviors you’re trying to encourage so that your business can succeed.”**

Debra Corey

instance. A gift certificate to a family restaurant, tickets to a nice entertainment event or an unexpected day off might be far more appreciated. On the other hand, a business trip might really resonate with a young, single employee that the manager knows is very interested in developing broader work experience and getting promoted.

### Purposeful recognition

It’s also critical that rewards mesh well with company values and mission statement, says Debra Corey, a former executive at Reward Gateway and now the chief pay-it-forward officer at DebCo HR. Ltd.

“Over the years, I’ve seen too many employee-recognition programs that aren’t strategic enough and don’t align closely enough with a company’s mission, purpose and values,” says Corey, who co-wrote *Build It: The Rebel Playbook for World-Class Employee Engagement*.

“Companies that are getting it are moving toward being true business partners (with employees) and driving business performance through human resources programs, including reward and recognition,” she adds. “Recognition needs to be strategic ... aimed at motivating the type of behaviors you’re trying to encourage so that your business can succeed.”

Corey recommends continuous, peer-to-peer recognition, in which employees have access to digital technology that allows them — not just managers — to send out digital pats on the back to colleagues. Social media platforms and other technologies provide effective channels for raising the visibility of these digital recognitions, she says.

### Virtual high-fives

Reward Gateway, for instance, developed a recognition program called MORE (Moments of Recognition Everyday) that drives employees to embrace its eight core values: love your job, be human, work hard, own it, push the boundaries, delight your customers, speak up and think global. They all emanate from the company’s mission statement: Make the world a better place to work.

Using the company’s intranet platform for instance, employees can send out digital e-cards. Known internally as “high-fives,” the cards are “continuous” because they can be sent at any time; they recognize things like positive attitude, volunteering, proposing a new idea or demonstrating reward gateway values. Employees can even send rewards via their cellphones.

Of course, moderation is critical; there can be such a thing as too much recognition — a flood of digital high-fives dilutes the value of the sentiment. That’s why it’s important to train employees and emphasize that recognition must be meaningful in order to be effective.

### Simple but effective

The hardest part of developing an effective recognition program is deciding why people should be recognized — what strategic goals and values should serve as the criteria — and what they should receive for that recognition.

But in the end, Hacker says there’s always this old, tried-and-true approach: Just personally thank employees for what they’ve done. All employees simply want to be treated with dignity and respect, and few things resonate more with employees than a manager who takes them aside and personally expresses appreciation for a job well done.

“There’s no substitute for the words, ‘Thank you,’” Hacker notes. “And most employees don’t hear it often enough. And what does that take to do that? Not a whole lot.” ♦

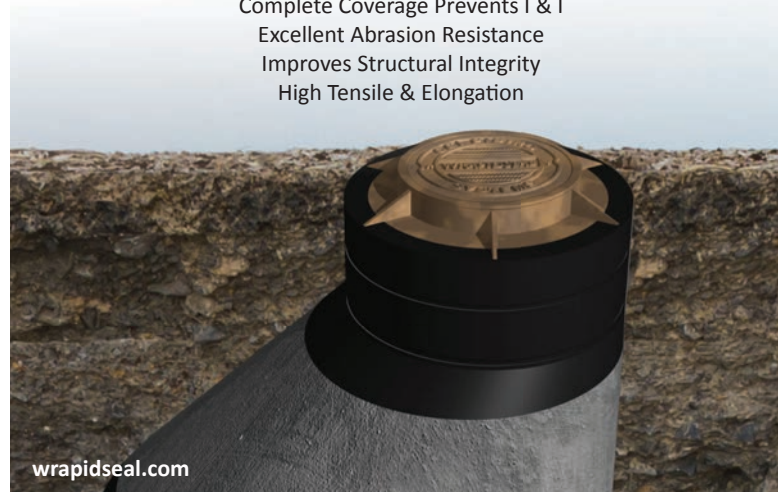


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Sheila Joy is executive director of NASSCO. She can be reached at [director@nassco.org](mailto:director@nassco.org).

# DEVELOPING NEW SPECIFICATIONS

Committee builds awareness and momentum for grouting technology

By Sheila Joy

NASSCO's mission is to set standards for the assessment, maintenance and rehabilitation of underground infrastructure and to assure the continued acceptance and growth of trenchless technologies. We do this through education, technical resources and advocacy.

NASSCO's Infiltration Control Grouting Committee has been on fire this past year with the production of several technical resources, including an informational video on the many benefits and features of grouting technology ([nassco.org/resource/grouting-technology](http://nassco.org/resource/grouting-technology)). The brief video is an excellent tool for anyone new to the grouting industry or for veterans who may need a quick refresher.

## NASSCO's Infiltration Control Grouting Committee has been on fire this past year.

The ICGC has also published two new grouting specifications: *Pipeline Packer Injection Capital Grouting and Pipeline Packer Injection Pre-Rehabilitation Grouting V2.10*. First published in 2014, the *Suggested Standard Specifications for Pressure Testing and Grouting of Sewer Joint, Laterals and Lateral Connections* quickly became the go-to grouting document for engineers and municipalities. Updated for 2021, that document has been enhanced and renamed *Pipeline Packer Injection Pre-Rehabilitation Grouting*. Available for contractors, engineers and system owners to download for free at [nassco.org/resources/nassco-specification-guidelines](http://nassco.org/resources/nassco-specification-guidelines), *Pipeline Packer Injection Pre-Rehabilitation Grouting* addresses the needs to eliminate infiltration prior to installing other rehabilitation methods and the ability of chemical grouting to act as a complementary technology after installed.

