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March 2015

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Water & Wastewater Equipment,
Treatment & Transport Show

SHOW ISSUE

Thea Hughes,
general manager of the
Jacksonville Wastewater
Utility in Jacksonville, Ark.

SEALING THE SYSTEM

Rehabilitation and
outreach efforts are playing
a big role in the Jacksonville
Wastewater Utility's battle
to eliminate I&I and SSOs

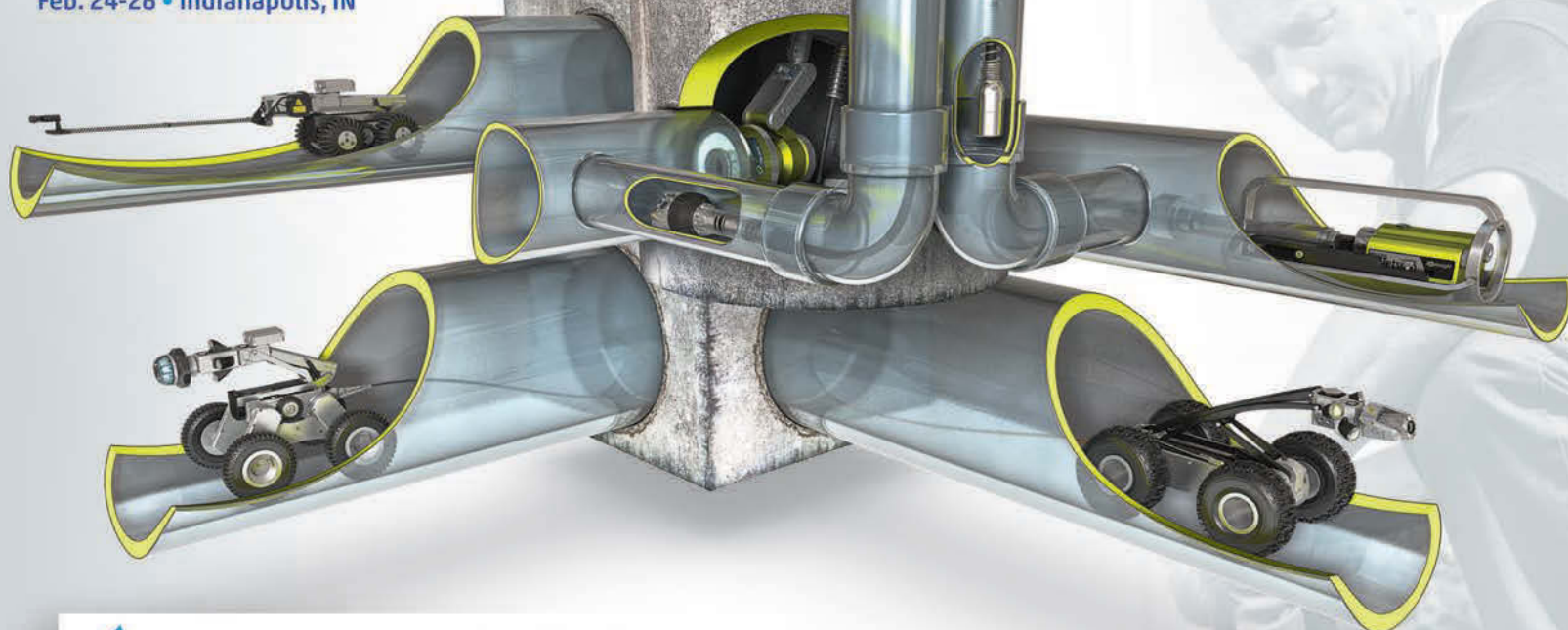
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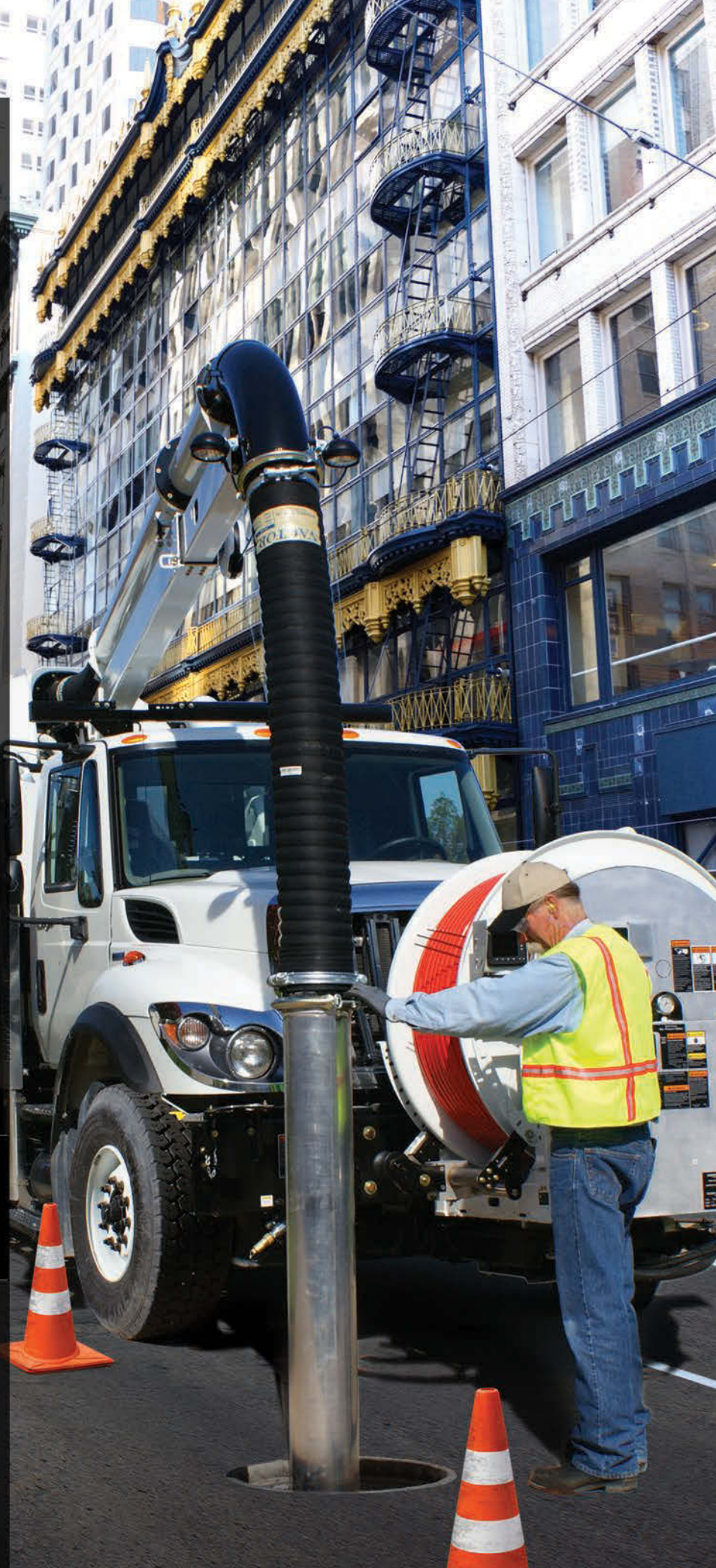
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INSIDE:

WWETT SHOW ISSUE,
PIPELINE & INFRASTRUCTURE



ON THE COVER:

Thea Hughes, general manager of the Jacksonville Wastewater Utility in Jacksonville, Ark. Rehabilitation and outreach efforts are playing a big role in the Jacksonville Wastewater Utility's battle to eliminate I&I and SSOs. (Photography by Stephen B. Thornton)



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MARCH 2015

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11:30am	Perma-Main TM Continuous Lining
1:00pm	Sectional Point Repair
1:30pm	Continuous Small Diameter Lining
2:00pm	Perma-Lateral TM Air Inversion Lining

WEDNESDAY, FEBRUARY 25th

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10:30am	Picote Solutions
11:00am	Perma-Lateral TM Air Inversion Lining
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1:30pm	Perma-Main TM Continuous Lining
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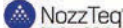
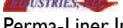











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SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:

 COLE publishing

1720 Maple Lake Dam Rd., PO Box 220,
Three Lakes WI 54562



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Email: info@mswmag.com / Fax: 715-546-3786

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

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


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

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CIRCULATION: 2014 average circulation was 38,192 copies per month (U.S. and international distribution).

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The WWETT Show shines a bright light on this industry and the people who keep it moving forward



FROM THE EDITOR

Luke Laggis

Welcome to the 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show issue of *MSW*. I hope you've made it to Indy and are excited to take in everything the show has to offer.

This is the biggest show we've ever put on, and we hope it's the best you've attended.

I'm looking forward to talking to as many of you as possible, getting your feedback, listening to the issues you're facing and hearing your stories. Of course, I'm excited to check out all the new tools, trucks and equipment, too, but it's your stories I'm most interested in.

I've been at the helm of *MSW* for over three years now. We've profiled 114 utilities in that time, and everyone reveals a new twist, a different focus or a better way of approaching a problem. It's an industry with a high level of technology and innovation, yet sometimes it's still the smallest utilities, trying to do more with less, that figure out how to build a better mousetrap.

That's part of what makes the WWETT Show such a great experience — seeing such a diverse group of people all seeking better ways to serve their communities. And that's mirrored by the diversity of manufacturers, from large companies offering the latest and greatest jet/vac trucks and rehabilitation systems, to the startups providing innovative ways to address specific issues you face every day. It's the positive, proactive approach we celebrate in *MSW*, and it's on display all week at the show.

Whether you're in the classroom, kicking the tires on a half-million-dollar hydroexcavator or striking up conversation with peers in your hotel lobby, you'll have no problem finding inspiration. So take advantage, because the insight you gain could help you solve a nagging problem or chart an entirely new course for your utility.

You'll have plenty of opportunities to learn and improve your utility while you're here in Indy. You'll also have plenty of opportunities to relax and enjoy yourself. Make sure all of the following are on your itinerary:

Whether you're in the classroom, kicking the tires on a half-million-dollar hydroexcavator or striking up conversation with peers in your hotel lobby, you'll have no problem finding inspiration.

Education Day. You don't have to spend all day in the classroom, but be sure to pick out at least a few classes that address questions, areas of interest or new opportunities you've been eyeing. The level of instruction is excellent, and knowledge gained will serve you year-round.

Walking the floor. OK, this one is obvious, but make sure you see everything on the show floor. You might find the long-sought solution to your FOG problems or a new inspection system that changes the way you manage your assets. Or you may just walk out with fresh ideas to improve your operations. Either way, there's some pretty cool stuff to see.

Sewer History Exhibit. For the first time, NASSCO and the Arizona Water Association will have their Sewer History Exhibit on display in the main corridor outside the exhibit hall. It's an impressive display of early ingenuity and a great look at how far the industry has come. Sometimes taking a look back can help you see the way forward.

Industry Appreciation Party. We're giving away a truck. Cole Swindell and Blackjack Billy are playing. And you can wash it all down with 25-cent tap beer. Enough said. Don't miss out.

It's not easy to boil the whole week down to four items on your itinerary, and really, why would you want to? There's so much more to see and do. Take it all in, and enjoy the show.

Welcome to Indy! ♦

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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“This is the only way that we see that we can engage the government, especially the state of Iowa, in a serious discussion about regulating those pollutants that are dumped into our water source. ... We foresee a time where we can't invest enough money to clean the water.”

— *Water Works to Sue Neighboring Counties*
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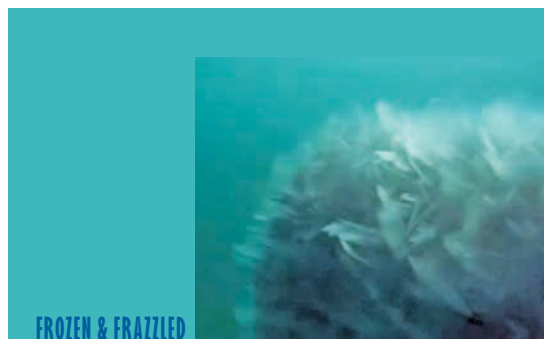
Confined-space entry deaths continue to make headlines. This simple device will save your life. Should you choose a portable gas detector capable of detecting the one hazardous gas you're most likely to encounter, or a multi-gas detector, capable of detecting several gases simultaneously? mswmag.com/featured



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What the Heck is Frazil Ice?

First it forms. Then it multiplies. Then it attaches to underwater structures like water system intakes. It's called frazil ice, and it's led to the frazzled nerves of managers of surface water systems, especially those along the Great Lakes. Learn what municipalities are doing to combat this cold-weather phenomenon. mswmag.com/featured



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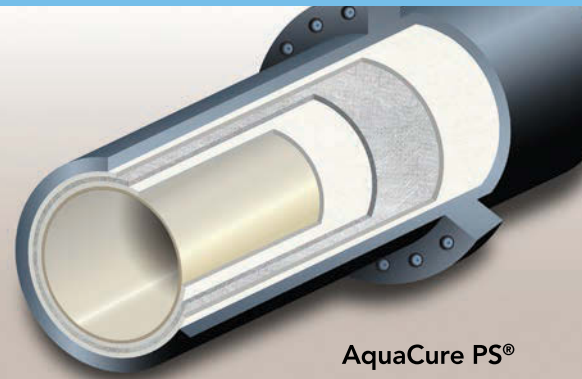


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HIGH TECH ON THE HIGH PLAINS

Cheyenne, Wyo., is meeting the future head on as it plans for growth and investigates new technology — including a unique fuel cell demonstration project

By Peter Kenter

The City of Cheyenne, Wyo., owes its existence to the construction of the Union Pacific railway — a technological marvel of the 19th century. The Cheyenne Board of Public Utilities (CBOPU) continues that tradition of investigating new technologies, including an advanced fuel cell that uses sewer gases to generate electricity for the benefit of its customers.

