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SETTING A STORMWATER STANDARD

South Burlington's stormwater management practices provide a good example for other utilities

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Dave Wheeler
Stormwater Services Superintendent
South Burlington, Vermont

PRODUCT FOCUS:
CHEMICAL AND MECHANICAL ROOT CONTROL

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CHEMICAL AND MECHANICAL ROOT CONTROL

ON THE COVER: Dave Wheeler is superintendent of South Burlington Stormwater Services, the first stormwater utility in the state of Vermont. (Photography by Carolyn Bates)

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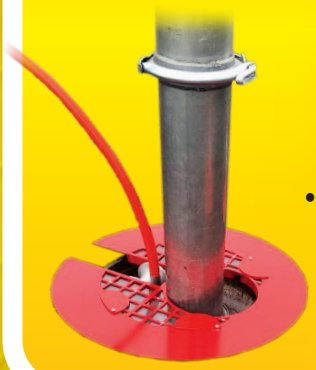

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Luke Laggis

COMMUNITY AND WATER

Access to clean, safe water isn't guaranteed, and it shouldn't be taken for granted

The view from my dining room table, which has served as my office for more than a year now, stretches out across 519 acres of water. The lake is clear, officially 38 feet at its deepest, but the water is so high right now I'd bet it's deeper. A crude calculation of acre-feet puts it close to 10,000.

There's another lake across the road but just out of view. It holds another 4,600 acre-feet. Lakes bigger and smaller dominate the local landscape. A few miles to the west, the upper stretch of the Wisconsin River flows into the 3,153-acre Rainbow Reservoir. On its own, that's another 44,000 acre-feet of water by my rough math.

Growing up here, it's hard to even imagine what it would be like to live somewhere without an abundance of water.

If I jumped in my truck to head over to the Rainbow, I'd pass a handful of other lakes, including a five-lake chain spanning 1,751 acres, and with a maximum of 32 feet deep, roughly 28,000 acre-feet.

Water scarcity isn't a thing here. Water levels wane in drought years but supply doesn't change. Quality isn't impacted.

Growing up here, it's hard to even imagine what it would be like to live somewhere without an abundance of water. That's why a local elementary school teacher reached halfway around the world to help her young students understand that the picture is much bigger than what they see here at home. And to do something good.

As reported in a local newspaper, the *Star Journal*, it started when second grade teacher Jenny Prom read the book, *Water Princess,* to her students. It's the story of a young African girl who walks miles every day to get water for her family, and the lengths the family goes to make the water safe to drink.

Her students' empathy for the girl in the story led Prom to a local leadership group that was able to connect the class with people from Zambia, Malawi, Zimbabwe, Uganda and Kenya. It was a way to teach the students that they are not just citizens of their school, city or country, but part of the human race. Students held fundraisers to buy water filters for communities in these African countries, and because of the direct connections they'd established with people there, all the money they raised went directly to the purchase of water filters.

Their local contact brought suitcases filled with water filters to these communities, and when members of those communities came here, they would bring suitcases full of filters back home. This year, the initiative expanded to involve all the district's elementary schools.

Whether you're on a Pacific island or planted in the Midwest's amber waves of grain, Africa or Wisconsin, water connects us all. Water scarcity might not be a present concern here, but harsh freeze-thaw cycles are very real. So is aging infrastructure. And small budgets. All utilities are saddled with one issue or another, and each can learn from and help the other.

Just like Prom's students were inspired by the story, maybe their efforts can spark outreach and education efforts in your own communities. At the very least, it's a reminder of the tremendous value of clean, safe water, and all the work you do for your communities.

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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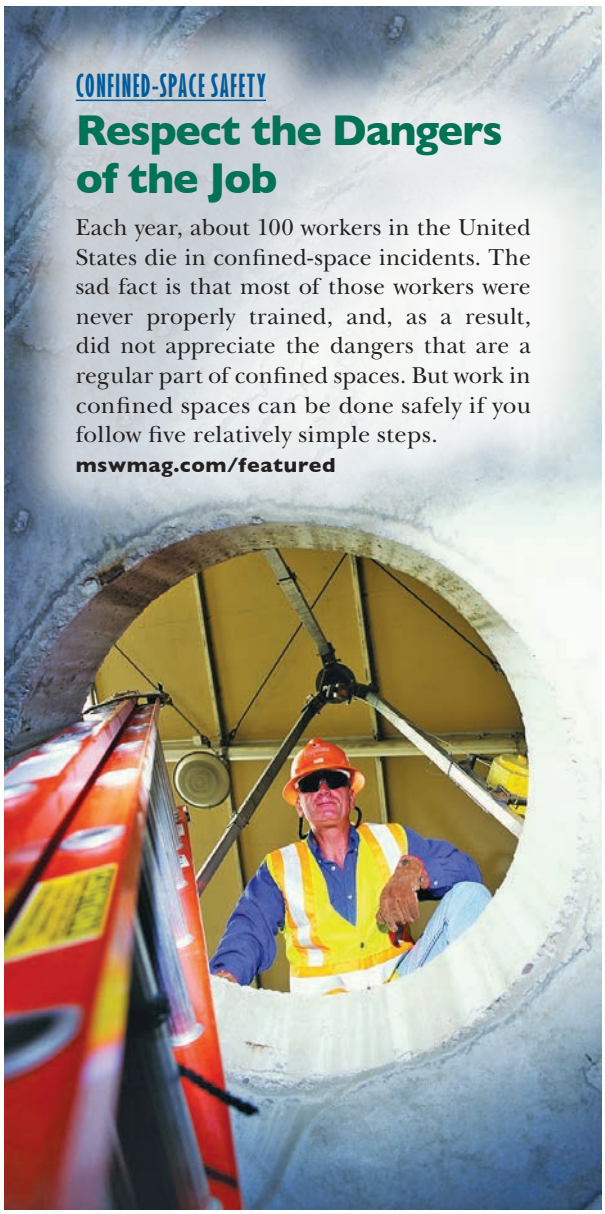
DEWATERING TACTICS

Finding the Right Strategy

As technology expands options, now is a good time to consider dewatering tactics. It's a necessary evil in construction, and in this online exclusive article, dewatering expert Ken Albaugh of Xylem shares some tips on finding the right strategy. **mswmag.com/featured**



CONFINED-SPACE SAFETY

Respect the Dangers of the Job

Each year, about 100 workers in the United States die in confined-space incidents. The sad fact is that most of those workers were never properly trained, and, as a result, did not appreciate the dangers that are a regular part of confined spaces. But work in confined spaces can be done safely if you follow five relatively simple steps.
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OVERHEARD ONLINE

"If you wish a departing employee would stay, make sure they know the door is open for them to come back. Sometimes we have to try on someone else's shoes before we realize we prefer our steel-toe boots."

— ***How to Handle a Good Employee Quitting*** **mswmag.com/featured**

STORM DRAINS AND CATCH BASINS

Tips for Proper Cleaning

Storm drain and catch basin cleaning are critical components to keeping local waterways clear, and in many areas regulated with defined performance measures. Best management practices should be incorporated into standard operating procedures to ensure performance objectives are met. **mswmag.com/featured**

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SEPARATING THE FLOW

The City of Hamilton is taking a progressive approach to eliminating cross connections

By Dave Alberton and Donald Young

Hamilton, Ontario, has a long history. The beginnings of its wastewater system date back more than 160 years, but its future is taking a divergent path thanks to a program that started just a decade ago.

The port city is situated on the western side of Lake Ontario with a population of 550,000 people. The Niagara Escarpment runs through the middle of the city across its entire breadth, producing roughly 92 miles of watercourses that flow through Hamilton and naturally feed into Lake Ontario. Protecting them is a significant concern.

The city has two types of sewer systems: a separated system with separate lines for wastewater and stormwater, and a combined system that exists in older parts of the city. That system sends both stormwater and sewage directly to the wastewater treatment plant. Once the water is cleaned, it flows into Hamilton Harbor. The city has nine large storage tanks that can hold close to 80 million gallons of diluted wastewater in the event of extreme rain or snowmelts, so it's rare that the city's treatment plant is forced to release wastewater into the harbor.

Making connections

At the end of 2001, the Ministry of the Environment, Conservation and Parks notified the city that there was *E. coli* present in Red Hill Creek. Given that rainwater washes animal waste into streams and rivers, it's not uncommon to find *E. coli* in watercourses when there are big rain events.

"It was important that we understood where this *E. coli* came from, so we ran a series of tests in storm sewer outfalls upstream of Red Hill Creek to determine if human waste was a factor in this *E. coli* discovery," says Calvin Huizinga, project manager for the utility's Sewer Lateral Cross Connection Program. "Unfortunately, the results indicated this was the case."

The city discovered that part of the problem was cross-connected sewer laterals from residences where builders had mistakenly linked sewage outputs to the storm sewer system. In addition, there were partial cross connections that typically occur from homeowner renovation projects, with new plumbing fixtures being connected to an internal storm drain.

Hamilton immediately launched a sampling program in 2002. "The starting point was easy — we investigated the surrounding catchment area for Red Hill Creek," Huizinga says.

Crews sampled the storm sewers, and upon a positive result, they deployed CCTV into the storm sewer system during dry weather to look for the source of entry for human waste. Once the source was determined, the city contacted the homeowner to advise them of the situation so that they could gain access to their internal plumbing. This would allow crews to run a definitive dye test and another CCTV inspection to identify where the cross connection took place. Two-hour on-site investigations cost Hamilton around CA$650.

Stepping up

In two years, the utility investigated 153 storm sewer outfalls that were part of the two most significant (and environmentally sensitive) watershed areas in the city: Cootes Paradise and the Red Hill Valley. They identified concerning levels of *E. coli* in 31 streams, indicating a high probability for cross-connection contamination.