The second specification, *Pipeline Packer Injection Capital Grouting*, was developed by ICGC to address long-term grouting means and methods that provide pipe stabilization by creating a pipe cradle-like stability in the bedding and a volumetrically significant, long-term, water seal outside the pipe. This will eliminate all groundwater and rainfall induced infiltration entering a defect or leaking joint. Installed per these new industry standards, it has an anticipated service life of 25 years or more.

Traditional grouting practices focused on placing a minimum amount of grout in the pipe gasket space and immediately outside the defect. This historically produced the desired decrease in infiltration but did not achieve pipe stabilization and generally resulted in a shorter service life. NASSCO's ICGC has spent several years developing the new specifications for Capital Grouting while still recognizing the need to quickly eliminate infiltration when installing other rehabilitation technologies. This resulted in the offering of two separate specifications, one for Pre-Rehabilitation Grouting and a second for Capital Grouting.

NASSCO's ICGC has also been busy working toward the release of a white paper detailing the research and proven technology behind the capital grouting methods that achieve the pipe stabilization and long-term seals described in the new specification.

In addition to online access, NASSCO is encouraging engineers and municipalities to download and print the 2021 specifications for use in their upcoming projects. *Pipeline Packer Capital Grouting Specification* and *Pipeline Packer Pre-Rehabilitation Grouting Specifications* are available on NASSCO.org, where you can also view ICGC's grouting video. ♦

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# HYDROEXCAVATION AND INDUSTRIAL JET/VAC SERVICES

By Craig Mandli



Enz USA Hydro X



Dynablast HV420



Hydra-Flex Machete



SewerProShop Raven



Soil Surgeon hydroexcavating tool

## HYDROEXCAVATION EQUIPMENT AND SUPPLIES

### Enz USA Hydro X

The **Hydro X** nozzle from **Enz USA** is available in 3/8-inch NPT or 1/2-inch connecting threads, and it can function at up to 5,000 psi with flow as low as 8 gpm. It combines a powerful, oscillating water jet with a high debris removal rate. A tungsten carbide front jet ensures a longer life than ceramic jets can offer. For quick and easy maintenance, a repair kit is available. Due to the nozzle's simplicity, repairs can be made quickly and efficiently in the field with little downtime. For the operator's safety, a plastic cover provides protection against harsh and sensitive environments. **888-369-8721; www.enz.com**

### Dynablast HV420

Custom **Dynablast HV420** hydrovac water heaters produce 420,000 Btu with an output temperature of 175 degrees F at 5 gpm, making them suitable for colder climates and improved digging in clay-filled areas. All models come with ETL certification for safety, which also includes certification on the coil for higher efficiency and heat transfer, a stainless steel target plate for increased coil life and momentary override control. They include an Interpump Group T 2040 water pump package providing 10.5 gpm at 2,900 psi and 1,750 rpm, as well as a hydraulic package with a Sunfab 34 cc motor. All components are custom-mounted in a 24-by-24-inch cabinet. **905-867-4642; www.dynablast.ca**

### Hydra-Flex Machete

The **Machete** hydroexcavating nozzle from **Hydra-Flex** channels water in an oscillating motion, creating a small spray angle and a direct stream with a forceful impact. This premium penetration will allow faster digging and more precise trenching capabilities. Its durable, replaceable cover allows for quick changes while increasing the nozzle's lifespan. It is available in three sizes, with operating pressure ranges from 1,000 to 3,200 psi and a heat rating of 180 degrees F. It will last in excess of 500 hours, according to the maker. **952-808-3640; www.hydraflexinc.com**

### SewerProShop Raven

The **Raven** hydroexcavation nozzle from **SewerProShop** has been precision engineered by Intersewer and manufactured to the highest technical standards by ISO 9001:2008 certification in Germany. The weight counteracts the high-pressure kickback of the wand. It is constructed from high-grade stainless steel, is threaded, and includes a replaceable ceramic nozzle insert with forward water jet angled at 0 degrees or a fan jet. It is rated for 18 gpm at 4,000 psi up to 80 gpm at 2,500 psi. It includes a 1/2- to 1-inch sewer hose connection. It is operator friendly, with no maintenance required. **877-864-9394; www.sewerproshop.com**

### Soil Surgeon hydroexcavating tool

The **Soil Surgeon** hydroexcavating tool fits any sewer combination truck equipped with a telescoping 6- or 8-inch boom. The tool has a 1-inch





**Ditch Witch HXT Line**



**GapVax HV33**



**RAMVAC by Sewer Equipment HX-12**



**HotJet USA Vac 'n Jet Series**



**Presvac Systems Hydrovac**

water connection. The operator controls water pressure and power through truck controls. It has a 6-foot Tuff-Tube with handles to guide the unit down for potholing or side to side for trenching. Six jets boring inward cut the soil, while six boring outward bring the tube down. **949-363-1401; www.soilsurgeoninc.com**