The city's first water system was developed in the 1870s, pumping water from Crow Creek to supply the railroad and provide water for fire protection. It soon expanded to supply homes and businesses.

Through the early 1900s, the city grew into an important military cen-

ter and cattle town. To meet increased water demands, Cheyenne constructed a series of reservoirs, a water treatment plant, a storage tank and connecting pipelines. The reservoirs, tank and even some of the pipes are still in use today.

water and sewer systems. Its first major project: construction of a wastewater treatment plant.

An expanding system

Now a city of almost 75,000, Cheyenne has developed a water sys-

tem that comprises nine reservoirs and crosses three mountain ranges — the Continental Divide, the North Platte River Basin and the Laramie River Basin. About 250 miles of raw water mains (34 percent ductile iron, 29 percent cast iron and 33 percent PVC) collect and transport water to and from reservoirs. A newly constructed water treatment plant can treat up to 32 million gpd and distribute it through 466 miles of potable water mains. About 328 miles of sewer mains, primarily vitrified clay and PVC, collect wastewater and deliver it to two water reclamation facilities. Another 14 miles of reclaimed water mains deliver recycled water to parks and sports fields.

"As with most water and wastewater systems, ours are in good condition with numerous mains that have exceeded their design life and continue to function," says Frank (continued)

"We're on the High Plains at over 6,000 feet in elevation, but we're lucky that the local topography only requires us to use five sewer lift stations."

— Frank Strong

During the Dust Bowl years of the 1930s, the city constructed a series of wells to augment the Crow Creek water supply. In 1943 it established the Board of Public Utilities to manage and control both the

tem that comprises nine reservoirs and crosses three mountain ranges — the Continental Divide, the North Platte River Basin and the Laramie River Basin. About 250 miles of raw water mains (34 percent ductile

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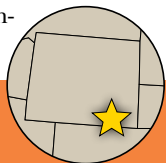
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Strong, P.E., operations and maintenance manager, CBOPU. "For example, 29 percent of the water system is more than 50 years old. But we're performing reasonably well with an average of 9.2 water main breaks and 10.8 sewer main backups per 100 miles of collections system in the last five years. Typically, pipe failure in Cheyenne is the result of cracks due to the age of the material or pockets of corrosive soil. We have a large variety of soil types in the area, so we require test holes and geotechnical reports on all new installations."

In-house crews are on call 24 hours a day to handle water main



PROFILE: Board of Public Utilities, Cheyenne, Wyo.

**YEAR UTILITY
ESTABLISHED:**
1943

CUSTOMERS SERVED:
23,071 water accounts

AREA SERVED:
21 sq. mi. +

DEPARTMENT STAFF:
130 employees

INFRASTRUCTURE:
250 miles of raw water
mains, 466 miles of treated
water mains, 14 miles of
reclaimed water mains,
328 miles of sewer mains

**ANNUAL DEPARTMENT
OPERATING BUDGET:**
\$29.2 million (sewer and
water)

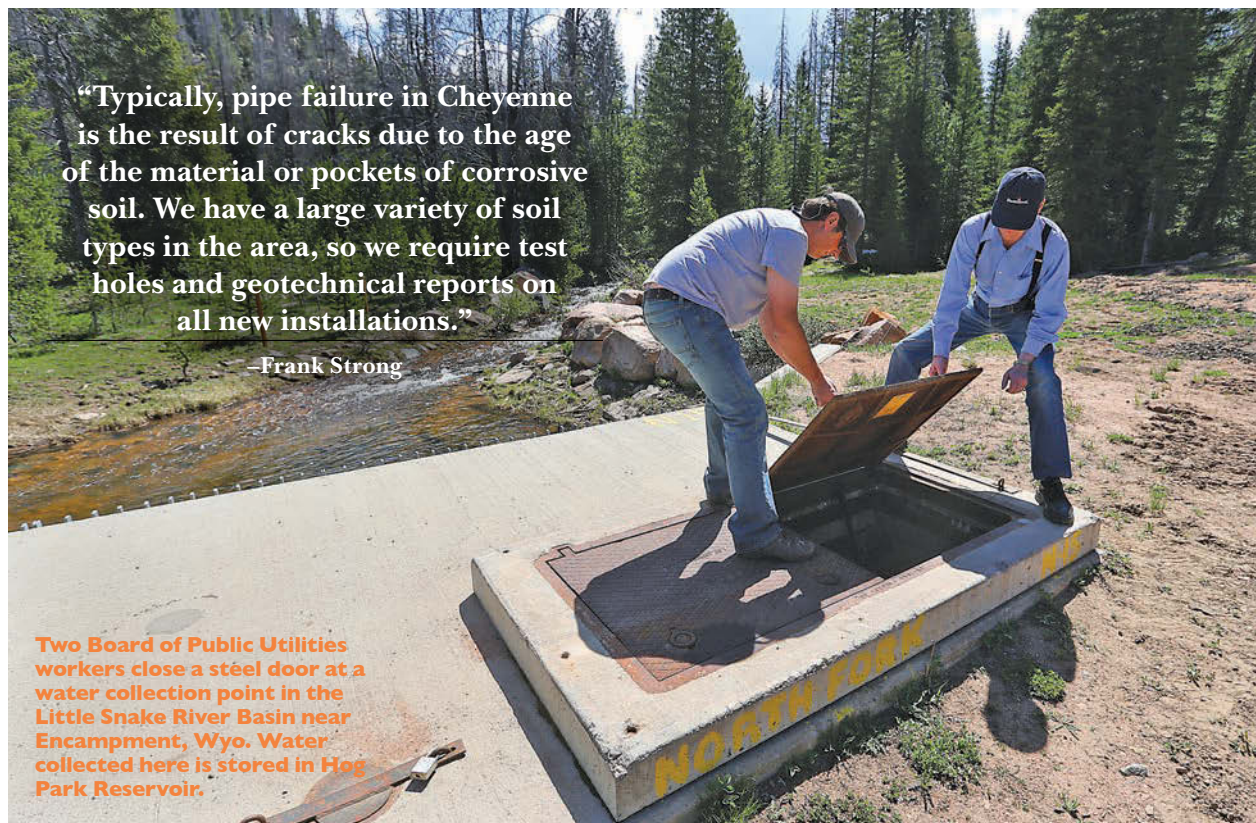
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"Typically, pipe failure in Cheyenne is the result of cracks due to the age of the material or pockets of corrosive soil. We have a large variety of soil types in the area, so we require test holes and geotechnical reports on all new installations."

—Frank Strong

Two Board of Public Utilities workers close a steel door at a water collection point in the Little Snake River Basin near Encampment, Wyo. Water collected here is stored in Hog Park Reservoir.



breaks and sanitary sewer backups. However, winter quickly puts the deep freeze on Cheyenne soil. Jackhammers are often used to break through frost layers anywhere from 3 inches to 4 feet thick.

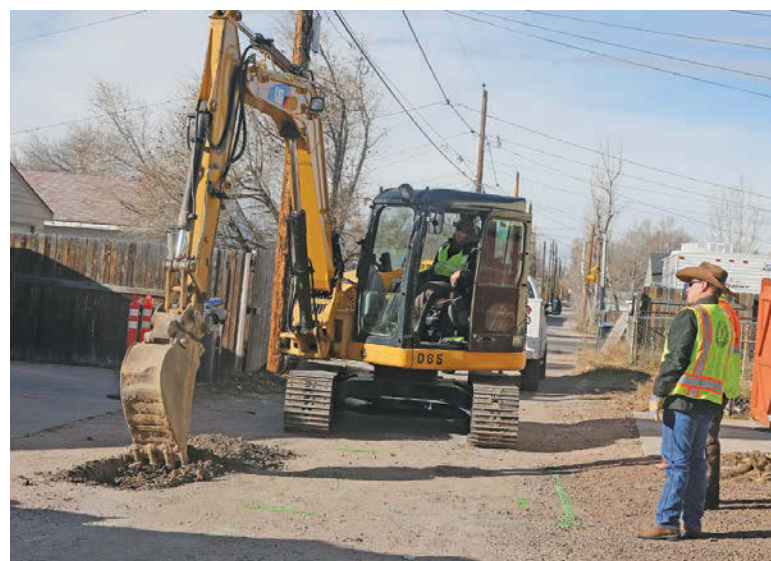
The utility operates a rigorous preventive maintenance program for both water and sewer systems.

Water distribution system maintenance includes hydrant flushing, valve exercising and curb stop maintenance. The city rehabilitates 2 miles of water mains and replaces 20 fire hydrants annually.

Listening for leaks

Water system leak testing includes 32 remote leak sensors placed inside existing water valve boxes. These are later collected and data is analyzed so that utility staff can follow up reports of potential leaks with higher-precision Gutermann acoustic microphones and correlators.

The maintenance program for the collections system includes 110 miles of sewer main cleaning each year, using four combination trucks — three Vactors and a Vac-Con. The maintenance program also includes manhole maintenance, manhole replacement, point repairs, root



Cheyenne Board of Public Utilities Operations and Maintenance crew members excavate a waterline beneath a residential street.

treatment, video inspection and lift station maintenance.

"We're on the High Plains at over 6,000 feet in elevation, but we're lucky that the local topography only requires us to use five sewer lift stations," Strong says.

In-house crews perform the majority of sewer maintenance work, with the exception of rehab projects, root treatment and some manhole replacement.

Utility crews also handle sewer point repairs using a trenchless,

resin-based pipe patch system.

"We budget annually to rehabilitate 1.5 miles of sewer mains per year," Strong says.

Predictable growth

While Cheyenne is undoubtedly benefiting from the local oil and gas boom, a diversified economy, including agricultural and high-tech sectors, has the region growing comfortably and steadily at about 1 percent per year.

The city's capital projects over
(continued)

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Cheyenne Board of Public Utilities Operations and Maintenance Manager Frank Strong on a job site in Cheyenne.

the next 10 years total an estimated \$212 million, with about half that budget devoted to new transmission mains, distribution mains and water main rehabilitation. The budget includes Phase II of the \$22.5 million Southern Water Transmission Main project, completed in 2014. The project added 11.5 miles of 42-inch transmission mains to supply water to neighborhoods in the southern areas of Cheyenne. Phase III of the project is already in the planning stage.

"Included in the recommended capital projects is an increase in Chey-

enne's annual water main rehabilitation, from 2 miles per year to 3 miles per year in 2018," Strong says.

Wastewater collections system construction over the same period will total an estimated \$68 million. The biggest project is Phase 1 of a large sewer interceptor, also designed to service southern Cheyenne. In addition, the utility plans to increase its sewer main rehabilitation rate from 1.5 miles per year to 2.5 miles per year, also in 2018.

Powering up with fuel cells

The utility also continues to investigate new technology.

A demonstration project at the utility's Dry Creek wastewater facility uses biogas to power a Microsoft data center through fuel cell technology, which harnesses chemical reactions directly to generate electricity. The \$7.6 million demonstration project will power a containerized Microsoft IT server.

"The server will crunch enough real-life data to test the concept and determine whether the energy provided by the fuel cell will provide consistent energy under load," says Anja Bendel, director of business development with Cheyenne LEADS, a private, not-for-profit economic development organization that



A group of visitors tours Microsoft's zero-carbon, waste-to-energy-powered data plant at the City of Cheyenne's Dry Creek Water Reclamation Facility. The facility uses biogas methane to power a fuel cell at the data plant.

RESERVOIR CAMS KEEP AN EYE ON WATER SUPPLY

Cheyenne, Wyo., was originally located around the water supply provided by Crow Creek, flowing through the Laramie Mountains. As the city and its metropolitan area grew, so did its need for new water supplies.

"We now have a vast water system that crosses three mountain ranges," says Frank Strong, operations and maintenance manager with the Cheyenne Board of Public Utilities (CBOPU). "In the summer, our source of supply crews regularly travel to Saratoga, about 150 miles west of Cheyenne, and stay there for four-day shifts to manage the water supply infrastructure."

To help extend the utility's reach, security cameras maintain a

24-hour vigil over all of the city's water supplies, reservoirs and critical water infrastructure.

"Source of supply crews, operators and engineering staff use the Web cameras to check on weather conditions, security and operational information," Strong says. "Operators can, if needed, manipulate the cameras remotely."

However, some of the cameras focused on city reservoirs feed directly to the CBOPU website and are accessible to the public.

"Cheyenne's reservoirs and the land around them are used by recreationalists who check the cameras for weather conditions," Strong says. "However, placing the camera feeds on the website is more than a public service. It also allows the U.S. Forest Service, state agencies and downstream communities to monitor the reservoirs. Better still, it allows our crews to monitor conditions from any mobile or Internet device, even while en route to resources that are several hours away from Cheyenne."



An exterior view of the Dry Creek Water Reclamation Facility in eastern Cheyenne, Wyo.

assisted in the bid proposal to host the pilot at CBOPU and helped coordinate the project.

The fuel cell plant was designed to produce 300 kilowatts of renewable power while the data center will only use about 200 kW. The excess electricity will be delivered to the wastewater treatment plant. Microsoft will use the data collected in further research, which could see pint-sized fuel cells placed directly inside data server racks.

A bonus for the utility — by installing the sophisticated monitoring systems associated with the project, the wastewater plant will be better able to monitor and analyze its own overall operations.

The project combined the contributions of private industry partners such as Microsoft, Jacobs Engineering, Evoqua Water Technologies and FuelCell Energy Inc. with a coalition that included CBOPU, the University of Wyoming, the Wyoming Business Council, the Western Research Institute, and state and local government partners.