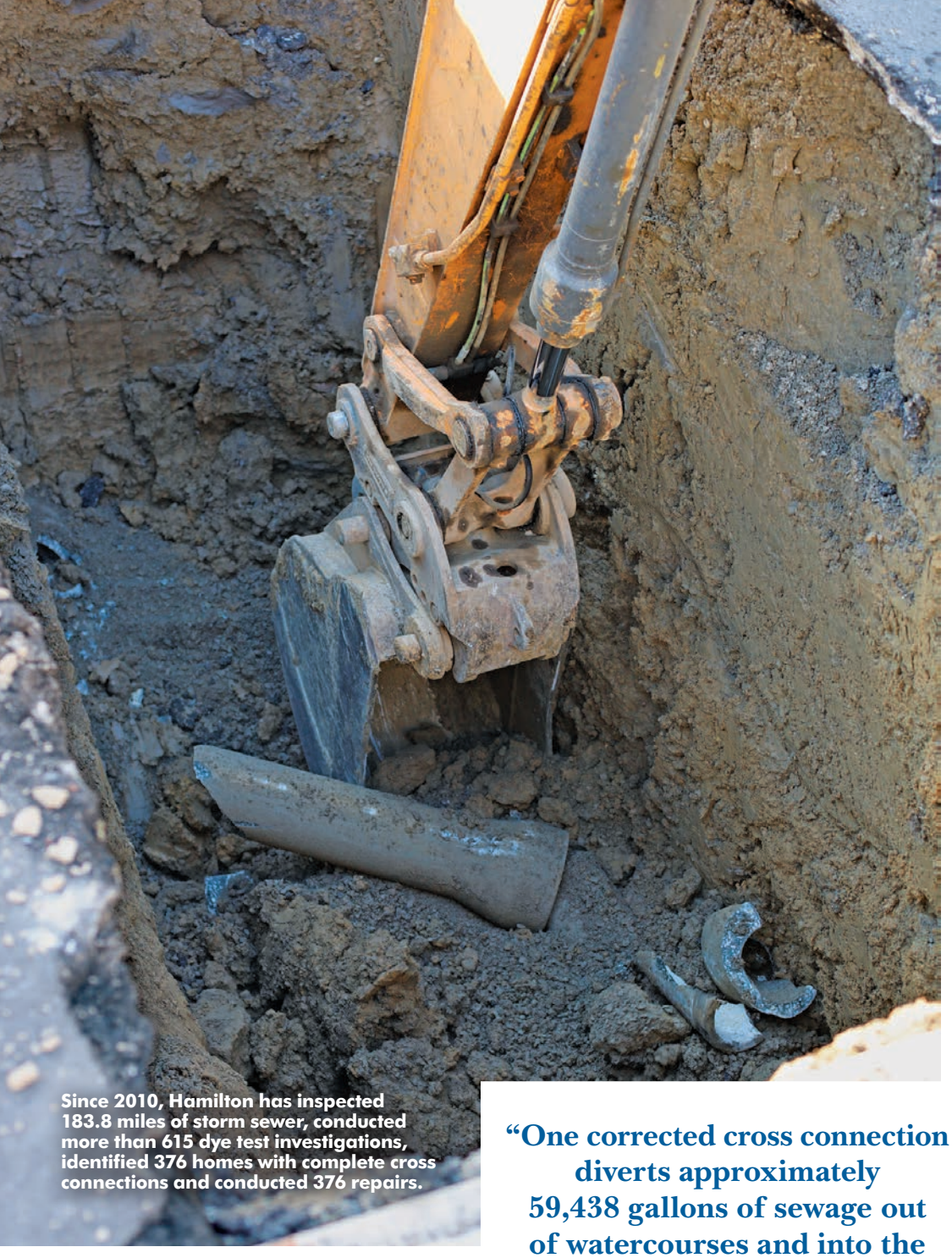
"Unfortunately, we were met with some resistance from residents to gain access to homes for dye testing," Huizinga says. "Homeowners were concerned that they would be found at fault, resulting in fines and costly repairs. Our primary concern was to stop the flow of this raw sewage through the drains as it posed a serious health risk and environmental contamination at its final harbor destination. So, in 2009 the city chose to waive owner liability, which significantly improved resident cooperation in giving us access for the final confirmation of what we suspected."

Hamilton looked for ways to expand the program by identifying other hot spots, conducting regular testing and fixing the cross connections wherever they occurred.

"Homeowners were concerned that they would be found at fault, resulting in fines and costly repairs."

Calvin Huizinga

Hamilton (Ontario) Water crew members excavate to expose a cross connection between the sanitary and storm sewer systems. The discovery of *E. coli* in a local waterway 20 years ago led to the establishment of the utility's Sewer Lateral Cross Connection Program. (Photographs contributed by the City of Hamilton)



Since 2010, Hamilton has inspected 183.8 miles of storm sewer, conducted more than 615 dye test investigations, identified 376 homes with complete cross connections and conducted 376 repairs.

In 2009 the Sewer Lateral Cross Connection Pilot Program was initiated, gaining momentum over the next several years as resources and funding were added. Today it's a permanent program with two full-time employees and a $700,000 annual budget.

"We are saddled with one of Canada's oldest water systems, so we have learned how to get creative and put our heads together to find a way to get the job done," Huizinga says. "One corrected cross connection diverts approximately 59,438 gallons of sewage out of watercourses and into the treatment system each year. This has a significant impact on the health and safety of our residents and the health of surrounding ecosystems, which is why the city stepped up to fix these cross connections at a cost of $7,200 per residence for the full repair and restoration."

> **"One corrected cross connection diverts approximately 59,438 gallons of sewage out of watercourses and into the treatment system each year."**
>
> **Calvin Huizinga**

Partial cross connections represent 10% of all identified cross connections in the city. Since the repair is required within the household, the city is not able to fix the connection. "We are still looking at ways to deal with partial cross connections. It's tricky because none of these problems were the fault of the city, but we are dealing with this effluent in our storm system, and our top priority is to stop it," Huizinga says.

Since 2010, the program has inspected 183.8 miles of storm sewer, which represents nearly 25% of the total storm sewer system. The city has conducted more than 615 dye test investigations, positively identified 376 homes with complete cross connections and conducted 376 repairs. This amounts to one repair for every 0.47 miles of inspection. This translates to more than 22,348,955 gallons of sewage being redirected from city watercourses and the natural environment each day and into Hamilton's wastewater treatment facilities. Or put another way, approximately 34 Olympic-size pools of sewage are prevented from flowing into the lake every year.

In addition to field investigations and repairs, Hamilton has also made changes to the building inspection program and created new bylaws to help prevent future cross connections. New subdivisions are now required to dye test private sewer laterals to ensure they are correctly connected.

"The Sewer Lateral Cross Connection Program is an integral contribution to the improvement of water quality in many of the watercourses within the city, including Hamilton Harbor and Lake Ontario," says Cari Vanderperk, director of Watershed Management for Hamilton Water. "The city is committed to fixing this legacy issue and has identified and repaired a number of cross connections across Hamilton. To date, cross-connection corrections are diverting 22.3 million gallons of raw sewage per year from our local receiving waters."

Leveraging data

In 2017, municipalities in Canada and the United States with cross-connection issues were contacted to complete a survey for industry review. Participants were provided an overview of the City of Hamilton's program and were asked to provide information about their own programs. Of the returned survey responses, only the City of Toronto and the Boston Water and Sewer Commission had well established programs in place.

"This was definitely surprising to us, as cross connections are not an uncommon problem, yet it was clear that our relatively small city already had a mature program in place," Huizinga says. "Furthermore, we discovered that we had corrected twice the number of cross connections per staff and at 12% less cost."

The city also partnered with Redeemer University's Environmental Studies program as they began actively monitoring water quality in the Chedoke Creek watershed in 2012. "Our students collect and analyze samples for a variety of biological and chemical contaminants. Nitrates, *E. coli,* total coliforms, phosphorus,

chlorides (from road salt) and several others are being studied," says Edward Berkelaar, professor of chemistry and environmental science for Redeemer University. "It only makes sense that we share our findings with the city as we all have the same vested interest in restoring the health of Hamilton's watersheds."

Hamilton, in turn, provided some further insight into the civil side of how collections systems operate. "Environmental stewardship is all of our responsibility and the students of Redeemer are our future policy makers, water scientists, operators and engineers. Partnerships like this accelerate a successful outcome," Huizinga says.

A Redeemer University independent student research project started in 2018 looking specifically at *Microbial Source Tracking of Fecal Contamination in Hamilton's Chedoke Watershed.* Using cutting-edge lab equipment, the student was able to perform quantitative polymerase chain reaction (qPCR) lab procedures to isolate and amplify specific characteristics of the DNA to identify if the bacterial contamination was human or otherwise. Two of the seven sample locations registered human fecal contaminations of 10% and 13% of the total *E. coli* and five of the locations registered indiscernibly (less than 3%) small amounts.

"While the methodology and application of this technology is fairly new at Redeemer University, we are all keen to better understand the sources of contamination within our watersheds and to quantify the positive environmental impact of repairing cross connections," Huizinga says.

> **"Partnerships like this accelerate a successful outcome."**
>
> **Calvin Huizinga**

The utility has already inspected 25% of the storm sewer system, and plans to continue inspecting 28.5 miles every year until the entire separated sewer system has been reviewed. In addition, they have expanded the scope of the program to include other potential sources and causes for sanitary sewer cross contamination. With over 186 miles of coded CCTV storm sewer footage as a result of searching for cross connections, it makes sense to leverage this data for a deeper structural pipe condition assessment.

"We plan to work with environmental engineers to use this data with additional infrastructure records and innovative software to pinpoint other potential sources of sewer cross connections, such as improperly abandoned sewer lines or sewer exfiltration," Huizinga says. "Diverting 22,348,955 gallons of sewage from the environment every year is something we are very proud of, but with human *E. coli* still present at outfalls we still have lots of work to do." ✦

Dave Alberton is the manager of Water Distribution & Wastewater Collection for Hamilton Water, and Donald Young is superintendent of Water Distribution & Wastewater Collection.

To date, cross connection corrections are diverting 22.3 million gallons of raw sewage per year from Hamilton's receiving waters.

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.

CONTINUING EDUCATION

Professional-development program creates better managers, improves agency's culture

By Ken Wysocky

When Brian Valentino was hired in 2014 as executive director of the Western Monmouth Utilities Authority in New Jersey, he was directed to change the agency's culture and improve succession planning by emphasizing professional development.

The vehicle for that change has been a program called the Environmental Professional Development Academy, which provides both current managers and up-and-coming employees with roughly 182 hours of instruction across four broad disciplines: administration/leadership, finance, human resources and field operations.

So far, nearly half of the 57 employees at the agency — which is based in the township of Manalapan and provides wastewater-treatment services to more than 125,000 people in central New Jersey — have graduated from the program.

> **"Executives tell us people come back more confident and engaged and that they think more strategically."**
>
> **Brian Valentino**

Furthermore, it was quickly expanded statewide through a partnership with about three dozen other environmental utilities and agencies. Overall, 123 employees have graduated from the program, Valentino says.

And above and beyond the 123 graduates, dozens of other employees have taken at least one course but haven't yet graduated.

"The program has received attention nationally and internationally," Valentino says, noting that it was recognized in 2019 by the New Jersey One Water awards program, sponsored by the American Water Resources Association's New Jersey section, the American Water Works Association's New Jersey section, the Association of Environmental Authorities, the Jersey Water Works and the New Jersey Water Environment Association.

"It's become kind of the gold standard in New Jersey for developing leadership qualifications for managers and directors at agencies."

More competent managers

Utilities that struggle with high employee turnover or inadequate succession planning in the face of a looming nationwide wave of retirements should take note of the program's success. A key benefit: It helps ease the transition for employees who too often get promoted without any management training — a common problem in the industry, Valentino says.

"A lot of managers in our industry are homegrown employees that come up through the ranks," Valentino says. "They're either very technical people who often have science-related college degrees or blue-collar employees, such as industrial mechanics, without college degrees.

"Yet they all get promoted into management, usually with no exposure to things such as management training, financial training and human resources law," he continues.

So Valentino, in conjunction with members of the Association of Environmental Authorities, developed a core curriculum focused on the four areas that he feels are critical to front-line supervisors' success.

"It's a crash course," he explains. "It's not designed to make them experts in these areas. But it gives them enough exposure to achieve a good baseline of knowledge — teaches them what they need to be good at in order to succeed. If they want, they can get more in-depth training later on."