## HYDROEXCAVATION TRUCKS/TRAILERS

### Ditch Witch HXT Line

Contractors looking for the efficiency and payload capacity of a truck-mounted vacuum excavator can turn to **Ditch Witch's HXT Line** of vacuum excavators. The HXT50 and HXT75 are powered by Kubota engines with 50 and 75 hp, respectively, for optimal suction power. The HXT50 has a 1,005 cfm blower and 3,000 psi water pressure. Both units are available with 500-, 800- and 1,200-gallon spoils tank configurations, allowing contractors the freedom to stay on a job site longer and avoid repeated spoils disposal and water refilling. The 500-gallon configuration is designed to be under CDL requirements, allowing contractors to transport the machine without a CDL driver on staff. The HXT75 offers 1,315 cfm and up to 5.5 gpm water pump flow. They are designed with a spoils tank door that can be controlled curbside or remotely to keep operators clean during spoils disposal. Both come with a multifunction remote control option for the boom, allowing operators to control the vacuum hose more easily. **580-336-4402; www.ditchwitch.com**

### HotJet USA Vac 'n Jet Series

The **HotJet USA Vac 'n Jet Series** of vacuum trailer jetties are designed to be rugged and compact, engineered to haul equipment and spoils loads, can clean valve boxes and storm drains and hydroexcavate and/or clean drainlines and sewer lines. They offer hot- and/or cold-water operation with a choice of engines ranging from 13 to 66 hp and gas or diesel. They are equipped with premium triplex pumps, a 500-gallon spoils tank, 200-gallon water tank, Gardner Denver vac/blowers, 4-ton hydraulic dump and CentriClean filter system. They can also be designed to meet specifications. **800-624-8186; www.hotjetusa.com**

### GapVax HV33

Designed to safely transport water and debris in urban areas, the **GapVax HV33** is shorter, smaller and more compact than its predecessor. It is 30 feet long overall on a medium-duty chassis and includes a 600-gallon water tank, 6-cubic-yard debris body, 6- or 8-inch top-mounted telescoping boom with a 14- to 17.5-foot reach, 4,000 cfm power and an inverted, full-opening tailgate. **888-442-7829; www.gapvax.com**

### Presvac Systems Hydrovac

The **Presvac Systems Hydrovac** is designed for versatility and cold-weather operation with optional full compliance with U.S. Department of Transportation specifications for collection or transportation of hazardous materials. The high-vacuum blower allows extraction of all types of soils, gravel, rock, clay, water and silt material, with knockout features in the debris tank to minimize carryover. Modular filtration configured to blower size provides blower protection and minimal maintenance. It comes with a heavy-duty, 8-inch boom that extends up to 25 feet with six-way hydraulic power and wireless controls for all boom functions, a soft-start water pump, vacuum breaker and truck engine speed. **800-387-7763; www.presvac.com**

### RAMVAC by Sewer Equipment HX-12

The **HX-12** hydroexcavator from **RAMVAC by Sewer Equipment** has a 12-yard debris tank and a heated, secured equipment locker that contains the entire water system, including water tanks, for cold-weather application and tool security. This machine touts a directional discharge system with the ability to off-load debris back into the excavation site when done, without the mess of dumping the tank. This system also allows operators to blow any obstructions out of the dig hose and get back to work. It includes a long-range wireless remote, NEMA 4 electrical system, an 800,000 Btu water heater and a three-stage cyclonic filtration system. The standard 4,400 cfm blower will match the performance of larger blower machines while delivering fuel economy with the ability to go up to 5,400 cfm. The series offers debris capacities from 3 to 15 cubic yards while maintaining a short overall footprint. **888-477-7638; www.ram-vac.com**

(continued)



**Rival Hydrovac T7 Tandem and T10**



**Tornado Global Hydrovacs F4 ECO-LITE**



**TRUVAC FLXX**



**Super Products Mud Dog 700**



**Transway Systems Terra-Vex HV38**



**Vac-Con Mudslinger MS800**

### Rival Hydrovac T7 Tandem and T10

The **T7 Tandem** from **Rival Hydrovac** was designed primarily to be a unit that could be loaded with debris and drive within legislated road limits with most types of debris on board. The unit comes standard with a scale that reads real-time weights both in the cab and on the wireless remote to confirm weights prior to travel. The T10 is built with the same features and operating system, but with larger capacities and components. It is popular with clients who do both utility and industrial work. It is available in three chassis layouts to meet weight restrictions in a given area. An air compressor option allows for excavating with air when required, while a truck-mounted coring system allows for removal of hard surfaces prior to nondestructive excavating. **403-550-7997; www.rivalhydrovac.com**