After the 18-month demonstration project has concluded, Microsoft will donate the data plant infrastructure to the participants, including the University of Wyoming, for further research.

“It’s unusual to have that many stakeholders working together on a common goal,” Bendel says. “This utility project shows what you can achieve when you’re open to innovation and willing to consider new endeavors.” ♦

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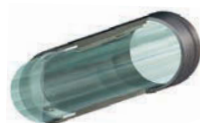
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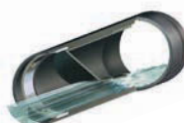
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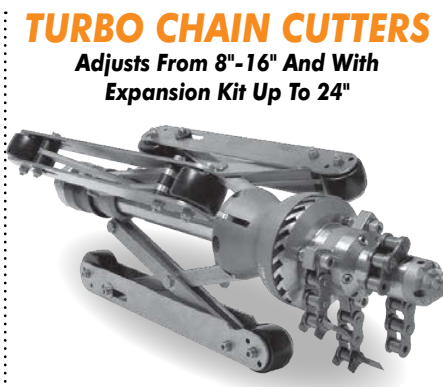
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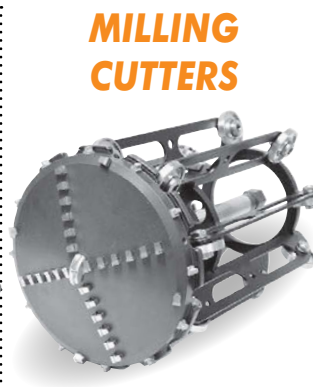
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A BETTER REPLACEMENT

Poly pipe averts disaster as crumbling asbestos concrete undermines upstate New York island

By Stephen C. Cooper

The final straw for a long section of the sanitary sewer line in Grand Island, N.Y., was a sinkhole large enough for a dump truck and sewage that flooded local residences and businesses in August 2013.

Running under Whitehaven Road, the main east/west multilane street, the 35-year-old, 30-inch-diameter asbestos cement pipe failed due to corrosion from hydrogen sulfide gas. Six hundred and fifty feet of 30-inch-diameter SaniTite HP triple-wall polypropylene pipe replaced the failed concrete pipe at depths of 22 to 24 feet.

Due to the extreme nature of the pipe failure and because the Town of Grand Island is surrounded by the Niagara River, it was imperative that the pipe be replaced quickly to prevent further damage to homes and buildings, and to stop any effluent from flowing into the Niagara River and eventually over Niagara Falls, causing a potential environmental disaster. The \$500,000 emergency repair took a month to complete.

Since the 1700s, the Town of Grand Island has been a resort, a lumber town, a colonial battleground, part of the City of Buffalo and part of the nearby Town of Tonawanda. Today, it is home to more than 20,000 residents and hundreds of businesses, ranging from small stores to major corporations with 500 people and more. The island town is 8 miles from Niagara Falls.

“We had an asbestos cement pipe that over the years was being eaten away by hydrogen sulfide gas,” explains John Whitney, P.E., Grand Island engineer. “This pipe originates upstream and the end of it is a tributary to a very long force main. Sewage goes septic in that force main. When it gets discharged into the gravity sewer, which is the 30-inch ACP, hydrogen sulfide gas mixes with air and you end up with various permeations of sulfuric acid. That is very destructive to cement and the pipe got so thin it just collapsed. It had already caused a sink hole the size of a dump truck and 27 feet deep.”

Among other plastics, polypropylene is inert to the effects of hydrogen sulfide present in sanitary sewers, making it a highly recommended material of choice to replace deteriorating infrastructure across the country. SaniTite HP has been used in similar emergency repairs to replace failed infrastructure in Kentucky, Mississippi, Ohio and Pennsylvania.

“In other sections, also, there was a tremendous amount of dirt that had infiltrated into the pipe from cracks,” he says. “We ran a camera in there and looked upstream from one of the downstream manholes and saw that the dirt went right to the ceiling of the pipe. And because the pipe was in such a deteriorated condition, we would not have been able to clean it without destroying it. We replaced it in the same trench with the SaniTite HP pipe.”

Sections of SaniTite HP triple-wall polypropylene pipe are staged to replace a failed 30-inch asbestos concrete sewer main in Grand Island, N.Y. During the repair, the crew used 8- and 12-inch pumps to bypass the area. RIGHT and BOTTOM RIGHT: Crews excavate the failed line, which was buried 22 to 24 feet deep along a busy highway.





A satellite view of Grand Island surrounded by the Niagara River.

SaniTite HP pipe is a product of Advanced Drainage Systems. It is manufactured in 30- to 60-inch diameters and is available in triple-wall construction, as was used for this project. The triple-wall design provides smooth interior and exterior walls supported by a corrugated structural core for improved stiffness and greater beam strength to minimize deflection and enhance long-term performance. It meets ASTM F2736, ASTM F2764 and also exceeds the requirements of ASTM D3212 for water tightness with dual gaskets and banded-reinforced bell.

Rugged and lightweight, the pipe is easily handled with minimal equipment and crew. Its stick length reduces the number of joints, which also saves

“This was a very deep cut near a very busy highway, and the repair had to be done quickly and safely. Not only is the pipe we used a good quality product, but it was also easy to install and we could get it delivered to the job site from a nearby plant.”

– Bill Kelley

time and labor and makes for a more secure system versus the several-ton weight of each short section of comparable concrete pipe.

According to Bill Kelley of Lock City Supply in Lockport, N.Y., who provided the materials for the job, “This was a very deep cut near a very busy highway, and the repair had to be done quickly and safely. Not only is the pipe we used a good quality product, but it was also easy to install and we could get it delivered to the job site from a nearby plant. If ever there was a case to prove the benefits of this pipe, this was it. It truly is the next generation of pipe.”

Aside from the depth, the project also had other challenges, including a 1.5-inch rain storm, a ductile iron pipeline that had to be cut and reinstalled, plus high-voltage electric lines overhead.

“The break was right in front of a water pumping station with a 3-million-gallon water tank, and there was a 16-inch ductile iron water transmission main which we had to cross,” Whitney explains. “The only way to do this was to physically isolate it, cut the line, run the new sanitary line and then reinstall the iron pipe.

“We were also adjacent to the National Grid power transmission lines coming out of Niagara Falls that carry 230,000 volts. This meant that we had to have a high-voltage certified electrician with us and have the equipment grounded all the time.”

During the repair, the crew used 8- and 12-inch pumps to bypass the area. A doghouse manhole was used to tie in the new SaniTite HP pipe with the existing ACP.

“The new pipe worked out great,” Whitney says. “The procurement was very rapid, the cost was favorable and it went together very well.” ♦

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SEALING THE SYSTEM

Rehabilitation and outreach efforts are playing a big role in the Jacksonville Wastewater Utility's battle to eliminate I&I and SSOs

By Dan Heim

Jacksonville is in central Arkansas, just off I-40 about 12 miles northeast of Little Rock. It's not a heavily industrialized area, and the majority of the wastewater utility's flow comes from residential sources. But with many pipes over 60 years old, some going back to the 1930s, and an average 50 inches of rain annually, SSOs and I&I were causing problems for the Jacksonville Wastewater Utility as early as 1980.

"That's when we got serious," says Bob Williams, engineering construction manager for JWU. "We started looking at where that I&I was coming from. What we found was contributions from both pipes and manholes, with manholes typically the worst offenders."

And so in 2000, JWU began their continuing efforts, now about two-thirds complete, spending to date some \$18.5 million on rehab and replacement. Overflows from I&I have been reduced from 27 in 2009 to zero in 2014, a significant decrease. Since 2008, I&I has been reduced on average by 45 percent, with up to 63 percent on some lines.

Jacksonville's problems

The main issue was simply the age and condition of their pipes and manholes and the resulting I&I and SSOs. Their original two treatment

(continued)

Jacksonville Wastewater Utility's Kenneth Maxwell (left) and Alex Manriquez clean a sewer main, part of Jacksonville's routine maintenance plan, with a Vac-Con combination truck. (Photography by Stephen B. Thornton)

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Jacksonville Wastewater Utility's Steve Grobeck (center) deploys a CCTV camera through a manhole during a warranty inspection of an 8-inch PVC



PROFILE:

Jacksonville (Ark.) Wastewater Utility

SERVICE AREA:

29 square miles

CUSTOMERS:

9,000, mostly residential

POPULATION DENSITY:

1,134 per square mile

INFRASTRUCTURE:

177.5 miles gravity pipe (6-42 inch, PVC, concrete, clay, DI, HDPE), 15 miles force main (2-18 inch, PVC, DI), 14 lift stations (90-3,500 gpm), 3,500 manholes, single-treatment plant with 12 mgd capacity

ANNUAL BUDGET:

\$3.9 million O&M, \$2.5 million capital (2014 data)

EMPLOYEES:

36 full-time (plus outside contractors)

AVERAGE RAINFALL:

50 inches per year

WEBSITE:

www.jwwu.com

plants used old technology and were being increasingly overwhelmed by daily loads.

Some of that I&I is coming from private residences through pipes on the owners' property, likewise from sanitary tee clean-outs with caps that have been dislodged or removed and not replaced. Residential contributions are difficult to measure, but based on specific instances encountered they add an easily avoidable load to the collections system. Many homes in the JWU service area are at least as old as the city's pipes.

Jacksonville discharges stormwater directly without any processing into Bayou Meto, a small tributary of the Arkansas River. Processing would involve a huge cost they'd obviously prefer to avoid, and Jacksonville wants to keep their system split.

"That's a separate department from ours, and they have to monitor their own effluent," says Walton Jay Summers, JWU collections system manager. "That started about 2002 when they applied for an

NPDES permit to use Bayou Meto for stormwater. To date, their effluent is still within specs. The only stormwater we have to deal with is what gets into our system through

and no real dry season. The cold season lasts on average from late November to late February with freezing temperatures averaging 30 percent of the year. Trenching can

"We're doing a good job with that outreach, seeing improvement every year, and probably pushing it harder than a lot of cities. Grease and 'flushable' wipes are a problem all over the country, so I hope others can learn from our success."

— Thea Hughes

I&I."

Their Class C soils (clay and soft rock) are susceptible to heaving and subsidence — not a good thing when a lot of your pipe is clay or concrete. Topography within the service area varies in elevation by only around 100 feet, so gravity lines are possible, but 14 pump stations are still required. Gravity lines with the requisite slope are limited in depth for practical reasons.

Jacksonville has a warm, humid, temperate climate with hot summers

be done in winter as the depth of frozen soil is never more than a few inches. Snowfall during this same period is even less an issue, with an average of only 4 inches annually.

Still, it's hard to trench in wet Class C soil. With an average annual rainfall of 50 inches and an average depth to groundwater from 0 to 20 feet, more often than not they are digging in mud. This can be done safely using approved trench-shoring practices, but is an impediment to what would normally be an easy job.

An Aries LE 2165 Lateral Launch System is positioned at the base of a manhole at the start of a mainline inspection. **Far right:** The view from the inspection monitor as the camera makes its way through the line.



JWU's solutions

With 177.5 miles of aging pipe, 3,500 manholes and 14 lift stations, the obvious solution was a full system inspection, repairing what they could and replacing what they couldn't.

JWU does a lot of their work in-house but subs out pipe bursting to Horse-shoe Construction of La Porte, Texas. "We did our first pipe bursting in 2000, and since that time we've used only two contractors for that work," recalls Williams. "Initially, we used the Heller Company from Hot Springs, Ark."

Likewise with their CIPP projects where contractors are drawn from local sources, Williams explains, "Our contractors have to go through the usual bid process, but if we're happy with their work the contract has an option for us to renew them for another four years."

Most of the pipe going in around new construction is PVC or HDPE. For pipe that's being replaced, what's already there presents some constraints. If they can make plastic work, that's what they'll put in. The existing clay and concrete pipes just haven't held up in their Class C soils.

For the manholes, which are mostly in-house projects, JWU uses any of a number of products, all cementitious compounds. They're still comparing efficacies and haven't yet settled on a specific brand.

"When you have to do bursting into a manhole, there's usually considerable reconstruction needed, so we make that work part of the pipe bursting process," Williams says. "That allows our own crews to handle the more straightforward rehabs."

Manhole rehab was started back in 2008. Since then JWU has seen a reduction in I&I from between 29 to 63 percent with an average of 45 percent, and that's with only two-thirds of the manholes done. SSOs caused by I&I have also been reduced from 27 in 2009 to three in 2013 to zero in 2014 (as of December).

"We're addressing I&I from private residences with our service line program," says Thea Hughes, JWU general manager. "It's actually been in effect since the early '90s, but we're pushing it more now. Once an I&I issue is identified, we require the homeowner to make the needed repairs at their own cost."

"We provide a letter and diagram explaining the problem along with suggested fixes. They have 90 days to make those repairs or we shut off their water. If they can't afford it, we provide a loan program through our local HUD office to help them out."

So JWU is now getting more of the wastewater and less of the rainwater into the treatment plant.

Outreach and education

JWU maintains a website that contributes to their success. On their home page, prominently displayed, are three important links for customer education:

- Can The Grease
- Water's Worth It
- Wipe Out Wipes

Can The Grease explains alternative disposal methods for household
(continued)

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SERVING THE MILITARY

Located just inside the city limits of Jacksonville, Ark., Little Rock AFB is tied into the Jacksonville Wastewater Utility (JWU) system. They don't have their own treatment plant, but they do have 80,000 feet of gravity lines and 323 manholes. So that adds to the total load processed by JWU.

"The base contributes about 18 percent of our wastewater processing load, but we never need to go in there because they are responsible for maintaining all their own pipes and manholes," notes Thea Hughes, JWU general manager.