Broad knowledge base

For example, a bookkeeper who gets promoted to finance manager first attends the field operations track to get a working knowledge of things like wastewater collections and treatment and drinking water treatment and distribution. Next comes the administrative track, which teaches skills such as leadership principles, strategic planning and how to develop talent.

That's followed by the finance track, which touches on everything from budgeting basics to capital planning and financing, and the human resources track, which might focus on topics like disciplining employees, collective bargaining and federal family-leave programs.

The EPDA now operates under the auspices of the AEA, with Valentino serving as the program's director. The program is funded through a $500 fee that each participating agency pays for every employee enrolled, he says.

Program participants attend one day-long session a week for 26 weeks, with roughly six weeks devoted to each of the four tracks. The day's schedule includes instruction from 9 a.m. to noon, a working, project-oriented lunch and then more classroom instruction from 1 to 4 p.m. The curriculum includes presentations made by expert speakers from various areas and disciplines.

The classes are held at various agencies during each track — except for current classes, which are taught virtually due to the pandemic. But each field-operations class is held at a different utility or agency, Valentino explains.

Qualifying criteria varies

The criteria for admittance to the EPDA varies by agency. At Western Monmouth, for example, employees must submit a letter to Valentino, explaining why they want to participate. Other agencies make program graduation a prerequisite for employee promotions. And yet other utilities hand select which employees they want to attend and groom for management.

"But in no case can employees unilaterally decide to attend," Valentino notes. "They have to be somehow endorsed by their employer."

Is there resentment by some employees who want to attend but don't get selected?

"I honestly have a bigger problem with people who ask to go, get sent and then don't get promoted," he says. "People say the program motivated them and gave them great ideas, but now there's nowhere to use them.

"But I tell them there's more to being a manager than being a leader and more to being a leader than being a manager," he adds. "So I try to tab them for special projects that allow them to utilize some of those skills."

Confidence breeds success

The program yields many benefits. For starters, employees who feel better equipped, more knowledgeable and in control of their careers are more confident and better managers.

"Executives tell us people come back more confident and engaged and that they think more strategically," he says. "They're better managers, which is our goal."

In addition, the program helps employees advance professionally, Valentino says, noting that people who graduate from the program are more likely to get promoted than those who do not.

"People have done very well (career-wise) as a result of this," he says. "It's a great social and educational leveler."

Moreover, surveys show that participants develop relationships and network with fellow attendees after the coursework is completed. "That gives them a pretty broad bench from which to pull for advice and input," he says.

In addition, the program sends a clear message to all employees: Everyone is a valued professional.

Trickle-down effect

One of Valentino's proudest moments was the day he overheard an EPDA graduate — an employee in the wastewater collections division who has not yet been promoted — handle a question from a colleague. The frustrated colleague asked why buying some small item required a purchase requisition, as opposed to just running over to a local hardware store and buying it.

The EPDA grad then patiently explained that there are several good reasons for doing so, such as ensuring there's money in the budget for the purchase and that items are bought from authorized vendors, not a black-market purchase made with an unauthorized vendor.

"I felt like a new father … it was a very profound moment," he adds. "His answer essentially was chapter and verse the way it should've been given. It would've come across much differently coming from a boss. But coming from him, it was totally different. He was doing what we call easing the ladder down — sharing knowledge with other employees."

From a higher-level perspective, Valentino says that too many senior executives in the industry miss opportunities to build great organizational cultures by not looking at the big picture. They concentrate too much on daily operations and ignore the things that can keep their agencies viable long past their departures.

"You can kill an agency quickly through neglect and save it with love and strategy," he says. "You have to build a culture based on developing individuals and helping them be the best they can be — one where everyone feels important, respected and valued. And if you do that, they'll do really great work for your ratepayers, which is what we all should strive for." ✦

"You can kill an agency quickly through neglect and save it with love and strategy."

Brian Valentino

SETTING A STORMWATER STANDARD

South Burlington's stormwater management practices provide a good example for other utilities

By Kyle Rogers

South Burlington (Vermont) Stormwater Services Superintendent Dave Wheeler checks water levels in one of the utility's new stormwater infrastructure features. (Photography by Carolyn Bates)

If you're with a New England utility and looking for some stormwater management guidance, the City of South Burlington, Vermont, is a logical place to start. In fact, as the first municipality in the state to establish a stormwater utility in 2005, South Burlington has done just that for many communities over the years.

"We've seen a bunch of other stormwater utilities pop up in Vermont, and in the New England area in general," says Dave Wheeler, South Burlington Stormwater Services superintendent. "These communities are looking to others to see what has worked. So being the first stormwater utility in Vermont, we have definitely done a lot of presentations, usually at conferences, on starting up a utility and what goes into it."

The core function of such a utility is of course to fund stormwater management projects. Since 2005, South Burlington has been plenty busy in that regard and has made a lot of progress in how stormwater is impacting the area's watersheds. But, Wheeler notes, there is still a lot of work left to do. With some extra funding for stormwater projects coming from the American Rescue Plan Act passed in early 2021, the future promises to be busy.

"It's an exciting time here. Hopefully we have enough engineers and contractors to do all the work," Wheeler says.

Confronting the problem

South Burlington serves a population of 18,000 and its stormwater infrastructure consists of 180 miles of conveyance and 6,700 drainage structures. Of that, the city owns and maintains 100 miles of conveyance and 3,400 drainage structures. The rest is the responsibility of private property owners. South Burlington Stormwater Services has a four-person maintenance crew that handles a variety of tasks, including catch basin cleaning, street sweeping, outfall inspections and stormwater treatment practice inspections and maintenance.

The need for changes in how stormwater was being managed in the area started to reveal itself in the early 2000s. In 2000, the EPA authorized Vermont's Agency of Natural Resources to implement Phase 2 MS4 permits in the state through the Department of Environmental Conservation. Additionally, in Vermont, the state government requires a stormwater permit for any development that produces an acre of impervious surface. For many years, permit requirements were fairly minimal.

"In the 1980s and earlier, it was basically put in catch basins and storm drains and discharge to the stream," Wheeler says. "They had requirements for cleaning the catch basins and sweeping parking lots thinking that was sufficient, but there were no requirements for stormwater treatment."

That started to change in the late 1980s with the rollout of the state's stormwater management procedures, which included requirements like flood control for a 10-year storm. In 1997, the procedures were updated with additional requirements to address stormwater treatment. Then in 2002, the state rolled out the first edition of its stormwater management manual, which included design requirements for stormwater treatment practices, addressing five categories: water quality, channel protection, groundwater recharge, moderate flooding events and extreme flooding events. At that time, South Burlington had 141 stormwater permits (many of them expired) as well as five watersheds the state deemed stormwater-impaired.

"The state sends biologists out to look for fish and insects, and if they don't find what they are looking for, the stream is deemed impaired," Wheeler says. "The state had to determine what was causing the impairment, and in many of our streams in Vermont, they decided it was stormwater in general, realizing that it is kind of an umbrella term including stream bank erosion from increased velocity, turbidity, thermal modifications, nutrients loading, along with other pollutants like metals, fertilizers and hydrocarbons."

The objective then was to mitigate that negative impact by reducing peak stormwater flows and installing treatment practices.

"There was an issue where people with expired stormwater permits couldn't renew their permit in an impaired watershed, unless they had stormwater treatment systems that meet the requirements of the stormwater management manual. So that was a huge driver for the creation of the stormwater utility," Wheeler says. "One of the goals was to be able to provide neighborhoods with maintenance of the treatment systems they were going to need to build or upgrade. Additionally, the city had its MS4 permit to comply with."

Getting support

Although South Burlington was Vermont's first stormwater utility, officials did have plenty of examples from other states to use as an initial template. They eventually settled on the equivalent residential unit (ERU) model, where an average baseline is established and every residential property owner gets billed one ERU no matter their amount of impervious surface. A tiered structure is then set up for commercial properties that is based off of square footage.

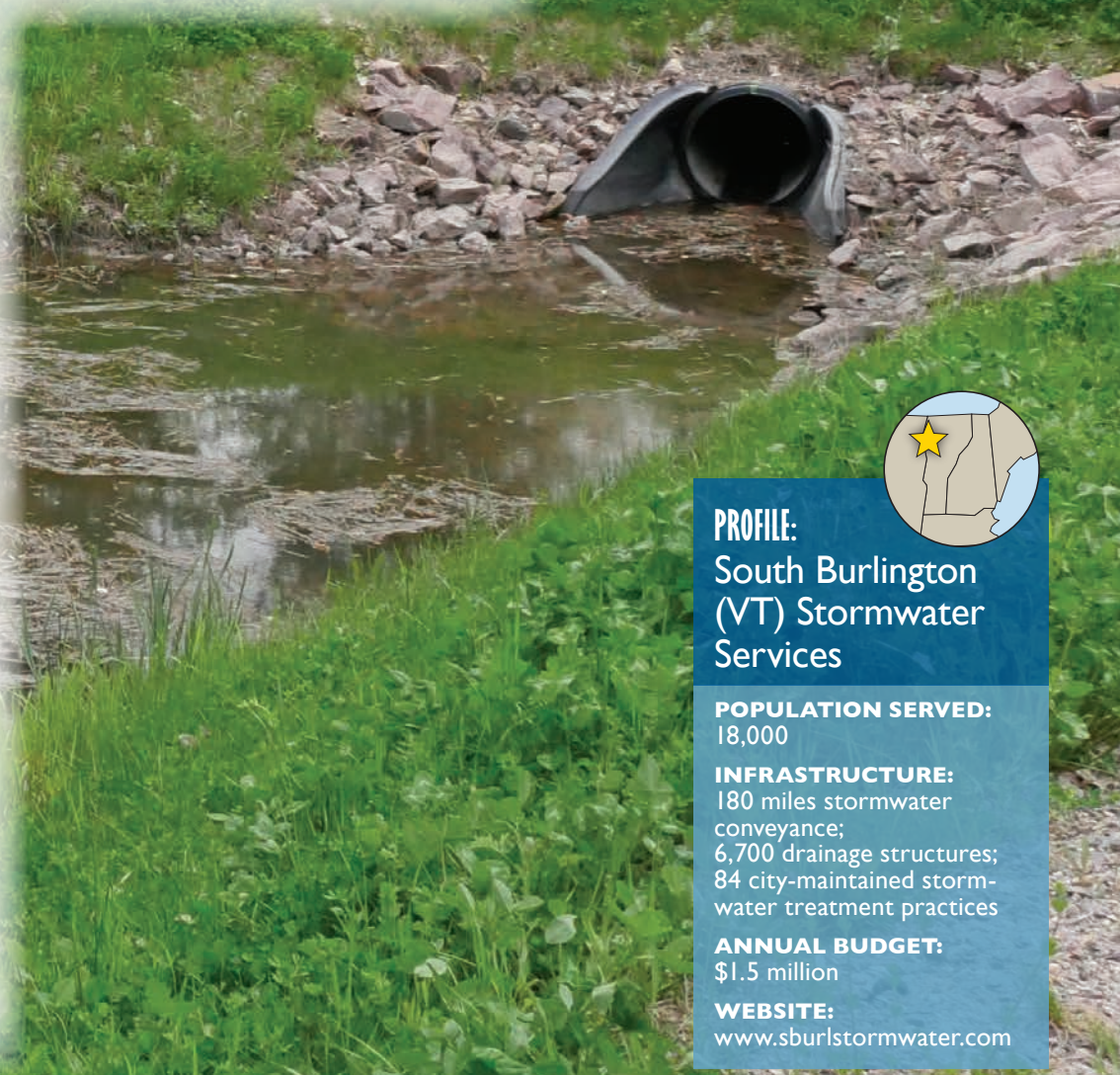
As it is with the establishment of anything new, public outreach was imperative.