### Super Products Mud Dog 700

**Mud Dog 700** vacuum excavators from **Super Products** are designed for operator convenience and consistent performance to meet the challenges of applications from compact, urban projects to large-scale excavation. Units come standard as hydroexcavators with an optional air excavation package. They maximize legal payload, allowing operators to carry and accomplish more while still excavating safely in small work areas. The compact, versatile vacuum excavator features a 7-yard debris body and 600-gallon water tank. The unit comes standard as a dump body with an electric vibrator offering a 50-degree dump angle with the capability of dumping into a 48-inch container. Additionally, it is equipped with a rear-mounted, extendable, 8-inch-diameter boom that reaches 18 feet, has 270-degree rotation and pivots 10 degrees downward, which minimizes job site restoration and eliminates traffic congestion near roads. **800-837-9711; www.superproducts.com**

### Tornado Global Hydrovacs F4 ECO-LITE

The **F4 ECO-LITE** from **Tornado Global Hydrovacs** has a 12-cubic-yard mud tank and holds 1,550 gallons of freshwater. The unit is more than 7,000 pounds lighter than the company's older models and offers more than double the payload. The boom has a 342-degree rotation and 26-foot reach. The smaller F3 ECO-LITE is a 10-cubic-yard, 1,250-gallon tandem-axle unit that more than doubles older payload capacities. It features an 8-inch boom and 3,800 cfm blower. **877-340-8141; www.tornadotrucks.com**

### Transway Systems Terra-Vex HV38

The **Transway Systems Terra-Vex HV38** has a 12-yard debris tank with onboard scales for efficient hauling and off-loading, and a 26-foot-by-8-inch telescoping boom. It has a one-touch-operated hydraulic half-door with a 3,800 cfm at 27 inches Hg hydraulically driven blower. Water pressure is achieved with a hydraulically driven triplex pump, delivering 10 gpm at 3,600 psi from a 1,000-gallon HDPE baffled water tank. The water is heated with a 420,000 Btu diesel-fired burner for cold-weather operation. **800-263-4508; www.transwaysystems.com**

### TRUVAC FLXX

The **TRUVAC FLXX** is a vacuum excavator built to perform for utilities and contractors installing, replacing and repairing underground infrastructure, utilizing both air and hydroexcavation options for all conditions. This safe digging machine offers more power and maneuverability ideal in tight urban settings where street excavation jobs can include supporting, repairing and installing a city's water, sewer, power and telecommunications infrastructure. Designed to maximize productivity on the job, it boasts the highest legal payload capacity in a midsize truck with a 10-cubic-yard debris body. In addition, it offers Park-n-Dig, an always-connected water source; safe and precise digging with the DigRight one-touch flow control technology; a water heater to dig in all types of weather/material conditions; a 22-foot boom reach with 340-degree rotation; and a DigFast option to maintain peak vacuuming performance and a clear airstream in the vacuum tube. **800-627-3171; www.truvac.com**

### Vac-Con Mudslinger MS800

The **Mudslinger MS800** trailer-mounted hydrovac from **Vac-Con** encompasses the same power, suction, and capacity of a truck hydroexcavator on a portable, pull-behind trailer. It includes the choice of Tier 4 diesel or gas engine options providing up to 1,190 cfm and 16 inches Hg with a PD blower and 325 gallons of water. An 845-gallon debris tank allows operators to stay productive on the job site, while a 9-foot boom with 24 inches of hydraulic extension provides a full range of motion. It is designed to be a powerful stand-alone unit, but can also provide support to construction, HDD and public utility fleets. It's at home in a variety of applications including day-lighting, potholing, culvert and manhole cleaning, and utility locating. **904-284-4200; www.vac-con.com**





**Vermeer VXT300**



**Bucher Municipal North America Remote Reel**



**Vacall AllJetVac**



**Supervac Triton**



**Vactor 2100i**

## Vermeer VXT300

Vermeer's VXT300 truck vac is outfitted with an 8-cubic-yard spoil tank, 6-inch dig tube and the ability to carry up to 800 gallons of water so crews can maximize productivity on the job. It is one of the lightest truck vacs in its class and designed with a low overall height of 11.5 feet to efficiently transport spoils from the job site to the dumpsite. The vac truck is built on a Kenworth T370 truck chassis with a 350 hp diesel engine and a six-speed automatic 3,000 RDS Allison transmission. The truck's PTO drive powers its Roots 624 vacuum blower with a maximum flow of 3,500 cfm and maximum suction of 18 inches Hg. With a water pump capable of producing 10 gpm at 3,000 psi, the VXT300 delivers productivity on large jobs as well as when digging at deeper depths. In addition, this truck vac's PTO drive system allows the vac to keep running while repositioning the truck between holes, rather than requiring full machine shutdown, for optimal efficiency. **800-837-6337; www.vermeer.com**

## JET/VAC COMBINATION TRUCKS/TRAILERS

### Bucher Municipal North America Remote Reel

The Remote Reel from Bucher Municipal North America helps users reach where sewer cleaner units can't and allows for easy and safe access to difficult jetting tasks. A smart design allows the user to go off road and even handle stairs. It includes a hydraulically operated hose reel with variable speed, 656 feet of 1-inch jetting hose, a Hinowa caterpillar track crawler with adjustable width, a Honda 11.7 hp gasoline engine and a rear operator platform with easy steering and controls. **704-658-1333; www.buchermunicipal.com**