Bob Williams, engineering construction manager for JWU, adds, "There's been nothing especially hazardous coming from that source. In fact, their compliance with our wastewater guidelines is better than average."

Still, JWU maintains a separate water-quality monitoring system for the effluent from the base. It's a prudent measure given the unique nature of the source. No problems have been detected to date.

Little Rock AFB is home to the 19th Airlift Wing, a part of the Military Airlift Command. Base Commander Col. Patrick J. Rhatigan oversees some 10,000 base personnel participating in their mission. They are known as the "Home of the C-130 Combat Airlift," supporting more than 65 of those venerable workhorse aircraft.

The C-130 is a heavy-lift machine with a range of 1,150 miles and a maximum payload of 21 tons. It's still in regular use for support missions within the states as a FEMA resource and overseas in support of combat operations.

The working relationship between JWU and Little Rock AFB has been mutually beneficial. Col. Rhatigan has consistently supported JWU's wastewater guidelines, avoiding increased wastewater charges, and JWU appreciates their cooperation.

"In 2011, for example, over 60 percent of our service calls were related to grease blockages in the main. And it cost the citizens over \$19,000 to clean those up. This year we've got that down to \$3,000 to \$4,000."

— Walton Jay Summers

the citizens over \$19,000 to clean those up. In 2014, we got that down to \$3,000 to \$4,000."

The Water's Worth It section, created by the Water Environment Federation, makes more of an intellectual appeal:

Clean water is critical to sustain life, yet we take it for granted. The world's water supply is finite. Water is a valuable resource that can be recovered and reused if wisely managed. Future generations are relying on us to find innovative and holistic ways to ensure adequate and safe water supplies. ... It's worth your respect, your effort, your passion, your health and your loyalty. Be as good to water as water's been to you.

Wipe Out Wipes addresses the issue of sanitary wipes that are often

advertised as being flushable, but in practice are not. "Manufacturers have guidelines for being able to use that label, but all that really means is they can be flushed," notes Hughes. "It says nothing about the ability of the product to break down once it's in the lines. It often ends up getting caught on roots or other intrusions and wrapping around pump motors.

"What we're finding is that these things make it into our pumps and can cause mechanical problems that are costly to fix. This is happening all around the country and all around the world. Can The Grease has been extremely successful, but we're really struggling with this wipes issue. Our slogan has only been in



Jacksonville Wastewater Utility's Todd Collins (left) and Steve Grobeck assist with the confined-space entry equipment as Joey Shofe enters a manhole to perform rehabilitation work.



General Manager Thea Hughes (front, second from right) with her staff at the Jacksonville Wastewater Utility.

grease and advocates allowing the grease to cool and solidify in cans or cartons for later delivery to the landfill with other household trash. Commercial establishments are required to use grease traps. Com-

pliance has been very good across both sectors.

"In 2011, for example, over 60 percent of our service calls were related to grease blockages in the main," Summers says. "And it cost

Alex Manriquez (left) and Kenneth Maxwell at the controls of a Vac-Con combination truck while cleaning a sewer main.

effect for two years, but we're hoping that if we continue to push it, it'll eventually catch on."

The road forward

JWU is not on a rigid completion schedule. They do what they can within their budget each year. "We're looking at probably another 10 years to wrap this all up," says Williams.

Fortunately their pump stations are in good shape, as is the treatment plant, so JWU will continue to focus their resources on pipe and manhole infrastructure.

Regular maintenance on the pump stations and treatment plant also tap into their budget, but they hope to lower those costs through their Wipe Out Wipes and Can The Grease educational outreach programs.

"We're doing a good job with that outreach, seeing improvement every year, and probably pushing it harder than a lot of cities," says Hughes. "Grease and 'flushable' wipes are a problem all over the country, so I hope others can learn from our success. We've already been contacted by several cities in Arkansas who want to learn about our programs, like coordinating HUD loan assistance for service line repair by homeowners."

The JWU educational outreach also extends into area schools. Just last year a local high school student won first place at their science fair for a project investigating how "flushable" various types of wipes really are. JWU helped with that research. Her project was featured as a poster board at the Water Environment Federation Technical Expo & Conference held in New Orleans last October.

JWU has yet to establish an internship program for students interested in pursuing a career in water management, but hopes to in the future. They are deeply involved with the Arkansas Water Environment Association's Young Professionals Committee, a statewide association, with a JWU staff member serving as chair of the YPC.

The YPC is working with schools to attract students to their profession. As with many utilities, the "graying of personnel" is an issue at JWU. Attracting the number of qualified replacements needed to offset attrition is an ongoing battle.

"I'd say our work on reducing I&I is about as good as it can get," notes Williams. "We've really been aggressive about that, and it's paying off in many ways. That applies to city mainlines and private service lines. I feel really good about where we are now and where we'll be a few years down the road." ♦



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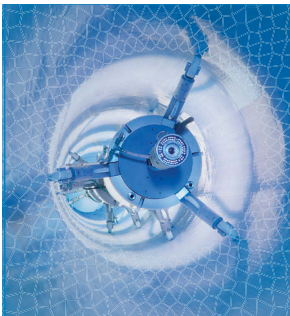
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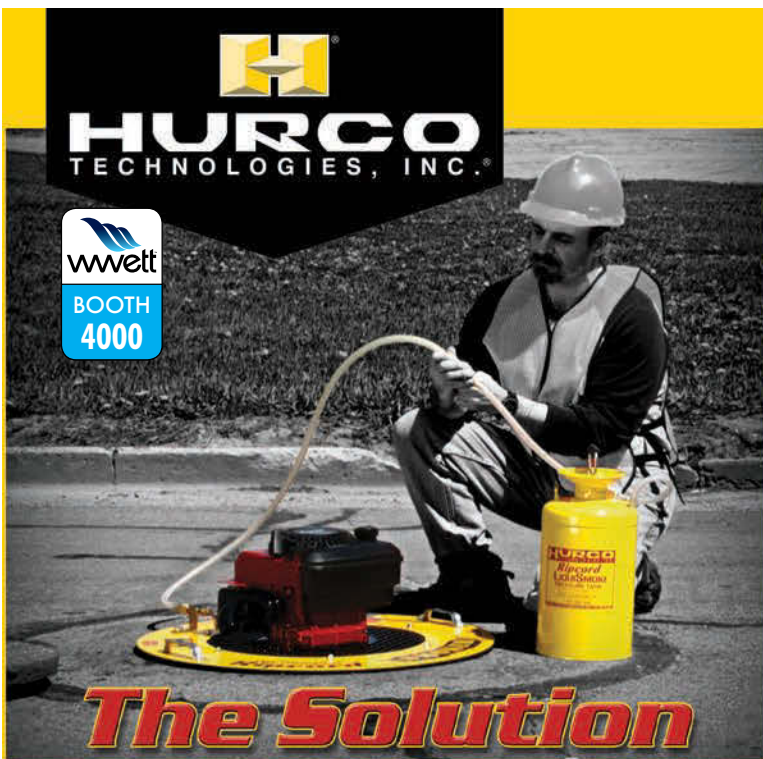
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Those questions will be answered at the 2015 Water & Wastewater Equipment, Treatment & Transport Show. Dr. Adrianus Vlugman, World Health Organization senior advisor on water, sanitation and environmental health, will speak Feb. 26 at 1 p.m. in Rooms 133-135 at the Indiana Convention Center as part of an extensive series of WWETT Show speakers and seminars.

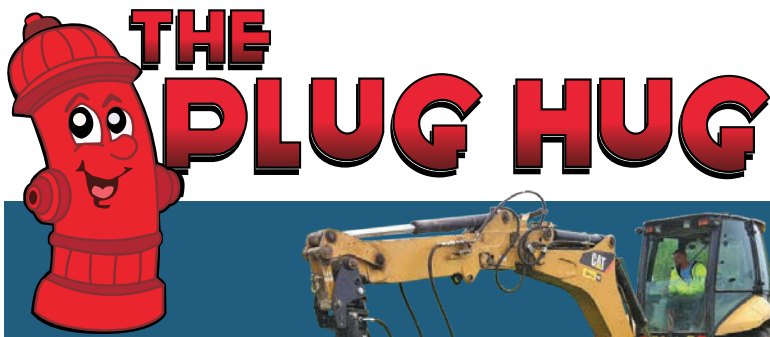
Vlugman will provide a general overview covering the survival and life expectancy of communicable diseases in water and wastewater. Among other topics, he will cover:

- Safety precautions to consider when handling water and wastewater.
- The likelihood of communicable diseases to be spread or passed through both centralized wastewater plants and decentralized onsite wastewater systems.
- Whether there is a concern for the spread of communicable diseases through land application of properly treated sewage, biosolids or septage.

The talk on the transfer of communicable diseases is free and open to anyone.

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IT'S TIME TO TALK

Focused conversations can foster a workplace filled with engaged and motivated employees who are less prone to jump ship

By Ken Wysocky

Disengaged employees are a lot like clogged sewer lines: They don't work very well. And if national surveys are correct, your workforce probably needs a powerful bit of waterjetting, metaphorically speaking.

Before you launch into an impassioned hey-my-workforce-isn't-like-that protest, let's consider the facts as outlined by a recent Gallup poll: Only 30 percent of employees in the United States are engaged at work, meaning they're committed to their jobs and are positively contributing to the organizations for which they work.

That leaves 70 percent of employees disengaged. Even worse, the survey shows 18 percent of them are what's known as actively disengaged, which is the equivalent of a fully clogged line as compared to a partially blocked pipe. Actively disengaged employees are defined as unhappy and unproductive — and they're most likely spreading negativity to co-workers like a bad flu virus.

Equally disturbing is the estimated cost of all this disengagement: \$450 to \$550 billion worth of lost productivity. Yup, you read that correctly; that's "b" as in "billions." And if that isn't enough to make you sit up and take notice, consider another ominous cloud on the horizon: a workforce that's rapidly shrinking as Baby Boomers retire, and much fewer Gen X and Gen Y cohorts available to take their places. In other words, competition to hire great employees in the next 10 to 15 years will rise to unprecedented levels.

"So we have a perfect storm of issues in play — low employee engagement and a horrendously high threat of a global labor shortage," says Kim Seeling Smith, the founder and chief executive officer of Ignite Global (www.igniteglobal.com), a management consulting firm. Seeling Smith is also an expert in improving employee engagement and productivity, as well as the author of *"Mind Reading for Managers: 5 FOCUSed Conversations to Increase Employee Engagement and Productivity."*

"And if you won't be able to hire the ones you need, you've got to love the ones you're with," she continues. "Human capital has indeed become the most valuable capital to organizations, and companies that don't understand this — and don't make changes to engage and retain their employees — will suffer dramatic hits to market share. It might even be their death knell."

Start the conversation

So how do managers begin to get listless employees motivated? Seeling

Smith suggests something very simple: a conversation — five of them, to be exact. And we're not talking about small talk around the water cooler or an office cubicle. Instead, managers should engage their direct reports in periodic discussions in five different areas during the course of a year.

"The answer to the question of how you engage disengaged employees is communication," Seeling Smith asserts. "Most managers don't sit down and talk enough to their staffs. And if they do, they often don't know what to talk about."

For managers who fall into that category, here are five things Seeling Smith suggests you FOCUS on:

1. Feedback. One of the most effective things managers can do to motivate employees is also the simplest: provide positive feedback — simply give praise where praise is due. But avoid generic blanket statements like, "Great job on that mainline-cleaning project." Instead, Seeling Smith suggests that you specifically cite details in their performance that specifically contributed to the project's success.

"Truly effective praise needs to be specific enough that employees can model that behavior in the future," she says. "It really makes a ton of difference because it engages the employees' brains and gives them specific things to hone in on. If you're not specific, employees might think you're praising them for something you're not actually praising them for."

2. Objectives. Annual goal setting that's developed with employee input is a valuable engagement kick-starter because it tells employees exactly what they need to do to be successful as well as how their success will be measured. It also gives employees a sense of where they fit into an organization and why their job is important, says Seeling Smith.

"But true objectives shouldn't be tasks, they should be outcomes," she notes. As an example, she cites a receptionist who's given job objectives such as answer calls at a switchboard and greet office visitors. "That doesn't tell her anything about how to be successful," she points out. Instead, tell the receptionist things such as how you want the phone to be answered, within how many minutes guests should be greeted and within how many rings phone calls should be answered. "That gives the employee something tangible with which to measure their performance and makes them feel more important, too," Seeling Smith observes.

3. Career development. More than ever before, employees want to know

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.

"A lot of the practices, policies and procedures — the very cultures of organizations — are built around policies developed during the Industrial Revolution. We hire people for their innovation skills, then treat them like they're making widgets on a factory floor."

— Kim Seeling Smith

the path they need to take to advance within an organization. "It's now the No. 1 or 2 concern for employees," Seeling Smith notes. "People want to know how they can learn, grow and develop in a career." Another factor that has changed: how career development is defined.

"Conventional wisdom says that development must be vertical, but that's not true in the social age we live in, where not everyone is interested in climbing the corporate ladder," she explains. The bottom line? Don't think about career development as a succession of jobs that leads to a specific goal or destination, mainly because things change so fast these days.

"Instead, think of career development as a collection of *experiences* designed to equip employees for a future role or that helps them grow and develop professionally," she suggests.

Too many managers avoid the career development conversation because they typically have small staffs. And if a manager has no plans to retire soon, they don't see any benefit in talking about career paths because opportunities seem limited. But using this different paradigm, which focuses on experiences rather than promotions, gives managers more options.

"And having that discussion, in turn, engenders employee trust and loyalty," Seeling Smith adds. "So they'll work for you longer than they normally would."

4. Underlying motivators. Managers also should talk to employees about what motivates them to stay engaged and go the extra yard. For example, ask them how they prefer to receive recognition. It might sound like a minor thing, but it's not, Seeling Smith notes.