"There were a lot of meetings and plenty of discussion. People are always going to have a certain amount of pushback at the beginning of something new," Wheeler says. "That's why it's important to reach out to people and explain to them the 'why' — that correlation between impervious surface and generating stormwater. Then you still need to handle the calls you get as you roll out the first stormwater bills. Residents will say things like, 'Well, my house doesn't generate runoff,' or 'My runoff just flows into a wetland behind the house and disappears.' You just have to keep explaining. Make those connections for people."

Overall, South Burlington residents accepted the stormwater utility quickly. In addition to the public outreach, another factor that helped, Wheeler says, is South Burlington's prominent location on the shores of Lake Champlain.

> **"You just have to keep explaining. Make those connections for people."**
>
> **Dave Wheeler**

"Being next to the lake was a big motivation for South Burlington to act," Wheeler says. "The residents truly care about the lake. It provides great recreational opportunities, it's the source of our drinking water, and there are stunning



PROFILE:
South Burlington (VT) Stormwater Services

POPULATION SERVED:
18,000

INFRASTRUCTURE:
180 miles stormwater conveyance;
6,700 drainage structures;
84 city-maintained stormwater treatment practices

ANNUAL BUDGET:
$1.5 million

WEBSITE:
www.sburlstormwater.com

KEEPING CHLORIDE UNDER CONTROL

In the effort to improve the health of area waterways, South Burlington Stormwater Services has had a lot of success in reducing phosphorus levels. But when it comes to mitigating the impact of stormwater, there are a lot of factors that need greater attention. One growing concern, says Dave Wheeler, stormwater superintendent, is chloride from the use of road salt.

"Looking ahead, one of the things that we'll probably have to deal with in a bigger way is chloride. It's really difficult to pull salt out of stormwater," he says. "You can't really modify stormwater treatment practices like ponds to reduce chloride. You can infiltrate it into the ground, but that's not always an option. The best option is just to minimize its use."

As receptive as the South Burlington community has been to stormwater issues, the chloride problem is perhaps something that will need more public outreach work in the future.

"I think it's one of the things that we'll have to hit a little bit harder on messaging," Wheeler says. "If you see leftover salt after all the snow has melted, then it's more than what was needed. I've seen some good materials put out by other states, aimed at getting residents and commercial property owners to minimize salt on sidewalks, driveways and parking lots."

South Burlington's road crew has been doing its part. All of the city's plow trucks have calibrated systems on board to regulate the flow of salt from the trucks. They also have GPS units and the city uses that to track salt use per mile per driver. In the winter of 2008, the city began purchasing equipment that allows the use of a liquid chloride salt product. Treating road salt with a liquid chloride mixture prior to spreading reduces the amount of salt that bounces off the road. It also allows the salt to work more effectively at lower temperatures. All these practices reduce the total amount of salt needed to achieve the intended results.

"We make it a goal to minimize salt use — still enough to have safe roads but reduce waste," Wheeler says. "The old-school method was you fill the truck up with salt and don't come back until it's empty. We've moved past that culture and instead use only what's necessary."

Members of the South Burlington crew clean a catch basin with a Vactor 2100 jet/vac truck.

sunset views of the lake and the Adirondacks from where we are located. I think the fact that residents can see the lake from parts of the city kind of drives the point home about stormwater."

Peak flows and phosphorus

Since establishing the stormwater utility, South Burlington Stormwater Services has been busy with projects. To date, utility fees have produced $25 million, which has been leveraged to obtain another $5 million from state and federal grants. Some of those funds have gone toward tackling a list of 150 different projects that are part of flow restoration plans for each stormwater-impaired watershed, aimed at knocking down peak flows for one-year storm events (2 inches of rain in a 24-hour period). The deadline on those projects is 2032.

> **"I think trying to be consistent on a regional basis is important."**
>
> **Dave Wheeler**

"We have a prioritization ranking," Wheeler says. "We started with projects that were the low-hanging fruit. It made sense to get projects that were the most cost-effective and would have the greatest water quality benefit in the ground first."

Phosphorus control is also a significant component of the various projects as South Burlington has a phosphorus TMDL to Lake Champlain it must comply with. Wheeler cites one project from recent years as an example of the type of work that South Burlington has been targeting in order to achieve the desired results.

The local airport had received money from the FAA to conduct a home buyout program, which has removed about 145 homes from the area surrounding the airport in order to address noise issues from the planes. On Picard Circle, all of the existing houses were removed. So the city was left with a short road and cul de sac with no homes to serve.

"It was right next to a stream. And there was a large drainage area discharging to the stream untreated," Wheeler says. "We routed the drainage into the cul de sac area. We removed

(continued)

Dave Wheeler launches an Envirosight Rovver X camera into a catch basin for a storm sewer inspection.

> **"These watersheds cross town boundaries, so when we develop flow restoration plans, we have to work together."**
>
> **Dave Wheeler**

Wheeler sets up in the camera van for a storm sewer inspection.

the road and utilities and put in a large underground chamber system to infiltrate the runoff."

The project reduced peak flows from a one-year storm event by 87%. On top of that, it reduced the amount of phosphorus going to Lake Champlain by 33 kg per year, 25% of South Burlington's required reduction.

"That provided us with a huge credit in our phosphorus TMDL for Lake Champlain," Wheeler says. "We just submitted our draft phosphorus control plan to the state, which showed we were exceeding our required phosphorus reduction by 32%."

Collaboration is key

For municipalities looking to improve their stormwater management game, Wheeler suggests first taking a look at what neighboring communities are doing.

"I think trying to be consistent on a regional basis is important," he says. "It can allow residents to better understand what their utility bill is all about or allow engineers to better understand what the local stormwater design requirements are."

South Burlington officials coordinate with those from surrounding communities on the public outreach front. In 2003, the MS4 communities in the region formed the Regional Stormwater Education Program to meet the public outreach requirements of the MS4 permit. In 2011, they formed a group called the Chittenden County Stream Team to meet the public participation requirements of the permit. In 2017, the two groups merged and rebranded under the Rethink Runoff program, which runs the website www.rethinkrunoff.org.

"It allows us to put out consistent messaging through digital advertising and radio ads," Wheeler says. "That way people aren't hearing one message from Burlington, a different message from South Burlington, etc. There's both a cost savings and a unified message, which has been good."

The success of the outreach efforts has been proven through periodic surveys.

"The survey is set up almost like a test. We ask residents general questions about runoff and other stormwater concepts," Wheeler says. "In the beginning, people didn't have the greatest technical understanding of the issues, but as time went on and we continued our messaging, there was a definite improvement in general awareness and understanding. In the most recent survey we conducted around behavior, we found that 83% of respondents report that they pick up pet waste compared to 62% in 2013. Additionally, only 21% use fertilizers on their lawn, which is down from 50% in 2013."

Beyond the shared public outreach efforts, South Burlington also frequently communicates with its neighboring communities so that all the stormwater programs are aware of what kind of work is happening in the larger region.

"These watersheds cross town boundaries, so when we develop flow restoration plans, we have to work together," Wheeler says. "Collaboration is very important."

A busy future

South Burlington Stormwater Services will be extremely active in the coming years. As much as has been accomplished in the past 15 years, aided by the stormwater utility, a significant amount of work lies ahead. For a lot of it, South Burlington will be helping private property owners with their stormwater management responsibilities. Wheeler says that until late last year the state legislature had essentially been allowing property owners with expired stormwater permits to defer. But now those permit holders are finally on a deadline to do the necessary stormwater upgrades.

"We've known this was coming for the past 15 years, so we've been working proactively with neighborhoods to upgrade their systems," Wheeler says.

There is also now a state mandate requiring stormwater treatment for any property with 3 acres or more of impervious surface, even if that property wasn't previously required to obtain a stormwater permit. They're no longer grandfathered in.

"That was an unfunded mandate by the legislature, and it looks like the state is now going to direct money from American Rescue Plan Act funds to help that effort," Wheeler says. "It could be a busy couple of years because that money has to be spent by 2024."

The amount of work left to do is seemingly endless, but South Burlington has also made considerable progress in managing its stormwater since first deciding to confront the issue.

"We're definitely in a much better place now than 15 years ago," Wheeler says. "The public awareness is there. I would say our community is very knowledgeable about stormwater just based on various interactions I've had with residents. We've installed a lot of stormwater treatment practices. It's hard because people see the money being spent, and they want to see the lake clean with no more algae blooms. That's going to take more time, but what we've done so far is pretty significant." ✦

THE SUPPLY SIDE

NAME:
Michael Caputi

JOB TITLE:
President

YEARS IN THE INDUSTRY:
30

YEARS WITH COMPANY:
20

A FORMULA FOR PROTECTING INFRASTRUCTURE

Epoxytec focuses on developing solutions to rehabilitate water and wastewater infrastructure

By Luke Laggis

Epoxytec has been in the water and wastewater industry for 30 years. As a manufacturer of restoration compounds, epoxies and protective coatings, the company has played a part in countless infrastructure protection and rehabilitation projects.

Today, the company's focus is on developing products and systems to repair, rehabilitate, coat and line wastewater and water infrastructure, while protecting structural assets from hydrogen sulfide and eliminating inflow and infiltration. Epoxytec prides itself on providing customized services and programs to combat corrosion, abrasion, chemical attack and other threats. The company performs inspections and helps prescribe specific protective lining and rehabilitative solutions for water and wastewater treatment plants, water distribution, sanitary sewer collections systems, manholes and lift stations.

Epoxytec President Michael Caputi

Founded by Joe Caputi, the company's history demonstrates experience, resilience and drive for excellence in the protective coating industry. As an Italian immigrant living in New York, Joe began his career as an independent field technician in 1973. He mastered the art of selling, which combined with his business acumen and knowledge of protective coatings formed a recipe for success. He founded Epoxytec in 1991, and as various industries expanded, so did his product line. Joe's son Michael Caputi joined the company in 2001 and helped drive the company's growth. Today he serves as company president.

> **At Epoxytec, our formulation and R&D team only focuses on water and wastewater, and therefore all the testing and design of product is based on these conditions.**
>
> **Michael Caputi**

Municipal Sewer & Water recently spoke with Michael about the company's past, present and future.

***MSW:* How do you see the sewer and water infrastructure rehabilitation industry evolving?**

Caputi: During the last few decades, we've seen the growth of innovation. Cementitious repair compounds and lining materials are improving, with modifications to incorporate enhanced curing mechanisms and improved corrosion resistance using polymers — incorporating epoxy and other polymers with cements for example.