### Supervac Triton

The Triton combination sewer cleaner from Supervac has a water recycling system using a Juggler filter to allow continuous work without down-

time for water filling. It filters water collected in the debris tank and transfers it to a water reservoir used by the water pump. It comes with a 2,500-gallon debris tank with stainless steel liner and vibrator, 1,500-gallon water tank, hydraulic boom and dump, and a full-opening rear door. Vacuum is provided by a 3,800 cfm at 27 inches Hg Robuschi blower, while jetting is provided by an 80 gpm, 2,500 psi Pratissoli water pump. The rear door-mounted hydraulic hose reel holds 600 feet of 1-inch hose. **866-839-5702; www.supervac.co**

### Vacall AllJetVac

Vacall AllJetVac combination sewer cleaners come standard with an intelligent AllSmartFlow CANbus control system with a programmable LCD display that monitors engine, water flow and vacuum performance, while allowing for more precise boom and reel movements. Water flow control monitoring can also reduce trips for refills. Models have a strong positive-displacement blower system for suitable jetting action and vacuum power. The oval-shaped debris body has cylindrical sides for extra strength and efficient material dumping. Water tanks, fabricated from high-quality aluminum, are mounted high on the chassis away from road debris. **800-382-8302; www.vacall.com**

### Vactor 2100i

The updated 2100i from Vactor improves operator ergonomics and provides more control of the machine from the operator station. Boom operation has also been improved in both speed and control, easing and reducing setup time. To help manage total cost of ownership, service reminders have been added to the machine as well as a winterization reminder. Nondestructive e-stops help protect both the operator and the equipment, and one-button operation allows for the simplest engagement process. An alarm and message has been added in the cab if the operator attempts to move the truck with either the boom or body raised, further improving operator safety. **815-672-3171; www.vactor.com** ♦



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# Product Spotlight

An easier way to swap valves

By Craig Mandli



**P**rying flanges apart to replace leaking valves without the right tools is often a time-consuming procedure. It can also be dangerous, as the come-alongs, wedges, screwdrivers and crowbars typically used for the job can slip out if not aligned perfectly. The Valve-Out flange-spreading tool from Specialty Maintenance Products takes the time and danger out of doing the job.

The cold-rolled steel tool consists of four spreader plates, eight bolt-hole pins (two for each spreader plate) that come in various diameters and fit into the flange bolt holes, and two spacer bars, which connect the pairs of spreader plates. Two jack bolts connect the spreader plates, exerting roughly 10 tons of pressure to pull apart the flanges on either side of a valve. This allows workers to slide out a damaged valve and replace it, along with any gaskets, if needed.

“Water and wastewater plants are comprised of multiple flanged valves and meters and their associated piping,” says Tyler Hemann, director of operations for specialty maintenance products. “The only way to spread the flanges is by grabbing the bolt holes. That is what the Valve-Out does.”

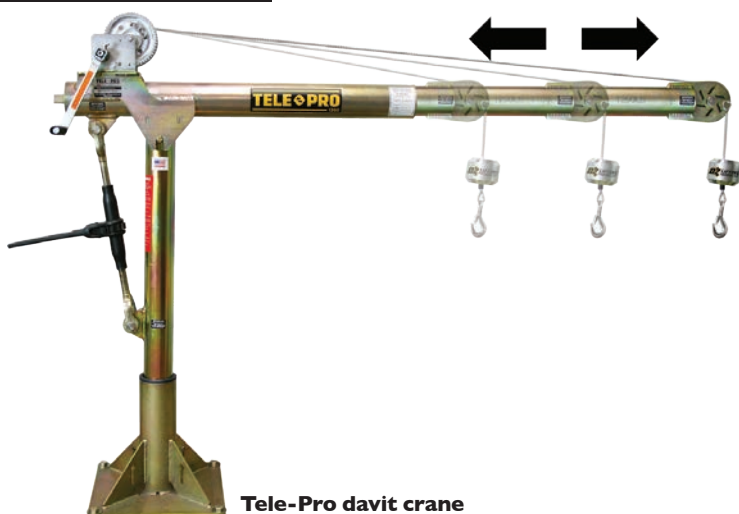
After removing all of the flange bolts, crews select the appropriate-size

bolt-hole pins and slide them through the spreading plates, which are essentially two pivoting arms that butterfly out to fit various bolt hole patterns. The pins are secured by pushing them through the spreader plates and then into the flange bolt holes. After each of the four spreader plates is affixed to the flanges and connected by the spacer bars, the tool operator simultaneously tightens two jack bolts, one attached to each pair of spreader plates via the threaded ends of the two spacer bars. As the jack bolts turn, they slowly expand the length of the spreader bars, which in turn forces the bolted-on spreader plates to spread the flanges apart.

“The municipalities using this in the field are blown away with the time and effort this tool saves,” Hemann says. “Many are actually leery of loaning it out to other cities because they don’t always get it returned.”