"The old adage about praising in public and counseling in private is not always the best approach," she says. "Some people don't like to be praised in public."

Most managers would be shocked at what really motivates employees to work at peak performance. It may sound counterintuitive, but studies have shown that many employees value things like autonomy, flexible work hours, work/life balance, setting and achieving goals, and intellectual challenges much greater than more money and bonuses.

"Ask most managers what motivates employees and they'll tell you it's all about the money," she points out. "But that's actually so far down the scale it's not even funny."

5. Strengths. After working with employees to analyze and understand their strengths, managers can increase engagement by incrementally shifting employees' job responsibilities so they spend more time playing to those strengths rather than trying to shore up weaknesses, Seeling Smith says.

"The reality is that most people are good at doing some things and bad at doing others," she explains. "It's better if you allow them to concentrate on what they do well and mitigate their weaknesses. I'm not talk-

ing about making wholesale changes to their jobs, but rather just changing their focus for a few hours a week."

Conventional wisdom holds that working to improve weaknesses is a good technique for improving job performance. But in fact, some studies show that people who are already great at something can get exponentially better

(continued)

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THE HUMAN SIDE

by working on improving that skill, while similar efforts aimed at improving weaker skills don't yield the same dramatic improvements, she says.

It's not rocket science

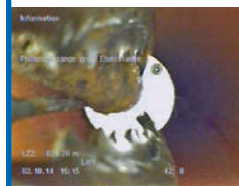
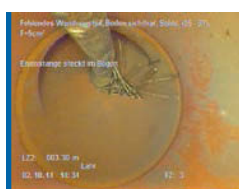
Why don't managers already hold these kinds of conversations with employees? After all, it's not rocket science, right? Seeling Smith agrees it's not, but notes that most people are promoted to managerial positions because of their experience/seniority and technical skills, but don't receive any training about what it takes to be a great manager.

"We still use industrial-age practices to hire and manage social-age employees," she explains. "A lot of the practices, policies and procedures — the very cultures of organizations — are built around policies developed during the Industrial Revolution. We hire people for their innovation skills, then treat them like they're making widgets on a factory floor. In other words, the very policies and practices that many organizations have established are diametrically opposed to engaging and facilitating the type of work we need from our employees."

So go ahead and start having some conversations with your employees. Even if it feels uncomfortable at first, the benefits that await — engaged, motivated and loyal employees who work as smoothly as a freshly cleaned sewer line — are well worth all the effort. ♦



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Virginia Beach Wastewater Collections Bureau workers Surjell Brickhouse (left) and Marcus Scott set up their Vac-Con combination truck to clean a sewer main in a residential area of Virginia Beach. (Photography by Lee Poe)

NO MORE WAITING

Proactive approach to operation and maintenance helps Virginia Beach cut overflows and blockages in its huge, aging system

By Erik Gunn

Twelve years ago the City of Virginia Beach got a wake-up call.

Its name was Hurricane Isabel. The 2003 storm was the worst in recent memory and led to severe power outages, according to Tom Leahy, Virginia Beach director of public utilities.

The power loss didn't just turn out the lights and shut off refrigerators. It severely hampered the city's sanitary sewer system.

With more than 10 percent of the city's sanitary sewer collections system consisting of force mains, Virginia Beach relies on an extensive collection of pumping stations to move its sewer flows. When Isabel hit, only 15 of the 390 sewer pumping stations had built-in generators. The utilities department realized "that we were going to have to spend a lot more money adding genera-

tors to these sewer pump stations."

The experience helped Virginia Beach turn around its sewer system operations and maintenance practices — moving from a reactive approach to a proactive one.

The aftermath of the hurricane wasn't the only reason for the change in direction. And Leahy emphasizes it's still a work in progress.

"Our goal is a sustainable operation in which we're able to keep up with the aging of the system," Leahy says. "We're not quite there yet."

SSOs and blockages

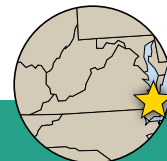
For several decades, Virginia Beach grew rapidly — first with the merger of Princess Anne County and the Town of Virginia Beach, and then as the local population soared. As the city grew, so did its sanitary sewer system — mostly through new development, but also with the

extension of public sanitary sewer systems into neighborhoods that had lacked the service and by acquiring old, failing private systems within the city's boundaries.

Then the growth tapered off and the population leveled off. The city is currently home to about 440,000 people. By the turn of the millennium, says Leahy, "We came to realize that a lot of the infrastructure built by developers and deeded over to the city was now getting old — it was wearing out."

A major symptom of problems was an increasing number of sewer system blockages and sanitary sewer overflows. "Our blockages and SSOs were increasing every single year," Leahy says. "My predecessor, Clarence Warnstaff, consulted with Jim Sarver, manager of the operations division, and they initiated a cleaning program."

(continued)



PROFILE:
Virginia Beach (Va.)
Public Utilities,
Wastewater
Collections Bureau

POPULATION SERVED:
440,000

SERVICE AREA:
City of Virginia Beach, Va.

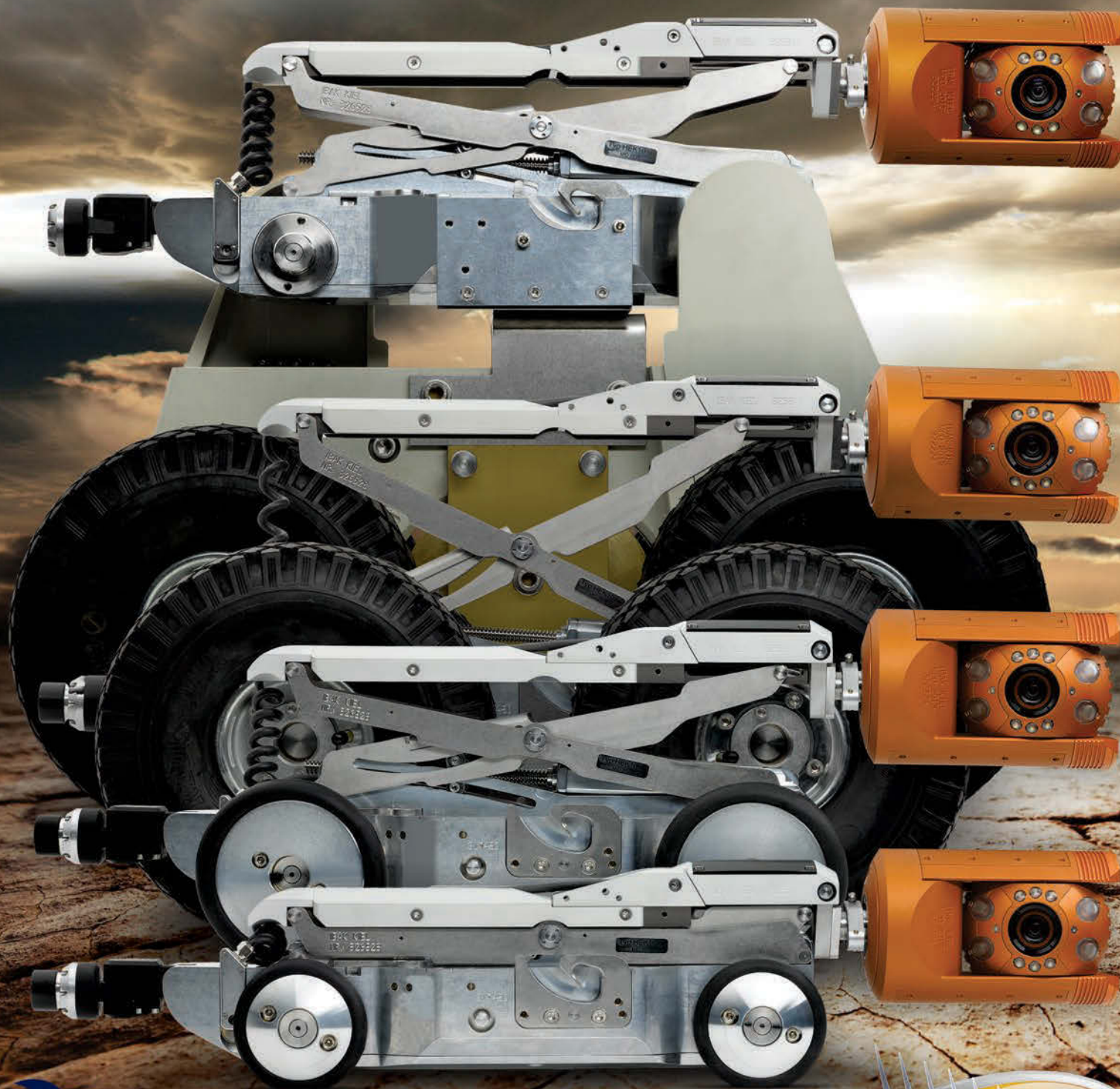
FLOWS:
49.6 mgd average;
78 mgd design

INFRASTRUCTURE:
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miles of gravity mains; 180
miles of force mains; 408
pump stations

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Meanwhile, the federal EPA proposed Capacity, Management, Operation and Maintenance (CMOM) standards in 2001. Although the federal government never formally implemented those standards, Virginia Beach officials thought they made a lot of sense, Leahy says. “We started working toward implementing the spirit of those.”

Then came the hurricane. Immediately after Isabel, 90 percent of the sewer pumping stations had no power. Five days after the storm, more than 30 percent of the 390 stations were still without power.

“For 30 years before that, the longest power outages the city had suffered [during a hurricane] was for a day or two,” says Leahy. “It was nothing like we had ever dealt with before.”

Pump up the volume

The system consists of 1,500 miles of gravity sanitary sewer mains and 180 miles of sewer force mains.

Virginia Beach has added 18 pump stations since Isabel, bringing the utility’s total to 408. But with an average age of 30 years across the system, many of its stations are more than 40 years old, dating back to the 1960s and ’70s, the city’s big growth period.

Each station is a fairly complex

“We’ve put a lot of resources into our sewer pumping stations — rebuilding and rehabbing them, cleaning them on a regular basis.”

– Daniel Lane

electrical and mechanical facility, and they all require regular maintenance.

After cleaning up from Isabel, the sewer utility began stocking up on generators, both permanently installed and portable units, says Daniel Lane, utility mechanic supervisor in the city’s Sanitary Sewer Pumping Station Bureau.

The utility also undertook a project to upgrade the pump stations — part of a larger series of capital projects that began seven years ago. As stations are replaced or rebuilt, dry well stations are being converted to submersible stations, which cost less, Leahy explains.



Virginia Beach crew members (from left) Norm Doyle, Duane Gilchrist and Daniel Lane set up an emergency generator at one of the city’s 408 pump stations.

“We’ve put a lot of resources into our sewer pumping stations — rebuilding and rehabbing them, cleaning them on a regular basis,” Lane says.

Scheduled maintenance

The capital budget increase was part of a broader program begun in 2007. That year the Hampton Roads Sanitary District, which treats the region’s sanitary sewage, signed a consent order with the EPA. The 14 communities sending flows to the district, including Virginia Beach, signed as well, agreeing to increase capital invest-



The Virginia Beach force main crew backfills a trench after installing a new insert valve on a force main. The valves are installed while lines are still under pressure.

ment and improve maintenance.

Virginia Beach, assisted by a consultant and guided by the CMOM standards, implemented a systematic approach to inspection and maintenance, explains Daren Williams, public utilities operations and maintenance engineer.

Adding up all the assets in the system — valves, air vents, pumps and so on — the utility established how often and over what period of time it would operate each asset. “For valves, we assumed that we would operate all valves within a year,” Williams says. “For manual air vents, we decided to operate all vents within the system in five years.”

(continued)



The Virginia Beach force main crew in the field.

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Crew leader Ernest Etheridge (left) and Antwan Young lower a CCTV camera from their CUES-equipped inspection van into a manhole at the start of a sewer line inspection.



MEETING CHALLENGES WITH NEW TECHNOLOGY

With a sanitary sewer system that has more than 10 percent force mains powered by hundreds of pump stations, Virginia Beach, Va., has had to find new approaches to some problems.

For instance, valve replacement can be a challenge. Installing a new valve in a sewer line normally requires shutting down the line while the repair is completed.

But Virginia Beach has been using insert valve technology. “That’s a very, very neat tool to use,” says Elijah Smith, assistant superintendent for the city’s Wastewater Collections Bureau. “We don’t have to shut down the pump station and we don’t have to shut down the line. You put the line in with everything still under pressure.”

Tom Leahy, director of public utilities, says the city’s approach to valve maintenance includes regularly exercising valves. The valve-insert work is done by specialty contractors, and the brand in use depends on the contractor chosen and which particular line that contractor is most familiar with and experienced in using. Components for each job are chosen from a city-approved list.

The contractor, Leahy explains, “bolts a large casing around the pipe.” The insert devices are sealed and crews cut a hole in the pipe, insert the valve seat and the valve actuator, then complete the repair — all while the line remains in use.

Working from those numbers, the utility then calculated monthly and annual goals to keep it on track with exercising every asset within the time allotted.

Utility employees reviewed the history of sewer pipe structural defects, such as bellies and insufficient grades, that would lead to blockages. They viewed CCTV videos to further analyze the causes of SSOs. Their findings helped establish a cleaning cycle, which then set the pace for monthly cleaning goals for gravity sewer mains in the Virginia Beach Hot Spot cleaning program.

“After a few years of operating and maintaining the system with preventive maintenance goals, we realized that we responded to fewer emergencies,” says Williams. Other aspects of the system were added to the program, such as cleaning vacuum collection tanks at least twice a year in parts of the community with heavy tourist traffic.