Other advancements have been the resin and reinforcement systems of the liners themselves. We're noticing a decline in engineers specifying thinner, multicoat traditional epoxy coatings; instead, they're selecting higher-build, higher-strength, reinforced 100% solids systems to accommodate many other forces that are at play in water and wastewater environments, especially when confronted with aged and highly fatigued infrastructure. In fact, we've noticed competitors transitioning from thinner-mil coatings, to higher-build, higher-strength epoxy or polymer lining solutions of which many offer enough strength to fit structural considerations with thickness calculations. Formulators are keeping busy as an incredible amount of material science and polymerization techniques are available today for R&D.

In recent years, we've been working with engineers who specify these advanced systems with the understanding that although possibly slightly higher in cost at the beginning, over the long term, the cost savings are extended and realized with higher performance due to extended life cycles. This is a terrific trend.

***MSW:* What kind of solutions and capabilities does Epoxytec provide municipal utilities?**

Caputi: Epoxytec provides a variety of rehabilitative and lining solutions. Epoxytec focuses on applied, immersion rehab and lining specific to the water and wastewater industry by developing a portfolio of product solutions to protect against H_2S and seal against I&I — products to enhance structures and protect them long-term. This is done by screening and certifying contractors and assisting engineers and utilities with proper product selection based on specific conditions. Doing this correctly offers the owner a well-drafted specification and plan, with warranty inclusion for quality assurance.

***MSW:* Can you provide some insight on the company's product development process?**

Caputi: Epoxytec launches R&D projects mainly due to market demand and customer feedback. It is a team effort, first led by field technicians who intimately understand the need for product deliverables from a contractor's perspective — material handling, usability, shelf-life considerations, flow characteristics, sag resistance, gel times and many other variables. This stage is important because before it goes to the formulator/chemist, our

field services team provides parameters and advocates for properties that chemists may not always consider. Many times, we may involve our preferred contractors to be a part of this stage and help with targeting properties and characteristics that would be beneficial in the field. In addition, surface forgiveness, surface acceptance, moisture tolerance and other properties are all taken into consideration.

Then the chemist goes to work figuring out the resin system, curing agents and the plethora of reinforcing agents, modifiers, additives and fillers that meet the properties requested. Once a version is completed, prototyping and testing begins. This includes mechanical strength testing and other property-specific testing. From there, revision continues until the balance of all properties is met. Third-party testing ensues, and compliance/regulatory reviews and authoring takes place until finally a batch ticket is completed, and a marketing campaign begins.

***MSW:* How has your product line evolved to meet the needs of utilities with aging infrastructure and limited budgets?**

Caputi: This is where we believe Epoxytec excels. Epoxytec has been transitioning its core product line from thinner traditional coatings to innovative ultra-high-build applied FRP-grade coatings that are specifically designed to bridge aging infrastructure using high-build applied and bonded lining often times at 125-250 mils. These more sophisticated applied lining products, what Epoxytec calls its CPP Series, are also enhanced to be applied direct-to-concrete, which saves time and money.

***MSW:* What differentiates your products from the competition?**

Caputi: Our observation is that many of our competitors formulate with a variety of industries in mind, attempting to design a coating to not only fit water and wastewater, but also other industries like oil and gas, marine, etc. Although convenient, oftentimes subtle properties needed for a product that may fare better on steel in another industry, for example, lack some of the subtle characteristics that allow it to perform, bond and survive long-term in the water and wastewater environment. At Epoxytec, our formulation and R&D team only focuses on water and wastewater, and therefore all the testing and design of product is based on these conditions. This allows us a competitive edge when requiring performance with specific tolerance and bonding capability that exists in humid and acidic environments.

Furthermore, it is common to see competitors with a single solution. Based on various conditions, Epoxytec would argue that there is a place for advanced-polymer cements, 100% solid coatings, and ultra-high build structural-grade applied lining systems depending on the needs, conditions and expectations of the customer. We offer each solution to fit the need.

Epoxytec acknowledges that each industry has its own unique needs and that's why our MCOR brand came to existence. Epoxytec created its MCOR brand to meet the more specialized needs of other industries, leaving Epoxytec to focus specifically on the needs of the water and wastewater industry. By separating the two, it has allowed the R&D focus to stay specific to each brand's needs.

***MSW:* Can the average municipal utility use your products and do the work in-house?**

Caputi: Yes. In fact, Epoxytec runs a comprehensive DIY train-

Epoxytec has been transitioning its core product line from thinner traditional coatings to innovative ultra-high-build applied FRP-grade coatings.

Michael Caputi

Epoxytec provides a variety of rehabilitative and lining solutions, focusing on applied, immersion rehab and lining products that protect against H_2S and seal against I&I.

A before-and-after look at the results of lining a pipe with Epoxytec.

ing program to help municipalities self-perform. The program with Epoxytec is carefully designed, as we supply products that contain no VOCs, and get started without requiring expensive equipment or complexity. A small crew with mixing drills, trowels and/or rollers can get started with basic manhole or lift station rehab and lining. If the crew wants higher output, for example, to carry over to plant structures, then they'd advance training to learn to spray ultra-high-build lining systems with our help and our spray vendor certification. It's a great program, and many municipalities have self-performed, typically sticking to easy-to-use, forgiving and 100% solids (no VOCs) manhole or lift station lining from our DIY program.

MSW: What sort of training and support do you offer municipalities?

Caputi: If you enroll in the Epoxytec DIY program, on-location training and support is conducted in a classroom and field demo setting with trainers and material on hand. Epoxytec takes the crew through material handling, surface preparation requirements, repair and resurfacing, and applied coating/lining. This typically involves waterblasting and troweling at first for smaller projects or lower output/less frequent mobilizations. Spraying is an option for high output needs; we'd then invite a spray vendor for a course on that equipment. This too would be a live demonstration and training.

MSW: What's on the horizon?

Caputi: Our structural, applied FRP lining portfolio, the CPP Series, currently consists of four versions: CPP trowel-grade for water and wastewater lining; CPP Sprayliner designed for large-wall wastewater interior lining; CPP Sprayliner MH for underground infrastructure lining, such as manholes, pipe and lift stations; and CPP Sprayliner 61, designed for potable water lining.

Epoxytec is looking to launch a fifth version that will be designed with novolac and polysulfide to have a semi-rigid, slightly flexible, high-chemical-resistance version in the lineup for extreme chemical resistance needs, still with high build in mind at 125–250 mils. Currently, there are similar solutions within our MCOR brand. ✦

EXERCISING PROPER PIPE RESTRAINT

There are important factors to consider regarding when and how to install pipe restraint systems

By Cristi Bruns

Pipe restraints in water and wastewater systems ensure that pipe joints stay connected and that systems keep working properly, but there are many factors that determine when and how restraint systems should be used.

Restraint of inline piping is widely used and has become standard procedure among many city and project engineers. Mechanical pipe connections such as 45s, 90s, end caps and hydrant connections are common points of restraint, as are connections in lift stations and treatment plants.

Although engineers typically decide when and how to restrain pipes, utility managers should be part of the process.

Instead of using restraints for specific applications, some engineers use them throughout force main systems. However, adding restraints in this way can increase project costs significantly. There are standards to follow and techniques to apply for restraining pipe connections in specific conditions and environments.

Restraining criteria

Although engineers typically decide when and how to restrain pipes, utility managers should be part of the process, since it is up to them to make sure the system works properly and to make repairs once it is completed. The first things to examine are factors that may pose a risk of pipe movement and separation.

In a pressurized buried pipeline such as a wastewater force main, axial-thrust forces act on the pipe based on changes in fluid velocity, pipe size, demand and pipeline direction. This generally happens at fittings such as plugs, caps, valves, tees, bends or reducers. Such hot spots categorically need to be restrained.

Earthquakes and ground movement can cause connection failures, beam or shear breaks, and cracks along the length of a pipe. A region's geographic trends greatly affect how much the ground moves. Some regions regularly see movement, while others are relatively stable.

California, for example, experiences dramatic earthquakes, and it is no surprise that a high level of restraint is used on sewer pipes in many areas along the West Coast. Other areas on major fault lines incur ground movement that, although less dramatic, can still stress pipelines.

The New Madrid Fault Line is notable since it affects more than 15 million people in Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee. Along the Ramapo Fault, which runs about 70 miles through New Jersey, New York and Pennsylvania, ground movement has stressed piping systems even without full-blown earthquakes. In addition, scientists have warned of earthquake risk from hydraulic fracturing operations.

Ground movement can also be caused by seasonal weather changes, such as freeze-thaw cycles in winter and spring. Ground movement also can accompany extreme weather changes.

The HYMAX GRIP is a coupling restraint that can be used on several types of metal and plastic pipes. It offers continuous dynamic deflection so that the connecting pipes can flex within the coupling.

The ground can also affect pipes in various other ways. The amount of ledge or rock in the ground can harm piping. In the presence of a high level of ledge, even slight movements caused by traffic or weather can cause piping to break. Swampy areas with moist and spongy ground that moves easily can also stress pipes.

Environments that lead to pipe uncoupling include tidal areas, bridge crossings and pipes running underwater. For these circumstances, it is best to consult with engineers on how to evaluate the risks.

Restraining techniques

Several techniques are available for restraining pipes, each with advantages and disadvantages in cost, time and labor.

Until relatively recently, rodding was the most-used restraining technique. Thrust rods are usually all-thread rods with washers and bolts that dog-ear into connections for restraint. Some installers even use rodding for flanged connections. The main drawback of rodding is that it is costly in time and materials.

Thrust blocks are another option. These engineered concrete blocks are placed at either end of a line of pipes or beside a joint to prevent pipes from pulling out. Whereas rodding strings pipes together so they stay connected, thrust blocks provide a solid mooring at the end or at a bend to prevent movement. Thrust blocks are typically made of concrete, but makeshift versions are made from steel posts, pressure-treated wood posts or bags of ready-made concrete.

Several techniques are available for restraining pipes, each with advantages and disadvantages in cost, time and labor.

The materials are inexpensive, but it takes time to construct the blocks, pour the concrete, and wait for it to cure. The wastewater system must be turned off to ensure that concrete cures properly before connecting the pipe. Additional costs are incurred in the time it takes to complete the job. In some cases, there is not enough space for thrust blocks, such as where utility lines are close by.

Concrete can also be used to restrain pipes by pouring it on the connection itself. While this can be effective, repairing the connection in the future can be tricky. At the very least, a pipe must be surrounded by plastic before the concrete is poured — otherwise the entire pipe and connection must be cut out and replaced when repairs are needed.

Mechanical restraints and sleeves involve connecting a sleeve using multiple lugs. Several such products are on the market, and they are effective for joining pipes. The process is time-consuming, however, and the larger the mechanical restraint device, the more bolts there are to tighten. This technique is particularly effective for large-diameter pipes that need significant reinforcement to stay connected.

The biggest drawback to mechanical restraint and sleeves is their high labor cost; the material cost of the lugs is also substantial. In addition, when using a product with lugs, the gripping mechanism creates stress points on the pipe. It can also take crews a long time to connect the lugs to the sleeves and so ensure that the lugs are tightened properly.