The system comes in three kits. The VOC 1 kit is designed to handle flanges with 3/4-, 7/8- and 1-inch-diameter bolt holes. The VOC 2 kit is designed to handle flanges with 1 1/8-, 1-1/4- and 1 3/8-inch-diameter bolt holes. The VOC 1-2 kit includes all six of the previously mentioned bolt-hole pins. **713-667-4402; www.smptools.com**

## SPECIAL REPORT



Tele-Pro davit crane

## OZ Lifting Products Tele-Pro davit crane

OZ Lifting Products’ patented Tele-Pro davit crane features an industry-first telescoping boom adjustment that can be moved in and out while under load. A ratchet screw jack allows the user to adjust the boom from horizontal to 45 degrees while under load and the 360-degree rotation of the crane allows a full range of motion. Smart latch technology at the boom/mast means no tools are required for assembly. A zinc-plated finish provides added corrosion protection. The Tele-Pro is available in 500-, 1,200- and 2,500-pound capacities. AC and DC electric winches are optional on the 500- and 1,200-pound models, or manual winch with drill drive adapter is available for all three models. The cranes are made in the U.S. and each one is individually tested and certified at 125%. **800-749-1064; www.ozliftingproducts.com**



## SPECIAL REPORT

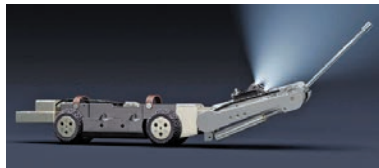


**REED Bevel Boss**

## REED Bevel Boss cordless pipe bevelers

Bevel Boss cordless pipe bevelers from REED Manufacturing quickly and safely bevel 2-inch-diameter and larger plastic pipe. The tool's unique design allows the Bevel Boss to offer a safe and speedy way to bevel. A cordless pipe beveler trims small- to large-diameter plastic pipe, including pipe already in the ditch. The lightweight tool significantly reduces prep time by quickly and consistently beveling when preparing multiple pipe lengths. They can be used on PVC and CPVC plastic pipe including C900, Corzan CPVC, Bionax PVC0 (C909) and ABS. Bevels can be added on most PVC glued joints and some sizes of bell and gasket joints. Adjustable for bevel length up to 1 inch, the required carbide router bits cut evenly and efficiently. Due to it being battery-powered, there are no fumes. Plus, the guide plate eliminates guesswork about the bevel and yields a consistent result. **800-666-3691; reedsales@reedmfgco.com**

## Vortex AccuPower™ high-pressure water blaster



The Vortex Companies' Vortex AccuPower high-pressure water blaster is capable of removing hardened concrete, heavy debris and CIPP lining without damaging host pipes. The AccuPower system can be quickly configured on a Schwalm robot within 10

minutes, eliminating the need for existing Schwalm robot owners to invest in a new one. Engineered for pipes 8 to 40 inches in diameter, it has powerful 40,000 psi output and precisely calibrated jets, avoiding compromising host pipes or original infrastructure. The water blaster offers more than 40 jet and nozzle options, including a 12-inch lance, for maximum versatility and customization for any obstruction and environment. Additionally, AccuPower jets are manufactured with diamond material to protect against wear and eliminate the need for replacement jets. **855-949-3441; www.vortexcompanies.com** ♦



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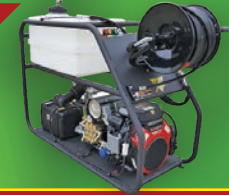


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Honda Engine

(NARROW DESIGN)

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#### 4008H Power Unit

»8 gpm @ 4000 psi »400' x 3/8" Jet Hose on DC Powered Reel  
»800 cc EFI  
Honda Engine

Just Add A Tank!

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#### 3012H Power Unit

»12 gpm @ 3000 psi »400' x 1/2" Jet Hose on DC Powered Reel  
»800 cc EFI  
Honda Engine

**Call for Quote**

#### 3012H Compact Skid

»12 gpm @ 3000 psi »400' x 1/2" Jet Hose on DC Powered Reel  
»800 cc EFI  
Honda Engine

(100 GALLON TANK)

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#### 4008H Compact Skid

»8 gpm @ 4000 psi »400' x 3/8" Jet Hose on DC Powered Reel  
»800 cc EFI  
Honda Engine

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## Jeremy Alexander joins Sprayroq as president

Sprayroq announced it hired Jeremy Alexander as its new president. Previous to taking on his new role at Sprayroq, he was the director of marketing at Line-X. The addition of Alexander comes on the heels of the firm's recent brand transformation with a new visual identity, coupled with the launch of a new website and relocation of the firm's corporate headquarters in Alabama.

## Vac-Con announces CMI Equipment as new dealer

Vac-Con announced the addition of CMI Equipment to the Vac-Con dealer network. The distributorship will provide sales, parts and service support to customers located in the state of Tennessee. For more than three decades, CMI Equipment has provided the Tennessee market with the equipment necessary to keep cities, counties and road departments running. CMI will offer the full portfolio of Vac-Con machines including combination sewer cleaners, jetters and hydroexcavators in both trailer and truck-mounted configurations.

## Superior Environmental Solutions acquires Mid Valley Industrial Services

Superior Environmental Solutions announced that it acquired Mid Valley Industrial Services. With offices in central Wisconsin and Waterloo, Iowa, Mid Valley expands the company's service area to the north and west, with the ability to service customers in Wisconsin, Iowa and Minnesota.