Force mains 4 inches or less in diameter that send flows to gravity sewer manholes are flushed every three months — once a quarter — as part of a bypass pumping program implemented to reduce emergency repairs. Previously, he explains, pumps frequently had to be repaired or replaced in lift sta-

tions with small force mains, or the mains had to be cut open and cleaned due to clogging.

Similar goals were set for other aspects of maintenance, such as replacing backup batteries at sewer pump stations every five years. The goal for cleaning gravity mains is 65,000 to 75,000 feet per month.

The goals were fed into the utility’s computer maintenance management system, which generates monthly work orders that are distributed to superintendents. As work orders are completed, superintendents review them to help keep the system accountable, Williams says. In its annual report, the utility logs the number of lateral repairs, main repairs and pump station repairs for the year; all that data is reported annually to the Virginia Department of Environmental Quality.

Inspection, cleaning, repair and replacement

But probably the biggest single change was in how the city deployed manpower.

“We used to have 10 repair crews,” says Elijah Smith, assistant superintendent for the Wastewater Collections Bureau. “What we decided to do was focus more on finding and fixing [problems].”



The Virginia Beach Public Utilities team includes (from left) Director Tom Leahy, Operations Manager Jim Sarver, and engineers Daren Williams and Bradley M. Law.

Virginia Beach reorganized the crews into maintenance crews. Each crew of two people is assigned to a Vacall sewer-cleaning truck. The city has five trucks as well as three dedicated video-inspection trucks.

Now as inspections uncover bottlenecks in the lines, crews will clean them out immediately if they can without much trouble. "We don't wait until we have major problems," Smith says.

The utility's annual cleaning goal calls for covering about 1 million feet per year, about 10 percent of the system. "It's had a tremendous reduction in our SSOs and in our stoppages," Leahy says.

Attention to cause

The reorganization has enabled crews to take a closer look at causes of particular problems.

"It used to be if someone responded to a blockage and cleared the lateral and there was grease there, it was just reported as a grease blockage," Leahy says. And if the real cause was some other defect, it might go undetected, requiring a return trip when the problem recurred.

The practice now is to televise the problem line as the first step so crews can be sure of what the real source of the blockage or other problem is. "Now the philosophy is to get in there, fix it and never have to come back to this address again," Leahy says.

At the same time, every call becomes an opportunity to look for more problems. "Every time we have a blockage or SSO, we go out and TV the line upstream and downstream of the area," Leahy says. Any defects encountered are slated for repair or replacement as soon as possible — even if they weren't responsible for the problem that led to the call in the first place.

Virginia Beach has also stepped up enforcement of existing regulations requiring food service establishments to pretreat their wastewater, instituting a program of inspections to confirm they are following the rules and are properly maintaining their grease traps. From less than 5 percent compliance when the program started, "now we're in the 60 to 79 percent range," Leahy says.

"We've gone from almost no compliance to two-thirds compliance."

Dramatic results

Between the capital investment, the find-and-fix policy, the grease-reduction program, root control and regularly scheduled cleaning, "it's had a phenomenal improvement on both our overflows and our sewer blockages," Leahy says. It's hard to say which gets the most credit, he adds. "They're all contributing at the same time."

"Find and fix" is more expensive in the short term, he observes, but it also helps prevent bigger problems. "I can't argue with the results. Our SSOs have really plummeted."

SSOs were once in the neighborhood of 200 a year. "These days we are always under 20," Leahy says. And in 2013, the number was a mere dozen. "We've dropped down to less than one SSO per 100 miles of line." ♦



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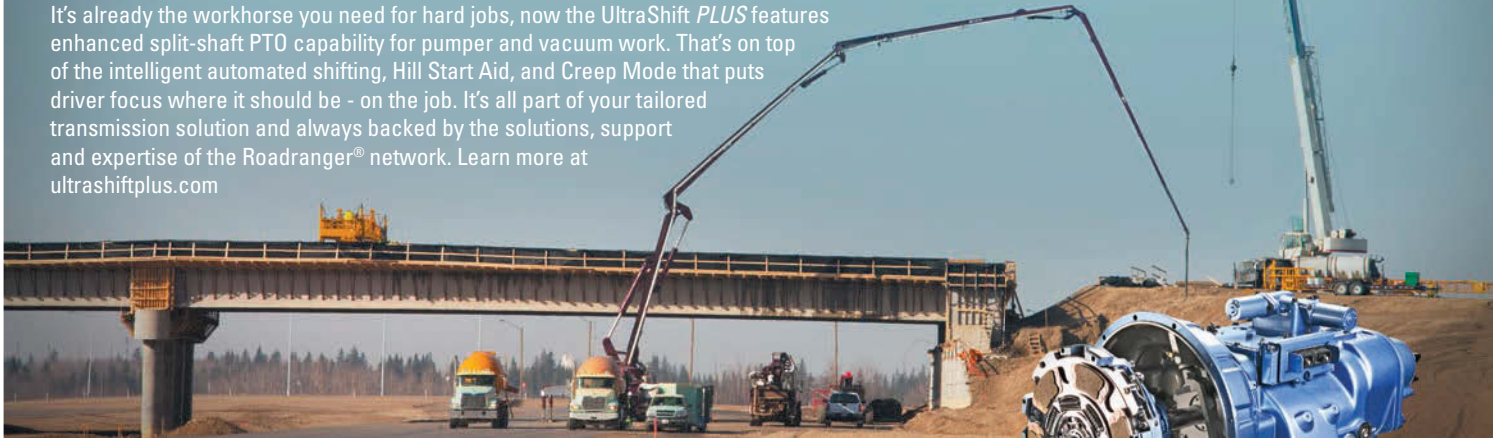
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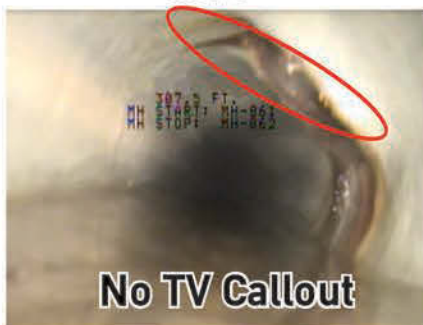
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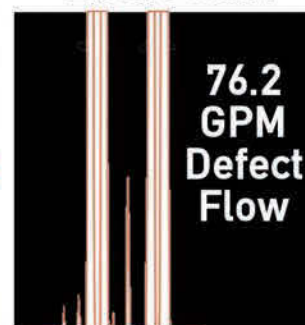
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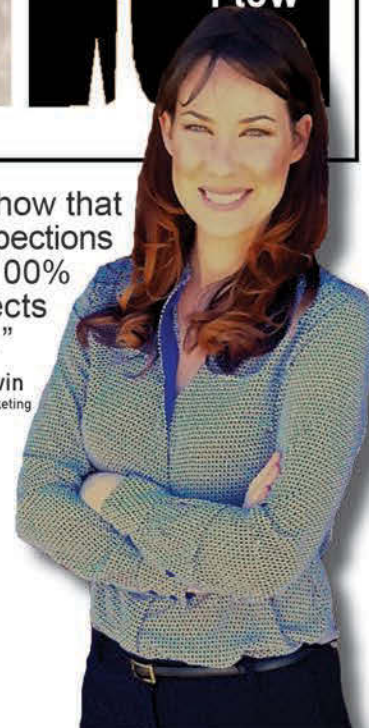


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NASSCO NAMES NEW TECHNICAL DIRECTOR

Osborn brings decades of engineering experience to new position

By Ted DeBoda, P.E.

NASSCO is proud to announce the appointment of our new technical director, Lynn Osborn. He replaces outgoing technical director Gerry Muenchmeyer who was instrumental in the development of the Inspector Training Certification Program as well as the Manhole Assessment Certification and Lateral Assessment Certification programs.

While Muenchmeyer has been an integral part of developing and growing these programs, he has also made a significant impact on the underground technology industry as a whole through his contributions to the acceptance and growth of trenchless technologies.

Muenchmeyer became NASSCO's technical director in 2007, but he has served the industry much longer. He started his career in the sewer industry in 1962 and became active in NASSCO in the 1990s, serving on the board of

directors and, in 2005, as president. His contributions to NASSCO and the underground industry earned him *Trenchless Technology Magazine's* "Person of the Year" award for 2014-15.

Muenchmeyer always focused on the success of NASSCO, and his Growth and Operational Plan became the source document for NASSCO's current strategic plan. He had a vision for the future of NASSCO and was instrumental in executing the plan to get there. Succession planning was one of Muenchmeyer's priorities, and Osborn was an obvious candidate for his own replacement.

"Lynn has been a part of this industry from the beginning, and has helped to shape trenchless technologies into what they are today," Muenchmeyer says.

Osborn steps into this role with a solid technical background and deep understanding of NASSCO's mission. As the senior applications manager

(engineering) at Insituform Technologies for 31 years, Osborn led all aspects of engineering, including technical support of sales, manufacturing and operations. Prior to that he worked for nine years as a consulting engineer in the water and wastewater fields.

Osborn served as chair of NASSCO's CIPP Committee, and was very active in our communications with the U.S. Department of Health and Human Services in 2010-11. He is also very active in the American Society of Civil Engineers and American Society for Testing and Materials, two organizations with whom we plan more extensive collaboration.

"As NASSCO's new technical director, I hope to continue the gold standard set by Gerry Muenchmeyer," Osborn says. "This includes providing responses to technical inquiries, maintaining and expanding ITCP and supporting the numerous NASSCO committees and divi-

sions, including the International Pipe Bursting Association and Infiltration Control Grouting Association."

Osborn also looks forward to helping NASSCO grow in the future. "As NASSCO continues to introduce new initiatives designed to support our mission to set standards for the assessment and rehabilitation of underground infrastructure, I look forward to assisting in the development and implementation of these programs. As the scope of NASSCO services expands, a greater market can be served and I also look forward to contributing to that growth."

Join us in thanking Muenchmeyer for his enormous contributions to NASSCO, and welcome Osborn as he steps in to help NASSCO keep a solid technical grounding as we continue to set standards for the assessment and rehabilitation of underground infrastructure. ♦

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March 4, 2015

Marriottsville, MD

PACP User Recertification

Trainer: Irv Gemora

Contact Dawn Jaworski for more information or to register: 410-442-7473 or email dawn@nassco.org

March 9-11, 2015

Marriottsville, MD

Includes Manholes and Laterals!

Trainer: Ted DeBoda

Contact Dawn Jaworski for more information or to register: 410-442-7473 or email dawn@nassco.org

March 10-12, 2015

Twinsburg, OH

Includes Manholes and Laterals!

Recertifications Welcome

Trainer: Brandon Conley

Contact the Camera Department for more information or to register:

248-349-0904 or email pacp@dohenycompanies.com

March 18-20, 2015

Conyers, GA

Includes Manholes and Laterals!

Recertifications Welcome

Trainer: John Jones

Contact John Jones for more information or to register: 404-432-5584 or email plumblineconsultant@gmail.com

April 15-17, 2015

Conyers, GA

Includes Manholes and Laterals!

Recertifications Welcome

Trainer: John Jones

Contact John Jones for more information or to register: 404-432-5584 or email plumblineconsultant@gmail.com

ITCP TRAINING (CIPP and Manhole)

March 9-11, 2015

Phoenix, AZ

Cured In Place Pipe and Manhole Rehabilitation

8:00 am – 5:00 pm Day 1 - MR

8:00 am – 1:00 pm Day 2 - MR

1:00 pm – 5:00 pm Day 2 - CIPP

8:00 am – 5:00 pm Day 3 - CIPP

CIPP Trainer: Gerry Muenchmeyer

MR Trainer: Tim Back

Contact Tim Back for more information:

513-253-8461 or email tback@cinci.rr.com

March 16-17, 2015

Orlando, FL

Manhole Rehabilitation

8:00 am – 5:00 pm Day 1 • 8:00 am – 1:00 pm Day 2

Trainer: Tim Back

Contact Tim Back for more information:

513-253-8461 or email tback@cinci.rr.com

March 19-20, 2015

Gainesville, FL

Manhole Rehabilitation

8:00 am – 5:00 pm Day 1 • 8:00 am – 1:00 pm Day 2

Trainer: Tim Back

Contact Tim Back for more information:

513-253-8461 or email tback@cinci.rr.com

March 26-27, 2015

Memphis, TN

Manhole Rehabilitation

8:00 am – 5:00 pm Day 1 • 8:00 am – 1:00 pm Day 2

Trainer: Tim Back

Contact Tim Back for more information:

513-253-8461 or email tback@cinci.rr.com

If you are interested in having a class at your facility or in your area, contact Gerry Muenchmeyer at 252-626-9930 or gerry@muenchmeyerassoc.com

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\$1.79 ft	\$2.99 ft	\$5.25 ft	\$11.49 ft

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\$10.95	\$13.95
2 1/2" x 2"	3" x 2 1/2"
\$13.95	\$37.95



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HEX NIPPLE**

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NEW Varco Sewerflex Blue 3000psi	BEST VALUE!	-	\$2.45 ft	\$2.89 ft
Pirhana Green 4000 psi / 10,000 burst	\$2.28 ft	-	-	-
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Pirhana Black 4000 psi / 12,000 burst	\$2.93 ft	\$3.54 ft	-	-

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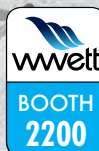


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PIPELINE AND INFRASTRUCTURE

By Craig Mandli

PIPE

Asahi/America Poly-Flo

The **Poly-Flo** co-extruded double-containment piping system from **Asahi/America** is available in black PE and euro grey PP-R. It is ideal for installations with space constraints and systems where thermal expansion and contraction are present. The system includes full pressure, drainage and machined fittings. This SDR-designed system is available in 1 by 1 1/2-, 2 by 3- and 4 by 6-inch sizes, and operates up to 150 psi at 68 degrees F. Black PE is suited for outside, above-ground applications because of its UV resistance, and it performs well in underground installations because of its resistance to crack propagation. Euro grey PP-R is ideal for applications running at higher temperatures due to its high pressure rating. The system is available with manual and low-point leak detection sensors. **800/343-3618; www.asahi-america.com.**

2 Underground Solutions fusible PVC pipe

Fusible PVC pipe products from **Underground Solutions** are available in diameters from 4 to 36 inches, including fusible C-900, fusible C-905 and FPVC. They produce a fused monolithic, fully restrained, gasket-free, leak-free piping system ideal for trenchless (horizontal directional drilling, pipe bursting and sliplining) or conventional open-cut installations. The combination of standard fittings as well as less weight and more flow for a given pressure class make it ideal for most pipeline projects. **858/679-9551; www.underground-solutions.com.**

PIPE PARTS/FITTINGS

3 Ford Meter Box Handlebolt

The **Handlebolt** from **Ford Meter Box** doubles as a handle, conveniently attaching to the end of the starter bolt to assist with installation and handling by providing leverage when pulling the clamp together. It is available on the company's F style repair clamps. **800/826-3487; www.fordmeterbox.com.**

Pipe, valves, pumps and other infrastructure components are all necessary for the construction and maintenance of municipal sewer systems. These products are all designed to efficiently transport water and wastewater.