Coupling-restraint products use a mechanism to grip the pipes to restrain them. They are effective and relatively low-cost. Offered in a wide range of diameters, coupling restraints can be used on several types of metal and plastic pipe where utility lines either cross or run parallel to water and wastewater pipes. These close pipe-to-pipe settings make it difficult or impossible to install thrust blocks and rodding.

The coupling restraints also offer continuous dynamic deflection, meaning the pipe can flex within the coupling to maintain a strong connection while preventing pipe pullout. This can substantially reduce breaks, given that ground movement is a key cause for pipes pulling out.

The restraint's chain of gripping teeth applies counter-pressure that prevents axial pipe motion. In addition, a progressive hydraulically assisted gasket self-inflates using existing water pressure. As water pressure rises in the pipe, water enters the gasket, which self-inflates and allows for dynamic deflection of the pipes while maintaining a secure seal.

Some circumstances require pipes to be restrained, including fire hydrants. The HYMAX GRIP coupling uses a chain of gripping teeth to apply counter pressure to prevent axial pipe motion.

The right approach

Some circumstances require pipes to be restrained. These include wastewater lift stations, wells, piping in water and wastewater treatment plants, and industrial applications that involve hydrants and valves. In all these situations, water flow can fluctuate and create stresses in daily use.

The question of whether to restrain does not always have an obvious answer. Restraint makes the system stronger, but if the risk is relatively small, it might not be worth the cost. It is worthwhile to evaluate the areas of the system that need to be restrained and which restraint technique will be the most appropriate.

By looking at all factors, engineers and system operators can determine the costs and benefits of each solution before deciding what kind of restraint is optimal. ✦

Cristi Bruns is the HYMAX training and technical field support manager for Mueller Water Products.

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STUDYING EMISSION SAFETY

Commitment to research and recommendations continues with third phase of CIPP study

By Sheila Joy

NASSCO continues to fund important third-party research on the safety of emissions from the cured-in-place pipe process when using styrenated resin. To date, there have been three phases of NASSCO-funded research, with each phase providing findings, valuable information, recommended safety protocols and direction for additional research and next steps.

Phase 1

Previously published reports questioned the safety of emissions from the CIPP process when using styrenated resin. In response, NASSCO made the decision to fund research to validate these claims. After submittal of an RFP and exhaustive screening of potential research labs and universities, NASSCO selected the Center for Underground Infrastructure Research and Education (CUIRE) to fully evaluate all previously published reports questioning the safety of CIPP emissions. The CUIRE report found previously published reports to be nonconclusive.

In response, NASSCO made the decision to fund research to validate these claims.

Phase 2

Given CUIRE's findings and the nonconclusive nature of previously published reports, NASSCO wanted to dig deeper with an independent study. Once again, the process of RFP solicitation and submittal began and this time the Trenchless Technology Center at Louisiana Tech University (TTC) was selected. The nearly two-year research project, including field studies in a variety of geographic locations (testing different CIPP dimensions, conditions and worker exposure), resulted in specific recommendations for refrigeration/storage units and steam cure emission stacks.

CIPP storage units:

- For those immediately entering the liner transport truck or storage unit, active air monitoring should be utilized at the initial opening of the truck or storage unit door to ensure a safe work environment.
- At the initial opening of the CIPP refrigerated truck or storage unit, suitable PPE should be worn by those immediately entering the truck or storage unit.

Emission stacks:

- A perimeter of 15 feet should be implemented around exhaust manholes and emission stacks during curing. This perimeter could be entered for short amounts of time not exceeding five minutes. If this area must be entered for longer than five minutes, suitable PPE should be used.
- Emission stacks should be a minimum of 6 feet in height to enhance the dispersion of emissions and lessen the likelihood of workers entering the perimeter from having to cross into the plume even when wearing PPE.

Phase 3

Per TTC's Phase 2 recommendation, an additional study is currently in progress to focus on task-oriented worker exposure to emissions relative to the CIPP storage unit. Phase 3 will include testing in two steps:

1. The styrene emissions generated inside and around a "test" CIPP storage unit to develop a baseline for monitoring in actual CIPP storage units.
2. The styrene emissions generated inside and around actual CIPP storage units based upon the findings of step one, while considering CIPP liner sizes, resin weight, liner stacking and liner coatings.

The results of this research will be evaluated and compared to other studies running parallel with the NASSCO Phase 3 study. The data generated from these studies will be used to determine if NASSCO should conduct further testing (e.g. Phase 4) beyond the items described above.

As NASSCO continues its mission to set standards for the assessment, maintenance and rehabilitation of underground infrastructure, safety will remain its No. 1 value. As NASSCO's top priority, safety should also be of critical concern to all contractors within our industry.

As a 501(c)(6) trade association whose responsibility is to represent and protect the entire industry, NASSCO will do everything within its means to ensure no stone is left unturned. For full research reports, the latest on CIPP emission studies, styrene safety and more, visit www.nassco.org. ✦

CHEMICAL AND MECHANICAL ROOT CONTROL

By Craig Mandli

Cable Machines

1. Duracable DM175

Duracable's 3/4 hp **DM175** comes equipped with a 100-foot-long 11/16-inch DuraFlex cable and a churn-through-anything heavy mainline blade. It demolishes roots and heavy grease buildup with a 10-1 gearbox ratio at 175 rpm. It includes a power cable feed and return, foot-pedal operation, stair climbers and well-planned transport features. **800-848-3375; www.duracable.com.**

2. Electric Eel Model C

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

3. Gorlitz Sewer & Drain Model GO 62HD Series

The **Model GO 62HD Series** machine from **Gorlitz Sewer & Drain** is a mirror image of the larger Model GO 68HD. Its smaller size, low profile and lighter weight make it suitable for getting into tight spaces or through narrow doorways and basements. It is available in a variety of reel and/or drum combinations. With a quick turn of an Allen wrench, the machine can be broken down into separate frame and reel components for easy transportation or adding an additional cable reel for extended reach. It includes a ball-bearing 1/3 hp reversible motor and aluminum gearbox that develops approximately 100 pounds of torque and cleans sewer lines and drainlines from 2 to 4 inches in diameter up to 200 feet long. The machine comes equipped with a standard hollow-core 5/8-inch-diameter cable with slip-joint connectors. An electric foot switch is provided for safe operation of the machine. **877-446-7548; www.gorlitz.com.**

4. MyTana M98

MyTana's M98 mainline cable machine easily handles 300 to 400 feet of cable to power through roots and blockages in 3- to 10-inch lines. It is driven by a 136cc LCT gas engine, and includes a cast aluminum gearbox with hardened steel shafts and gears. Adding an extra section of cable to push farther is quick and easy, and the drive spring design means no tools are needed to detach or reattach a reel. An optional 1/2 hp electric motor with foot-pedal control provides dual power for outdoor and indoor operation. Safety features include a kill switch and low-oil engine shutoff. The machine ships with 100 or 125 feet of high-quality, 3/4-inch cable, an autofeed-retriever, a 6-foot steel cable guide and a full set of blades. **800-328-8170; www.mytana.com.**

5. Picote Solutions Mini Cleaner

The **Mini Cleaner** from **Picote Solutions** is a high-speed pipeline cleaning system aimed at the domestic drainage and plumbing markets. The unit has a flexible two-part shaft with a rotating inner core where the cleaning heads are attached. The stationary outer casing ensures the operator's hands do not make contact with rotating parts during the cleaning operation, improving safety and flexibility. The outer casing is durable and also flame, abrasion and chemical resistant with a high continuous service temperature. The whole unit weighs in at 58 pounds so it can be easily transported. It also has the flexibility to handle multiple 90-degree bends, even in smaller-diameter pipes. **219-440-1404; www.picotesolutions.com.**

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6. Pipe Lining Supply Renssi cable machines

Tree root intrusions play a primary role in driving the drain cleaning industry. The complete line of **Renssi** machines, cables and attachable tools distributed by **Pipe Lining Supply** can save money by offering longer-lasting blades and perfectly cleaned out host pipes. The machines are efficient and versatile, with the cable turning at 3,500 rpm versus 250 rpm found in traditional equipment. A variety of machines provide solutions for roots anywhere from 50 to 118 feet down the line. **888-354-6464; www.pipeliningsupply.com.**

7. Spartan Tool Model 300

The **Model 300** from **Spartan Tool** has a compact design suitable for tight spaces and narrow doorways. Its enclosed inner and outer steel drums keep messes contained. It can be combined with up to 107 feet of Spartan Tool's Magnum cable for increased power and performance in a compact machine. **800-435-3866; www.spartantool.com.**

Cutting Nozzles

8. Arthur Products Cnt-R-KUT2 EMAX2

The **Cnt-r-KUT2 EMAX 2** from **Arthur Products** is an interchangeable cutter nozzle to clear roots and debris. The centering devices can be modified for custom applications. They help operators tackle tough jobs, including when using drain cleaning nozzles in those tight spaces in damaged sewers. Technicians can expect to achieve maximum cleaning spread in drains and other pipes. **800-322-0510; www.arthurproducts.com.**

9. Enz USA Cutting Ball

The water-driven **Cutting Ball** nozzle from **Enz USA** is now available in a 3-inch model, complementing the 4-inch model in multiple pipe cleaning applications. The 4-inch nozzle includes an aggressive carbide-coated head designed to remove the hardest scale in pipes. The nozzle moves easily around curves in 3- to 6-inch PE, steel, or concrete pipes while safely removing roots and mineral deposits, resulting in no damage to the pipe. The cutting ball works without impact but has the ability to switch to a vibrating nozzle. It is equipped with a hard metal front blade for pipes that are more than 50% clogged. The side blades are self-sharpening and maintain their sharpness over their entire service life. The cutting ball operates with controlled rotation speed and is capable of running on recycled water. It is leakage free. **877-369-8721; www.enz.com.**

10. Hydra-Flex Reaper

The **Reaper** rotating jetting nozzle from **Hydra-Flex** has a rotating front jet that provides a 0-degree, straight water stream that blasts at up to 4,000 psi while rotating. Optimized stream quality results in greater impingement, allowing the technician to use one tool for various applications, including cutting, cleaning and removal. Its four rear jets create a 20-degree angle for maximum thrusting and pulling power. This heavy-duty, high-impact nozzle is constructed with a stainless steel housing and tungsten carbide wear surfaces to withstand harsh environments and provide long life. **952-808-3640; www.hydraflexinc.com.**

Jetters

11. American Jetter 51T Series 2040

The **51T Series 2040** trailer jetter from **American Jetter** offers 20 gpm at 4,000 psi in cold- and hot-water models. Consistent power is provided by dual Kohler electronic fuel injection gasoline engines that create 76 hp, saving up to 20% fuel, while avoiding problems associated with carbureted engines. Low water shutoff prevents pump damage if the optional 330- to 800-gallon tanks run low. Hose reel speed control allows for precise cleaning in both directions. A long-range wireless remote option allows for water on/off, engine shutdown and hose reel control. The heavy-duty square tubing trailer offers standard electric brakes on both axles. **866-944-3569; www.americanjetter.com.**

12. Cam Spray CV Series

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

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13. GapVax GJet

The **GJet** truck jetter from **GapVax** offers 500- to 3,000-gallon stainless steel water tank options and 40 to 100 gpm water pump options along with a front-mounted hose reel, various toolbox options, room for a vice or crane, and 10-foot tube trays. **888-442-7829; www.gapvax.com.**