## Felling Trailers' Knudsen retires after 42 years

Gary Knudsen, Felling Trailers' regional sales manager and 42-year veteran of the heavy equipment and transport industry, retired at the end of 2021. Almost 17 of those years have been spent selling trailers: four years with Towmaster, and the last 13 years with Felling Trailers. He joined the Felling team in June 2008 as the North American outside sales representative. Knudsen provided dealer support for ten states spanning from Alaska to the Dakotas, and to Arkansas, Texas and the Canadian region.



**Gary Knudsen**

## Envirosuite wins 2021 Water Entrepreneurial award

Envirosuite announced it received Frost & Sullivan's 2021 Global Digital Twin Technology for Water Entrepreneurial Company of the Year award. Frost & Sullivan applies a rigorous analytical process that involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Envirosuite was recognized for entrepreneurial innovation criteria in the digital twins for water space, including market disruption, competitive differentiation, market gaps, leadership focus and persistence. Envirosuite also scored highly for customer impact criteria, particularly in price and performance value, customer purchase experience, customer ownership experience, customer service experience and brand equity.

## The Water Council, SCS Global Services partner

The Water Council has partnered with SCS Global Services to meet water and sustainability challenges by improving corporate water stewardship outcomes and reporting. The new partnership will include development and rollout of programs to help companies move beyond traditional water management to credible and verified water stewardship that addresses enterprise-wide challenges and opportunities. SCS Global Services offers third-party verification of environmental, social and sustainability performance, helping organizations demonstrate and communicate their corporate responsibility and sustainability success stories.

## Vermeer Southwest acquires Vermeer Rocky Mountain

Vermeer Southwest acquired Vermeer Rocky Mountain and will become Vermeer Mountain West. Combining these two adjacent Vermeer industrial dealers creates a contiguous network of nine dealership locations spanning the mountain west region of the U.S. Kyle Pieratt, who served as president and CEO of Vermeer Southwest, will continue to lead as the president and CEO of Vermeer Mountain West. The dealership will be headquartered in Chandler, Arizona, with branch locations in eight other states, including New Mexico, Nevada, Utah, Idaho, Montana, Texas and Washington.

## SJE's Julian Atchia joins Hydraulic Institute board

SJE's Julian Atchia, vice president of research and development, was selected to serve as a Hydraulic Institute board member. He and two other new members will begin their three-year term at the Hydraulic Institute Annual Conference in Orlando, Florida, in March 2022. Board members are responsible for maintaining the missions, goals and key strategies of the institute; ensuring adequate financial, staff and volunteer resources; and providing leadership support to key committees to accomplish institute goals.



**Julian Atchia**

## Anue Water and D & H Water Systems expands coverage

D & H Water Systems, a rep for Anue Water Technology, expanded its coverage to all of California, and also added coverage in Arizona and Nevada.

## Thompson Pump announces executive retirement and promotions

Thompson Pump and Mfg. announced the retirement of John Farrell, the company's vice president of sales and marketing. With Farrell's retirement, the promotion of Bobby Zitzka to vice president of sales and marketing and of Pat Broderick to national sales manager were also announced. Over his 38 years at Thompson Pump, Farrell helped establish and grow partnerships with national rental companies, distributors and vendors. He also traveled the world meeting with customers, attending tradeshows and growing Thompson Pump's international and municipal business as well as its dealer and distributor network to more than 40 business partners across the U.S. and Canada.

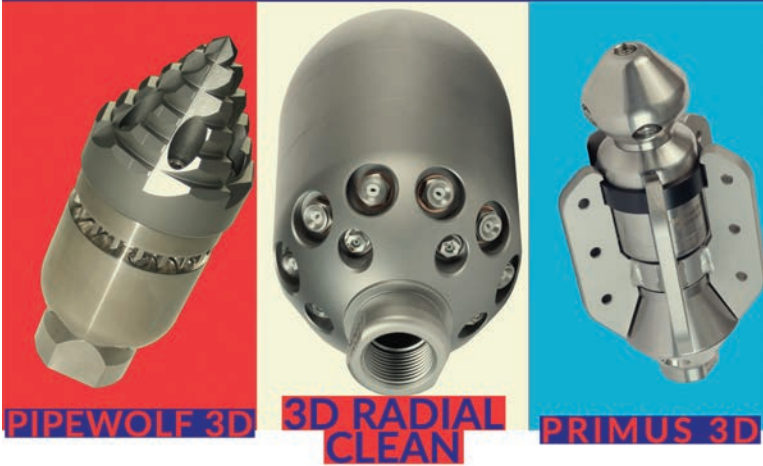
## AWWA board selects president-elect, VPs and director-at-large

The American Water Works Association's board of directors selected Patrick Kerr of Baton Rouge, Louisiana, as the association's next president-elect. Four vice presidents and a director-at-large were also selected during the Board's annual winter meeting, which was conducted virtually. Kerr will begin his term as president-elect in June at the conclusion of AWWA's Annual Conference & Exposition, and his term as president begins in June 2023. He follows current president-elect Joseph Jacangelo.