4 Total Piping Solutions Triple Tap

The **Triple Tap** tapping sleeve from **Total Piping Solutions** is available in a low- or high-range shell before fitting on the pipe. The low range shell typically covers IPS through AC Class 150, and the high range shell DIP through AC Class 200. It has Type 304 stainless steel construction with no-gall stainless steel bolts. The gasket is an NSF 61 registered NBR compound for water or sewage. It is available in diameters from 4 through 16 inches, meets AWWA C223-13 for tapping sleeves, and carries a pressure rating up to 250 psi with test to 350 psi. **716/372-0160; www.tps.us.**

COMPONENTS

5 Environment One Corporation iota OneBox

The **iota OneBox** telemetry system from **Environment One Corporation** enables control of a fleet of pressure sewer grinder pumps from an office desktop or a smartphone. It seamlessly integrates into SCADA networks to provide information on tank storage capacities, power failures, blockages and faults. Diagnostics for individual properties, streets or whole networks are available in real time. It enables remote control and monitoring of individual grinder pumps; alerts even before the customer becomes aware of any faults; trend analysis, report generation and peak flow demand determinations; and flow smoothing and maximized efficiency of downstream infrastructure. **518/579-3068; www.eone.com.**

6 PRIMEX Level View

The **Level View** controller from **PRIMEX** controls two or three constant or variable-speed pumps for pump up (water) and pump down (wastewater) applications. Its color touch screen can be easily read in direct sunlight and provides on/off level control, speed control, pump alternation, flow monitoring, data logging, alarm logging and historical trending. An SD card provides data storage and download capability. Connectivity options provide flexibility for SCADA/BAC integration, as well as a plug-and-play interface to the Pump Watch Web-based monitoring system. **844/477-4639; www.primexcontrols.com.**

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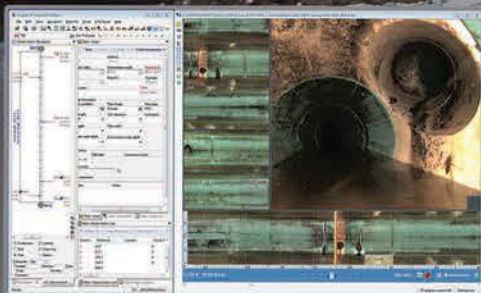


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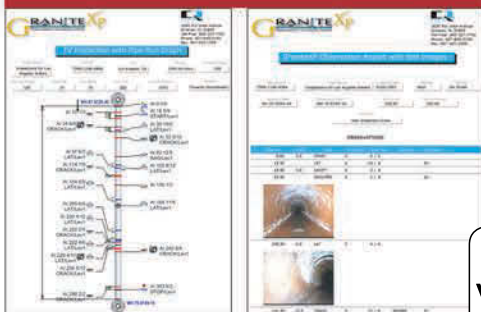
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7 RELINER/Duran Inside Drop

Inside Drops from **RELINER/Duran** extend pump life in lift stations by preventing aerated influent from being directly drawn into the pumps, causing cavitation. The drop pipe should always be extended below the low limit level and cut to follow the slope of the base fillet. If there is no fillet, cut the pipe at 45 degrees, and maintain a distance from the floor or fillet of one pipe diameter. This creates a diffuser by directing the flow back against the structure, de-aerating the influent. Do not direct the incoming flow toward the pumps. This arrangement is easy to maintain, as there is nothing to collect rags and debris. It can be cleaned from above. **800/508-6001; www.reliner.com.**

8 Smith Flow Control USA EasiDrive

The **EasiDrive** portable valve actuator from **Smith Flow Control USA** allows for valves to be operated without dedicated valve actuators. One person can efficiently drive multiple valves with a single tool, reducing fatigue and injury risk and saving cost and time. Its reaction kit prevents torque kick-back, ensuring valve movement is always fully controlled and preventing operator injury and fatigue. The variable torque output feature, which prevents excessive torque being applied, ensures proper and safe valve operation. No permanent power supply is required, and it is suitable for all climates. It has wide-band torque capability with variable torque adjustment. It can be powered by air, electricity or battery. **859/578-2395; www.smithflowcontrol.com.**

PUMPS

9 Flygt Exporior

The **Exporior** wastewater pumping system from **Flygt - a Xylem Brand** has self-cleaning Flygt N-technology that ensures efficient pumping. Its Adaptive N-hydraulics allow the impeller to move axially upward when necessary to permit bulky or tough debris to pass through, reducing stress on the shaft, seals and bearings. It has a preprogrammed SmartRun pump control unit that provides the benefits of variable-speed pumping. Its premium-efficiency motor is small and light, yet durable, with a long bearing and motor lifetime. **704/409-9700; www.flygtus.com.**

10 Franklin Electric FPS NC Series

Submersible centrifugal **FPS NC Series** non-clog pumps from **Franklin Electric** are available in 3- and 4-inch 125 ANSI flange discharge connections, in 3, 5, 7.5 and 10 hp models with heads up to 66 feet and flows up to 610 gpm. They can pass up to 3-inch solids, retrofit to any standard rail system and contain replaceable internal components. Ductile iron casted impellers provide added corrosion resistance and handle rigid debris. A Fluoroelastomer motor

enclosure sealing system improves chemical and temperature resistance, while a double-row ball lower bearing offers ideal loading and wear characteristics. It has a field-adjustable wear plate. **800/701-7894; www.franklinengineered.com.**

11 Giant Industries GP5100

For applications that have limited space, the **GP5100** series compact-design industrial triplex plunger pump from **Giant Industries** is rated up to 4,000 psi and up to 43 gpm. It comes with an SAE-C four-bolt mount and a hollow shaft, which will accept standard hydraulic motors. It is constructed with a nickel-plated spheroidal cast iron crankcase; drop-forged, through-hardened, ground and polished crankshaft; bronze connecting rods; sight glass; vented dipstick; hardened, ground and polished stainless steel plunger bases; solid ceramic plungers; nitrile seals with fabric reinforcing; stainless steel valves; and nickel-plated spheroidal cast iron manifold. **800/633-4565; www.giantpumps.com.**

12 Gorman-Rupp Company ReliaPrime

The **ReliaPrime** emergency bypass station from **Gorman-Rupp Company** has a 6-inch Super T Series pump capable of passing 3-inch spherical solids. A soundproof, lightweight aluminum enclosure has lockable door panels that can be removed for maintenance. The unit is a complete backup package, ready for hookup. **419/755-1011; www.grpumps.com.**

13 Goulds Water Technology Series e-SV

The **Series e-SV** stainless steel vertical multistage pump by **Goulds Water Technology - a Xylem brand** is offered in 11 models with flow rates of up to 800 gpm and heads up to 1,150 feet. It has standard NEMA meters that support 0.5 to 75 hp and have a temperature range of -20 to 250 degrees F. The design is easy to maintain and enables the removal of the mechanical seal without having to detach the motor, reducing repair time by up to 50 percent. **866/325-4210; www.goulds.com.**

14 Hammelmann Corp. HDP-196

The **HDP-196** sewer pump from **Hammelmann Corp.** has flows up to 160 gpm and pressures of 3,200 psi. It has a compact footprint and integral reduction gear, and is available in horizontal or vertical models with a reversible pump head, central or side suction connection, discharge connections on both sides, left- or right-hand driveshaft, and operation at any angle. The water end is suitable for recycled water with high-grade solid ceramic plungers, wear-resistant valve seats, low flow velocity over suction and discharge valves, packing seal sets within rust-resistant stainless steel sleeves, a slow plunger speed, pressurized oil lubrication system, and clockwise or counterclockwise rotation. It offers easy servicing with reversible

(continued)



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15 InviZiQ Pressure Sewer System

The **InviZiQ Pressure Sewer System** utilizes grinding and pumping to move sewage to treatment facilities, no matter the terrain, slope, environmental sensitivity of the area or complex topography of the region. It has a dry well design that delivers clean access to the system motor and other working parts, increasing safety for contractors. Network monitoring and control is built into every system and gives users a host of diagnostic resources for system management. **281/854-0300; www.inviziq.com.**

16 Liberty Pumps LSG-Series Omnivore

The **LSG-Series Omnivore** grinder pump from **Liberty Pumps** has V-Slice cutter technology with a hardened stainless steel cutting system that aggressively shreds jeans, shop rags, sanitary napkins and other difficult solids into fine slurry with little jamming. It has a one-piece cast iron body, quick-disconnect power cord, stainless steel impeller and dual-shaft seals. Complete predesigned grinder systems are available in a variety of basin sizes. **800/543-2550; www.libertypumps.com.**

17 Moyno EZstrip Transfer Pump

The **EZstrip Transfer Pump** from **Moyno** provides a quick and easy way to disassemble, de-rag and maintain a PC pump in place. It offers direct access to the wear parts and rotating assemblies without affecting the operational parameters. Its full drive train, including the rotor, stator, shaft, rod and seal, can be removed in minutes with no electrical disconnection required. Suction and discharge ports remain connected to the pipe work, eliminating dismantling lengths. Low running speeds reduce wear for a long working pump life. It requires only a wrench and an Allen key to maintain. **877/486-6966; www.moyno.com.**

18 Vertiflo Pump Co. 1600

The **1600** vortex close-coupled horizontal-end suction pump from **Vertiflo Pump Co.** is available in cast iron, 316 stainless steel fitted, all 316 stainless steel, Alloy 20 and CD4MCu. Capacities range up to 1,600 gpm, heads of 170 feet tdh and temperatures of 250 degrees F. It has back-pull-out construction, a fully recessed vortex impeller and external impeller adjustment. **513/530-0888; www.vertiflopump.com.**

VALVES

19 APCO ASU Combination Air Valve

DeZURIK APCO ASU Combination Air Valve from **DeZURIK Water Controls** are single-body combination valves with an air release and air/vacuum mechanism to deal with media containing grit, solids and grease. They provide varied and predictable airflow over a wide range of air release conditions. A large diameter air/vacuum disc provides high-volume airflow for rapid venting during pipeline filling and allows high volumes of air to enter the pipeline during draining. During normal pipeline flow conditions, the dual-range air release prevents air buildup and resultant flow restrictions under changing conditions and through the full flow range. It is available in 1- to 4-inch sizes with all stainless steel construction and meets the performance requirements of AWWA C512 standard. **320/259-2000; www.dezurik.com.**

20 Mainline Backflow Products STRAIGHT-FIT

STRAIGHT-FIT valves from **Mainline Backflow Products** come in 3-, 4- and 6-inch sizes and are available in both PVC and ABS. They have a body that is extendible to whatever depth required. The gate can be extended for easy extraction as well. They have a Smart CURVE gate designed to allow a sewer snake to feed and retract without catching on the gate itself. A cleat insert in the body eases the feeding and retrieval of a snake without hanging up, reducing excessive wear on the body. An optional test gate can be used to pressure test the system or isolate the property. **877/734-8691; www.backwatervalve.com.**

21 Mueller Co. Gate Valve

The **A-2361** all-ductile-iron-resilient wedge gate valve from **Mueller Co.** operates at a working pressure of 350 psi. It is available in sizes from 4 to 12 inches and has dual-purpose lifting lugs, a T-head bolt retention design and pressure-assist wedge geometry. It is triple listed — meeting AWWA's C515 standards, UL listed, and FM approved. Lifting lugs provide alignment for the valve box and accommodate straps or hooks. A nesting area for T-head bolts on MJ connections prevents rotation during pipe installation. The pressure-assisted wedge design requires the same torque to seal at 350 psi as current valves do at 250 psi. **800/423-1323; www.muellercompany.com.**

22 Red Valve Co. Type A Pinch Valve

The **Type A Pinch Valve** from **Red Valve Co. / Tideflex Technologies** has a full-port opening and straight-through flow path to eliminate turbulence when open. The two-piece body acts as a built-in pneumatic actuator. Fabricated elastomer sleeves offer wear resistance and sealing on entrapped debris. Double-wall and cone sleeves are available for abrasive and high-pressure applications. **412/279-0044; www.redvalve.com.**

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23 Victaulic Series 365 AWWA Vic-Plug