14. General Pipe Cleaners JM-1000 Mini-Jet

The combination of **General Pipe Cleaners'** portable **JM-1000 Mini-Jet** and high-performance stainless steel braid jet hose offers drain cleaning power in a small package. The jetter is available with stainless steel braid hoses with Teflon core in a variety of lengths. The durable hose also works well with the big brother to the JM-1000, the powerful JM-1450 electric jet. It can be used to clear grease, sand and ice from small lines, sinks, and laundry drains with high-pressure, wall-to-wall water spray. It packs 1,500 psi of cleaning power in a compact package, yet weighs only 23 pounds. Its rugged diamond-plate metal case safely shields the pump and motor assembly from common job site abuse. The stainless steel braid hose design smoothly slides the jet nozzle down 1 1/2- to 3-inch drainlines, and more easily navigates tight bends. The 3/16-inch Teflon core also reduces flow resistance, further improving small line cleaning power. **800-245-6200; www.drainbrain.com.**

15. HotJet USA HotJet II

The **HotJet USA HotJet II** trailer-mounted jetter is now available with hydraulic hose reels and 37 hp Vanguard fuel-injection engine. Operating with hot or cold water, it runs 12 gpm at 4,000 psi, cleaning 2- to 12-inch lines. The fuel-injected unit is a good alternative between the small output and larger output machines. It comes ready to operate upon delivery with a 330-gallon water tank, detergent tanks and full power-washing capabilities for cleaning, disinfecting and sanitizing after the job. It is mounted on a 7,000-pound-rated tandem-axle trailer (single-axle units are also available). It has a rear control panel and remote control, two HD diamond plate side toolboxes and a front toolbox. **800-624-8186; www.hotjetusa.com.**

16. Sewer Equipment Model 800 Series IV

The **Model 800 Series IV** truck jet from **Sewer Equipment** has fully baffled Duraprolene water tanks, an eco-friendly operating system, 190-degree rotation of the hose reel and an insulated, heated enclosure housing all water components. This all-weather truck's rear door closes fully while the hose reel is extended, keeping heat inside the enclosure where water components are stored. It offers wintertime recirculation of the water system at highway speeds, a retractable canopy for sun and inclement weather, and a boiler to provide onboard hot water for cold-weather applications. The dual reel configuration touts two hose reels in one location, with the secondary reel allowing for the addition of a televising jet pod or small-line sewer hose, giving operators the ability to perform multiple applications using one truck. It includes ergonomic controls, an operator station situated between hose reels in a dual hose reel configuration and a secondary operator's station at midship. **888-477-7611; www.sewerequipment.com.**

17. Super Products SuperJet

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

18. Vac-Con Hot Shot

The **Hot Shot** high-pressure water jetting machine from **Vac-Con** is designed for removing stones, bottles, cans, grease, sludge and other debris from sanitary sewer and storm lines. Engineered for one-person operation, all high-pressure water and hose reel controls are located at the front of the machine for ease of operation and increased safety. Models are available with 1,000- and 1,600-gallon water tanks. Options include variable flow, articulating hose reel, polyethylene water tanks, 30 gpm at 3,000 psi water pump system, auxiliary engine or hydrostatic drive, cold-weather recirculation system, side-mounted toolboxes, air purge system, hose footage counter, arrow board, strobe lights, inspector cam, high-pressure spray bar, hose rewind guide, 600 psi handgun system with 25 feet of hose, and a selection of nozzles. **888-920-2945; www.vac-con.com.**

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Mechanical Root Cutters

19. PipeHunter Red Dawg Kraken

The **Red Dawg Kraken** series root cutter, distributed by **PipeHunter,** is very easy to set up, only requiring the loosening of three bolts. It can be set up with a roller chain, link chain or wire rope for pipes from 6 up to 16 inches. Operators can fix any issues that may arise with this system, meaning no more expensive rebuilds when too much rebar is encountered. The only components needing maintenance are the three primary water-cooled bearings. It offers a 40 to 85 gpm flow range, stainless steel and aluminum construction, simplified cutting method plates for easy changes, and a high-speed, low-torque drive design. **800-373-1318; www.pipehunter.com.**

20. Sewer Pro Shop Raptor and Viper

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

21. USB-USA Turbo Chain Cutter Series

The heavy-duty **Turbo Chain Cutter Series** from **USB-USA** continuously adjusts from 8 to 15 inches (Turbo S200) or 12 to 24 inches (Turbo S600) and easily fits into the pipe. Turbine technology powers the durable chain retainer on a robust body to remove roots, concrete, calcium deposits, hardened grease and tuberculation from sewer lines. They are designed to be aggressive on the hardest materials. They are robust and have double the amount of turbine-driving water jets as previous models, generating high cutting power. Easily adjust the cutter to within 1/16 inch by spinning the rear to make it larger or smaller. Internal 3D fluid mechanics in conjunction with one-piece ceramic nozzle inserts allow the cutter to be used with recycled or clean water. **844-285-5770; www.usb-usa.com.**

Root Chemicals

22. Duke's Root Control RazoRooter II

Duke's Root Control uses **RazoRooter II,** a thick, herbicide-laden foam with the consistency of shaving cream. Since effectively killing roots in sewer systems requires access to the entire line, Duke's crew inserts a hose from manhole to manhole. The hose releases and sprays the foam in all directions, allowing it to adhere to roots and penetrate through wye connections to kill roots even in lateral lines. The entire system is treated as the foam compresses against pipe surfaces and penetrates cracks, joints and connecting sewers. Roots are killed on contact inside and outside the pipe walls before they decay naturally and slough away, with regrowth delayed for two to three years. Trees and other aboveground vegetation are not harmed. **800-447-6687; www.dukes.com.**

23. Lenzyme Trap-Cleer foaming root control

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

24. RootX chemical root control

Chemical root control from **RootX** is a long-term solution to pipeline root intrusion. It stunts new root growth without damaging the pipe, clearing pipeline roots that can cause blockages and sanitary sewer overflows. The chemical won't harm water treatment systems and is registered with the U.S. Environmental Protection Agency for both sanitary and storm use (EPA Reg. No. 68464). Simplicity of application enables crews to perform root control on demand or as scheduled preventive maintenance. **800-844-4974; www.rootx.com.** ✦

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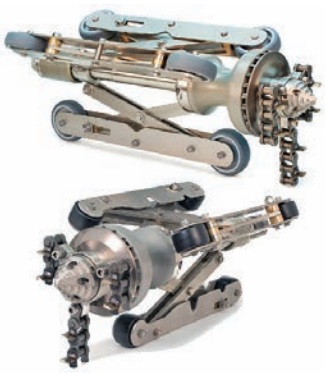

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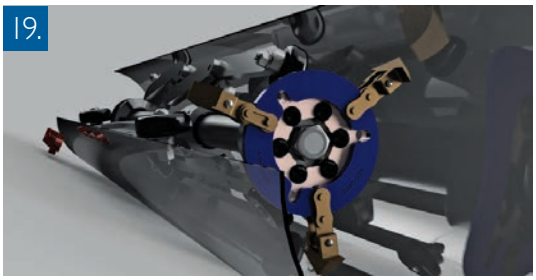

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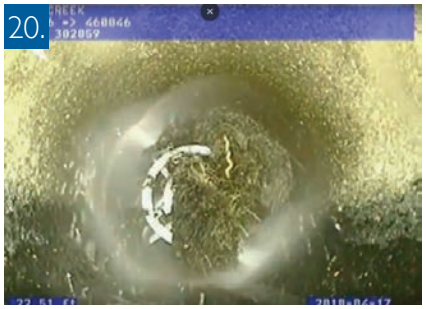

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CHEMICAL AND MECHANICAL ROOT CONTROL *By Craig Mandli*

Removing heavy root blockages in limited access environments

Problem:

A two-story building in Southern California was experiencing a backed-up line despite the efforts of a previous plumbing company to snake the line. Nicholas Krewson of San Diego Drain Krew found that the line was blocked by heavy root intrusions. To be positioned effectively, the hose would need to be run into the building from its roof. Adding further complexity to the situation, the roof could not be easily accessed by ladder, and the building was designed with back-to-back toilets. In order to prevent an emergency dig-up, the property needed a solution to resolve the blockage and restore flow without damaging the pipe walls.

Solution:

A 1/2-inch **Warthog Flexible SuperSpin** nozzle (WS-1/2) from **StoneAge** was used in conjunction with a water jetter to effectively clear the roots. Equipped with the nozzle and jetter hose, Krewson climbed to the roof of the two-story building to gain the access needed. First, the line was scoped with a camera to identify the extent of the root intrusions. As the hose was lowered 120 feet through the building via a roof vent, the side-to-side flexibility of the unit's inlet hose shortened its rigid length to more effectively navigate the limited access environment and remove the roots.

RESULT:

The nozzle cut through the roots blocking the line to restore flow without causing damage to the pipe walls. Resolving the root blockages enabled the property to complete installation of a set of two-way clean-outs for easy future maintenance, instead of doing an emergency dig-up. **866-795-1586; www.warthog-nozzles.com.** ✦

Product Spotlight

Trailer jetter offers power and reliability of larger truck unit

By Craig Mandli

Truck jetters are terrific tools for municipalities in need of heavy-duty jetting power. But sometimes, for a multitude of reasons, a trailer jetter is simply the better option.

GapVax believes that you shouldn't have to sacrifice quality and reliability in a trailer jetter, though, and has introduced the G7 to give customers an alternative to a full-size truck unit. According to the company, the jetter's "Fit and Finish" assembly prior to powder coating ensures maximum long-term durability in an "everyday jetter built to operate seven days a week."

The G7 jetter is built on a heavy-duty, contractor-grade NATM-certified trailer. Several engine choices including Cummins diesel are all certified and sized appropriately for the water pump combinations.

"This is a unit designed for routine maintenance and blockage removal," says Zack Shustrick, GapVax project engineer. "The G7 jetter is built for daily use. It can also be used for washdown needs, from lift stations to heavy-equipment cleaning."

The unit's hose reel is hydraulically powered with a direct-drive gearbox and variable-speed control. The hose reel offers a 3-foot (curbside) articulation from center of bearing, 180-degree rotation and a capacity of 800 feet of ¾-inch jetter hose. The polyethylene plastic water tank is available in 300-, 500-, 600- or 700-gallon capacities. The water pump is center fed for optimum performance. Another safety integration to note, according to Shustrick, is the precise control of water pressure and flow accomplished with the bypass valve. In addition, underbody water and hydraulic lines come standard in stainless steel for longevity. The control box is weather tight and lockable. The controller is interlocked with safety features that will show low fuel levels, low water and is capable of a complete engine shutdown in the event of an emergency.