The board selected the following four vice presidents: Ari Copeland and Randy Moore, both from Kansas City, Missouri; Juanita Reyher-Colon, executive director of the Hawaii Rural Water Association; and Michelle Stockness, from Minneapolis. The board also selected Mary Gugliuzza as a director-at-large. She is based in Fort Worth, Texas.



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## McLaughlin achieves 100 years of service

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## Barbco holds second annual St. Baldrick's fundraiser



Barbco held its second annual St. Baldrick's head-shaving fundraiser to benefit the fight against childhood cancer. After suspending the event in 2020 due to COVID safety considerations, in 2021 the team raised over \$5,000 and 37 Barbco employees shaved their heads to benefit childhood cancer research. ♦

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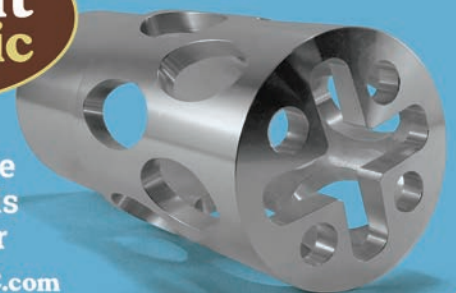
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## WORTH NOTING

### PEOPLE/AWARDS

**Kathryn McKillips** was promoted to city engineer for the City of Elyria (Ohio).

**Arden Fontaine** was promoted to deputy director of public works for Volusia County (Florida).

**Ty Cunningham** was hired as an engineer with the Lehigh Valley Planning Commission (Pennsylvania). He comes with a background in managing stormwater projects.

**Dan Tyler** was hired as the public works director for the City of Brattleboro (Vermont) replacing **Steve Barrett**, who retired.

The **Minnesota Board of Water and Soil Resources** announced the following recipients of Clean Water Grant funds:

- Carnelian-Marine-St. Croix Watershed District, Big Marine Lake Stormwater Quality Improvements Phase I, \$272,400
- Carnelian-Marine-St. Croix Watershed District, Big Carnelian Lake Stormwater Quality Improvements Phase I, \$203,850
- Washington Conservation District, Perro Creek Stormwater Retrofits, \$80,000

The **City of Bonita Springs** received more than \$16 million from the Florida Department of Economic Opportunity's Rebuild Florida Mitigation General Infrastructure Program. The fund will be used to make improvements to 2.5 miles of stormwater infrastructure and will repair damage caused by Hurricane Irma.

The **Town of Warrenton** (Virginia) received a \$991,185 grant from the state's Stormwater Local Assistance Fund to help finance a stormwater pollution reduction project.

The Association of Minnesota Counties and the Board of Water & Soil Resources presented **Crow Wing County's community partnership with the County Highway Department** for one of two AMC-BWSR County Conservation Awards for implementing stormwater runoff mitigation projects. ♦

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## CALENDAR

### April 10-13

American Public Works Association Snow Conference, David L. Lawrence Convention Center, Pittsburgh. Visit [snow.apwa.net](http://snow.apwa.net).

### April 25-27

American Water Resources Association Spring Conference, Bryant Conference Center, Tuscaloosa, Alabama. Visit [www.awra.org](http://www.awra.org).

### May 2-4

Montana Stormwater Association Annual Conference, Holiday Inn Downtown, Missoula. Visit [www.mtstormwaterconference.org](http://www.mtstormwaterconference.org).

### June 5-8

American Society of Civil Engineers World Environmental and Water Resources Congress, The Hyatt Regency Atlanta Hotel, Atlanta. Visit [www.asce.org](http://www.asce.org).

### June 12-15

American Water Works Association ACE22, Henry B. Gonzalez Convention Center, San Antonio. Visit [www.awwa.org](http://www.awwa.org).

### June 27-29

Water Environment Federation Stormwater Summit, Hyatt Regency, Minneapolis. Visit [www.wef.org](http://www.wef.org).

### Aug. 28-31


American Public Works Association Public Works Expo 2022, (hotel TBA), Charlotte, North Carolina. Visit [px.apwa.net](http://px.apwa.net).

### Sept. 11-14

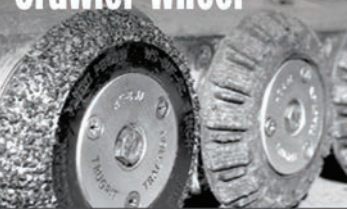
American Water Works Association Water Infrastructure Conference, (hotel TBA), Portland, Oregon. [www.awwa.org](http://www.awwa.org).

**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](mailto:editor@mswmag.com).





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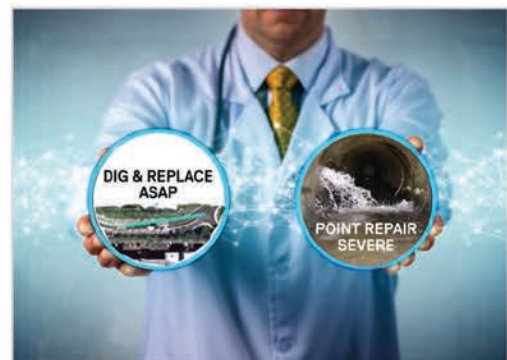


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