"GapVax dealers and customers all had input in what they wanted to see in our jetter trailer," he says. "As with all GapVax units, our team focuses on ease of operation and maintenance for the end user and quality components that are readily available for minimal downtime. GapVax has been in the industry for over 40 years, and still stands by our 'built by the operator for the operator' mentality." **888-442-7829; www.gapvax.com.**

SPECIAL REPORT

Flomatic AIS-compliant valves

With an extensive offering of American iron and steel requirement-compliant valve products, Flomatic is dedicated to engineering and manufacturing lasting and reliable valves that are ready to perform and meet your ever-changing needs. Manufactured in the U.S., and available in a variety of materials and configurations, Flomatic offers many AIS-compliant valves, including check, automatic control, swing check, silent check, foot, ball check and more. No matter how complex your application is, Flomatic can help select the most efficient valve product for your next job. **800-833-2040; www.flomatic.com.**

FLIR T865 T-Series thermal camera

The T865 T-Series high-performance thermal camera from FLIR Systems is built for electrical condition and mechanical equipment inspection, and for use in research and development applications. The camera provides plus/minus 1.6 degrees F or plus/minus 1% temperature measurement accuracy, a wider temperature range between negative 40 to 248 degrees F, and more on-camera tools for improved analysis. The T865 offers versatility with portable and handheld fixed mount options for inside and outside work in harsh conditions, and multiple lens options to inspect objects both near and far. The available 6-degree telephoto lens provides the required magnification for those routinely inspecting the condition of small targets at a distance, such as overhead power lines. **866-477-3687; www.flir.com.**

Utilis MasterPlan for water utility management

MasterPlan from Utilis is an evolution of the technology used to find leaks underground using synthetic aperture radar sensors, and it provides actionable insights to utility asset management plans. The new MasterPlan algorithm assesses the deficiency of an entire pipe system using multiple SAR images taken months apart. The trained algorithm scores pipe segments based on observed non-surfacing leaks and provides a single GIS dataset of pipes scored from one to five (level of deficiency observed) for easy input into any GIS system or asset planning model. It uses actual — not predictive — measurement of non-surfacing pipe leaks. **858-382-7066; www.utiliscorp.com.**

Reign ReignAir valve monitoring solution

Reign's ReignAir provides an instant overview of a municipality's system to help prioritize maintenance and get ahead of issues before they get out of hand. ReignAir also gives insight into remote portions of a system that were previously inaccessible. Monitor almost any new or existing air release valve from a PC, tablet or smartphone 24/7. It provides instant notification of any leaks or pressure anomalies via text, phone call or email. Users also have access to live or historical pressure readings from the dashboard. A map will highlight any valve in need of attention. **833-467-3446; www.reignrmc.com.**

Mueller EZ-TAP drilling machine

Mueller Water Products' compact and lightweight EZ-TAP drilling machine is designed specifically for water taps and use with service saddles and corporation stops up to 300 psig working pressure. The new design makes service connections easier on mains with or without pressure. It can be hand operated using a standard socket or off-the-shelf cordless drill. The drilling machine is available in two kit options: the Machine Kit is designed for 3/4- and 1-inch corporation stops; and the Large Diameter Kit is designed for 1 1/4-, 1 1/2- and 2-inch corporation stops. **800-423-1323; www.muellerwaterproducts.com.** ✦

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see photos in color at www.mswmag.com

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POSITIONS AVAILABLE

GapVax, Inc., a nationally recognized manufacturing business, is seeking a talented, highly motivated individual to fill a full-time Sales Position in the Midwest (Iowa based preferred) region. GapVax is the leading manufacturer of industrial and municipal vacuum units and hydro-excavation units in the United States. We provide the most reliable, comprehensive, and efficient mobile vacuum units in the industrial and municipal markets. Specifications of the position are listed on our website, www.gapvax.com, click on the Now Hiring link in the left hand column. Send resumes to or betty@gapvax.com or 575 Central Avenue, Johnstown, PA 15902 (MBM)

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WORTH NOTING

PEOPLE/AWARDS

Terrence Simpkins was hired as the director of the Rockdale County (Georgia) Stormwater Management Department.

McMahon, a professional engineering and architectural firm, hired **Sara Altimimi** as a water/wastewater engineer at its Illinois office. Altimimi will focus her attention on supporting the planning and design of several projects, including stormwater initiatives.

Brian Frix was hired as the chief of operations for the City of Conyers (Georgia) Department of Public Works and Transportation. Overseeing stormwater projects is among his duties.

Wayne Everhart was hired as the streets and stormwater director for the City of Plant City, Florida.

Engineering and architectural firm **George, Miles & Buhr LLC** received a Conceptor Award from the American Council of Engineering Companies of Delaware for its Front Street and Savannah Road Water and Sewer Improvements project in Lewes. The project achieved many goals for the city, including addressing stormwater management challenges.

Carnegie Mellon University's Ansys Hall (Pennsylvania) achieved LEED (Leadership in Energy and Environmental Design) Gold certification from the U.S. Green Building Council for its energy efficiency and sustainability. Ansys Hall's green roof has helped to decrease its stormwater runoff by 25%.

Ed Torres was hired as the director of the Orange County (Florida) Utilities Department. ✦

CALENDAR

July 11-14
American Society of Agricultural and Biological Engineers Annual International Meeting, event held virtually. Visit asabe.org.

July 19-21
American Water Resources Association Summer Specialty Conference, event held virtually. Visit awra.org.

July 22-23
Water Environment Federation Stormwater Summit 2021, event held virtually. Visit wef.org.

Aug. 29-Sept. 1
American Public Works Association Public Works Expo (PWX), America's Center, St. Louis. Visit apwa.net.

Sept. 13-15
StormCon Milwaukee and WaterPro Conference, Wisconsin Center, Milwaukee, Wisconsin (parallel events being held on same days and location). Visit stormcon.com or waterproconference.org.

Oct. 6-8
American Society of Civil Engineers 2021 Convention, event held virtually. Visit asce.org.

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Which types of sewer, storm & water repair, maintenance & inspection do you perform monthly?
❍ Jetting ❍ Manhole Rehabilitation ❍ Pipeline Rehabilitation & Relining
❍ Repair/Replace Excavating ❍ Treatment ❍ TV Inspection ❍ Vacuum Truck Service

What is the approximate population of the area in which you provide service?
❍ 1-10,000 ❍ 10,001-50,000 ❍ 50,001-100,000 ❍ 100,001-200,000
❍ 200,001-500,000 ❍ 500,001+

How many vehicles do you currently have in service?
❍ 1-5 ❍ 6-10 ❍ 11-15 ❍ 16-20 ❍ 21+

What is your annual equipment budget?
❍ Under $50,000 ❍ $51,000-100,000 ❍ $101,000-200,000 ❍ $201,000-300,000
❍ $301,000-400,000 ❍ $401,000-500,000 ❍ Over $500,000

If municipal, what percentage of your sewer and/or water work is done by private contractor?
❍ None ❍ 1-20% ❍ 21-40% ❍ 41-60% ❍ 61-80% ❍ 80%+

Services provided?
❍ Cleaning ❍ Education ❍ Flow Control ❍ Inspection ❍ Infrastructure
❍ Location/Detection ❍ Manholes ❍ Rehabilitation/Relining ❍ Safety
❍ Stormwater ❍ Trucks
❍ Other _____

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Schmidt promoted to Barbco VP, business development


Thomas Schmidt

Barbco announced Thomas Schmidt was promoted into the newly created position of vice president, business development. Schmidt is a manufacturing veteran with many years of leadership in numerous Ohio plants including Harrison Paint, Heinemann Saw Co. and Georgia Pacific.

Aries names new Pacific Northwest dealer

Aries Industries added Washington-based One.7 to its dealer network. Based in Ravensdale, Washington, One.7 has been a street maintenance and environmental equipment dealer since 2005. As an Aries Industries dealer, One.7 will sell and service Aries sewer inspection and rehabilitation equipment to customers in Washington, Oregon, Idaho, Hawaii and Alaska.

Vacuworx introduces online training program

Vacuworx introduced a training program to provide access to information to help ensure that dealers and contractors are able to use and service its equipment correctly and safely. The new online Vacuworx Training Center is available to anyone who operates or services Vacuworx vacuum lifting systems through the company's website, www.vacuworx.com. The self-guided program currently includes five modules, each with course certifications, focused on the RC Series lifters including installation, daily operation checklist, operation, maintenance and troubleshooting.

New CUES sales reps named for Florida

In an effort to continue providing the best customer service to its Florida clients, CUES announced Al Milley and Stuart Rome as its two new Florida regional sales managers.

Vacuum Truck Rentals named authorized service center

Vacuum Truck Rentals has partnered with GapVax and Kaiser Premier and is now an authorized warranty and service center for both manufacturers. As an authorized warranty and service center, each of VTR's 16 locations will provide service, repair and warranty work for GapVax and Kaiser Premier equipment.

Larsen retires from Felling Trailers


Daniel Larsen

Daniel "Boone" Larsen, Felling Trailers' Great Lakes regional sales manager, retired in early May. The 40-year industry veteran joined the Felling team in July 2010 as its Midwest and Southeast U.S. regional sales manager. He provided dealer support for 15 states spanning from Minnesota to Virginia, Florida to Mississippi. In the fall of 2014, Boone reduced his coverage area to the Great Lakes region to provide more focused dealer support to the Felling Trailers' dealer base in Ohio, Kentucky, Michigan, Indiana, Illinois, Wisconsin and Minnesota.

VMAC recognized as Best Workplace in Canada

VMAC was again recognized as a Best Workplace in Canada for 2021, as compiled by Great Place to Work Canada. To be considered, organizations must first be Great Place To Work certified. Then, employees must complete a comprehensive anonymous survey, and agree over an array of criteria that their workplace is a great place to work. Finally, an in-depth review of the organization's culture is conducted.

Makita breaks ground on major expansion

Makita U.S.A. launched construction of a new 600,000-square-foot facility northeast of Atlanta in Hall County, Georgia. The new facility will be constructed on 80 acres and is part of Makita's planned future development to address continuing growth in the United States. The new facility will serve as a distribution center, and will also include a sales and training center, customer service resources, and a factory service center. The location has adjacent space for future expansion up to 800,000 square feet.

GSSI announces new training program

GSSI announced a comprehensive training program for new and existing customers on how to use GSSI equipment safely and effectively in the field. More than a hundred virtual and in-person classes will be held in 2021. Training is conducted by a team of three experienced full-time professional trainers. In-person classes are held in dedicated training facilities in Henderson, Nevada, and Nashua, New Hampshire, which offer more than 5,000 square feet of dedicated training space. Also offered are online webinar training options.

Stantec launches Institute for Water Technology and Policy

Stantec unveiled its newest initiative, the Stantec Institute for Water Technology and Policy, to explore the real-world impacts of a changing climate on the sustainability of water and the role of emerging technologies in water science and policy. The institute engages scientists, engineers, and technology specialists across the globe to investigate questions at the forefront of transforming the water industry's future.

GapVax welcomes new team members and dealer

Brad Renzelmann and Gap Barbin joined the GapVax team. Renzelmann will serve Minnesota, Wisconsin and Illinois for municipal and industrial sales. Barbin handles industrial and municipal sales for Nebraska, Kansas, Iowa, Missouri, North and South Dakota. GapVax also announced a new dealer, JWR Inc., which will serve Wisconsin and Northern Illinois with GapVax sales, service and parts. ✦