Series 365 AWWA Vic-Plug grooved-end eccentric plug valves from Victaulic are designed to ANSI/AWWA standards. The body conforms to AWWA C-509 standard end-to-end dimensions, while the grooved ends conform to ANSI/AWWA C-606 rigid groove specifications. The valve is installed quickly and easily with Style 31 couplings, Style 307 transition couplings or in combination with Style 341 Vic-Flange adapters. It ensures bubble-tight sealing up to 175 psi as the plug cams into the seat. Bidirectional sealing to 25 psi is standard; full bidirectional sealing to 175 psi is also available. Self-lubricated stainless steel bearings with protective o-rings resist corrosion to prevent binding and prolong valve life. They have adjustable chevron packing, multiple types of manual operators, and a variety of body and plug coatings to meet specific service requirements. They are available in 3- to 12-inch sizes. **610/559-3300; www.victaulic.com.** ♦

23



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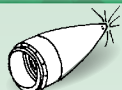
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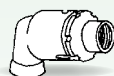
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1"-17°/24°	\$156.00
1"-24°	\$141.00

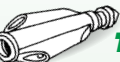


Swivel Joints

T-M® Style	
90° or Straight, 6000 psi	
3/4" & 1"	\$198.00
1-1/4"	\$210.00
1-1/2"	\$560.00
2"	\$807.00



Aluminum Grease



Truder

3/4" or 1"-17°	\$350.00
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Shark

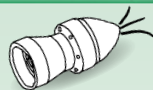
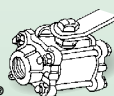
1"	\$495.00
1" Big Shark	\$610.00

Stainless Steel Nozzles

1/8"	\$37.00
1/4"	\$41.00
3/8"	\$45.00
1/2"	\$57.00
3/4"	\$91.00
1"	\$116.00

Ball Valves

Dyna Quip® Style	
3000 psi	
1"	\$227.00



Radial Bullet

3/4"-18° or 35°	\$50.00
3/4"-18°/24°	\$53.00
1"-18° or 30°	\$69.00
1"-15° or 30°	\$69.00
1-1/4"-18 or 35°	\$85.00



Steel Sand

1"-12°	\$73.00
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NEW Storm/Culvert Floor Cleaner Nozzles

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1/8"- 1-1/4"



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4" - 18"
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w/flat blades	\$1175.00
w/concave blades	\$1198.00
w/spiral blades	\$118.00

Donut Mounted	
w/flat blades	\$1125.00
w/concave blades	\$1160.00
w/spiral blades	\$1160.00

Lateral Mounted	
w/flat blades	\$1020.00
w/concave blades	\$1075.00

Assemblies come with one ea. of 6, 8, 10 and 12" blades, saw blades, hub, skids, etc.

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TigerTail™ Style

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with 24' rope



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Power Clamps

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3'-6" available

King Clamps

8"	\$29.75
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4'-6" available

Bandlock® Clamps

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Quick Clamps

8"	\$26.50
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3'-6" available



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1" 2-way	\$119.00
1-1/4" 2-way	\$226.00

4500 psi

3/8" 3-way	\$115.00
1/2" 3-way	\$160.00
3/4" 3-way	\$180.00
1" 3-way	\$190.00
1-1/4" 3-way	\$440.00
2" 3-way	\$690.00



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Steel-reinforced polyethylene pipe used for limited-space sewer and water main replacement

Problem:

Located in the suburbs of Fort Worth, Texas, the Lochwood Court residential housing community required replacing a water main and storm sewer system located between houses, where spacing is tight.

Solution:

Wade Trim Inc. specified that **DuroMaxx** steel-reinforced polyethylene from **Contech Engineered Solutions** be used, with concrete pipe as an alternate. The product is lightweight and its long 24-inch joints allow for a quicker installation of the required 378 LF. The high-performance 15 psi joints provide a watertight joint while the profile provides a small outer diameter, resulting in less trench excavation. The pipe can be installed utilizing small equipment.

RESULT:

Nearby homeowners were satisfied, as the installation was kept to a constrained site that avoided wrecking landscaping and encroaching upon surrounding lawns. "The product was delivered on time, easy to install and is functioning as designed," says project engineer David Speicher of Wade Trim Inc. "The use of this product expedited our project construction time and made it much easier to work between two homes." 800/338-1122; www.conteches.com.

Deep-water outfall used to improve stormwater quality

Problem:

The shoreline of North Myrtle Beach, S.C., was being negatively impacted by four outfalls that were not only an eyesore, but whose discharge led to beach erosion along with pollutants that, following rain events, created poor water quality in swimming areas, resulting in an increasing number of beach advisories.

Solution:

The city decided to combine the existing outfalls into one 84-inch deep-



water outfall that stretched 1,200 feet into the Atlantic Ocean. Due to pressure from above wave action and compact bedding, the 1,300-foot outfall required a rigid pressure pipeline. **Hanson Pressure Pipe** supplied 84-inch **E-301** pipe in 20-foot lengths. Burial depths ranged from 6 to 7 feet under the ocean floor. Pipe bedding and backfill included 3 1/2 to 6 feet of bedding stone, topped with 1 1/2 feet of rip-rap stone and a top layer of 5 to 7 feet of armor stone.

RESULT:

The outfall, along with implementation of best management practices, significantly improved stormwater quality. 972/262-3600; www.hansonpressurepipe.com.



Township eliminates cavitation in reservoir with single-rolling diaphragm control valve

Problem:

Pittsfield Township, Mich., pumps water from a neighboring community to a storage tank that ranges between empty and 16 feet at full, resulting in a pressure drop anywhere between 7 to 70 psi. The existing plug valve was not able to handle this flow ratio and caused cavitation that destroyed two reducers.

Solution:

They installed a single-rolling diaphragm actuated control valve with anticavitation (AC) trim from **Singer Valve** to eliminate cavitation damage without sacrificing other valves, changing processes or system dynamics. The AC control valve contains two heavy stainless steel sliding cages that maximize the full flow capacity. The first directs and contains the cavitation recovery, allowing it to dissipate, while the second allows further control to a level as low as atmospheric pressure downstream. The cages are engineered to meet the flow/pressure differential of the specific application.

RESULT:

The valve operates quietly and smoothly without cavitation. "The Singer valve is a simple and efficient solution with minimal maintenance," says Billy Weirich, Pittsfield Township utilities superintendent. The valve continues to consistently modulate the flow into the tank without any shutdown, creating consistent water flow. 604/594-5404; www.singervalue.com.



HDPE pipe used to replace long water main

Problem:

Fast-growing Lyon Township in Michigan required new potable-water services. This extension line needed to cross under three wetland areas, a drainage crossing, and near several residential and commercial areas with little or no disruption.

Solution:

The township installed 11,307 linear feet of 14-inch SDR 11 high-density polyethylene water main from **WL Plastics Corp.**, along with gate wells and fire hydrants. The project was installed in a dedicated easement and within the right-of-ways. Most of the project was horizontally drilled with transitions to ductile iron through gate wells, hydrant outlets and gate valve connections.

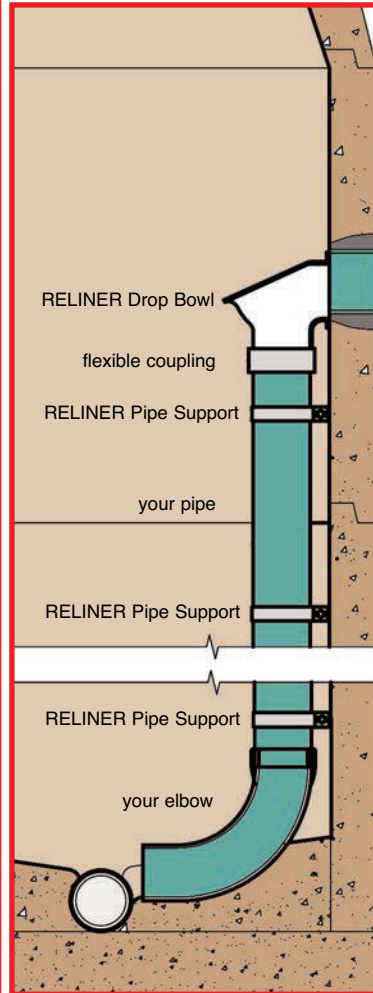
RESULT:

The piping provided a trouble- and leak-free system that resists corrosion and ground movements. It doesn't promote biological growth, so tuberculation effects were nullified and maintenance costs were reduced. 682/831-2700; www.wlplastics.com. ♦

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Product Spotlight

Jetter nozzle captures video from 6- to 10-inch lines

By Ed Wodalski

The JetScan Mini video nozzle from Envirosight captures HD video from 6- to 10-inch sewer lines. Like its big brother, the Mini provides municipal crews with visual feedback to select appropriate cleaning tools, troubleshoot backups, identify buried safety hazards and document successful cleaning.

"It simply connects to the end of a jetter hose and you can run it up a line," says Jake Wells, marketing manager for Envirosight. "That's especially beneficial in Texas and California where 6-inch lines are more prevalent."

As with the standard JetScan, the Mini attaches to 3/4- to 1 1/2-inch hoses and records up to 8 hours of 72p HD MPEG video to an onboard 32 GB memory card, which can be removed for viewing on an iPad or compatible device.

"The nozzle will work off any jetter, whether it's mounted to a cleaning truck or a trailer jetter," Wells says. "It allows you to be more efficient and judicious with your use of more expensive technology. For example, if there's

an emergency call about a blockage, a cleaning crew can troubleshoot it rather than calling a CCTV truck. The camera also travels down the line at a higher rate of speed than your typical crawler or push camera."

Twin high-output LED lamps ensure bright, vivid footage, while rechargeable lithium-ion batteries provide up to four hours of continuous operation.

When paired with the standard JetScan and optional roller arm, crews have the ability to view lines from 6 to 24 inches in diameter.

"It's a great tool for helping jetting crews get visual information from underground without relying on other crews who have other priorities," Wells says. "The detachable camera also can be used with either nozzle body."

The 6-inch video nozzle is available separately or as part of a complete system. **866/936-8476; www.envirosight.com.**



Water Cannon 17H85 Pressure Washer



ClearSpan Fabric Structures



General Pipe Cleaners Gen-Eye SDW Monitor

Water Cannon pressure washers

Pressure washers from Water Cannon meet or exceed 2014 EPA and California regulations relating to fuel tanks, vents and carbon canisters. The pressure washers feature low-permeation fuel tanks and fuel lines. Fuel caps vent to the engine's air cleaner rather than the atmosphere. Model 17H85 has a Honda GX 690 electric start engine, 15-gallon fuel tank, roll cage protection and a TSP General triplex plunger pump that delivers 4 gpm and 7,000 psi. **800/333-9274; www.watercannon.com.**

ClearSpan fabric building structures

HD Buildings from ClearSpan Fabric Structures are available in gable-, round-style, and hybrid designs. They can be mounted as a freestanding structure or affixed to other foundations. The buildings have a triple-galvanized structural steel tubing frame and 12.5-ounce high-density polyethylene rip-stop fabric cover. Buildings start at 25 feet wide. **866/643-1010; www.clearspan.com.**

General Pipe Cleaners inspection system with Wi-Fi

The Gen-Eye SDW video inspection and location system from General Pipe Cleaners features a Wi-Fi transmitter inside the command module that sends video to a smartphone or tablet. A free app enables operators to view and record video inspections from a range of 300 to 500 feet. Older SD systems can be upgraded with the Wi-Fi features. Weighing 12 pounds, the inspection system has a 10.4-inch LCD screen, built-in waterproof keyboard, integral SD recorder and heavy-duty Pelican case. **800/245-6200; www.drainbrain.com.**

(continued)



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Engineered Software pipe modeling

The Pipe-Flo Professional v14.0 pipe-modeling program from Engineered Software is designed for engineering, commissioning and operations projects. The piping simulation model, once created, continually updates as the system evolves, incorporating new information as it becomes available. Inlet and outlet static pressure, hydraulic grade and energy grade are calculated and reported for pipes. Percent deviation is calculated for all devices for greater accuracy. License messaging aids in troubleshooting. Gradient color allows for clear diagnostics and model troubleshooting. **800/786-8545; www.eng-software.com.**

OTTO Controls universal joystick

The G3-A1AS111NNN universal joystick/grip housing from OTTO Controls and distributed by Peerless Electronics eliminates the need for tooling changes. The housing accommodates push-button, rocker, toggle, HP Hall effect and HPL proportional outlet series of switches (not included). **800/285-2121; www.peerlesselectronics.com.** ♦

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Karl Buscher



Paul Twaddell

Pump Solutions Group names officers

Pump Solutions Group, manufacturer of pumps, systems and related flow-control products, named Karl Buscher president. He had been president of PSG Americas. Paul Twaddell was promoted to vice president of global sales and marketing from vice president of vertical segment management. Mike Chua was named vice president of sales and business development, Asia.



Jesse Hanssen

Sioux names sales and marketing manager

Sioux Corp. named Jesse Hanssen sales and marketing manager. Sioux manufactures industrial application-specific cleaning equipment, water-heating and chilling systems, steam generators and related custom equipment.

Southland Tool certified ISO 9001-2008 compliant

Southland Tool received ISO 9001-2008 certification, signifying a commitment to product quality and management principles: customer focus,

leadership, involvement of people, process approach, system approach to management, continual improvement, fact-based decision-making and mutual beneficial supplier relationships.

InfoSense receives technology award

InfoSense was a 2014 winner of the Use of Tech in Energy & Environment Award, which recognizes North Carolina companies and individuals who have demonstrated excellence, innovation and leadership in 25 categories. InfoSense was recognized for its Sewer Line Rapid Assessment Tool that acoustically inspects sewer lines for blockages.

Cornell Pump names municipal market manager

Cornell Pump promoted Ron Aceto to municipal market manager. Based in New Jersey, he will be responsible for technical selling and regional support in the United States and internationally for all municipal applications.

Wastequip named among Best Places to Work

Wastequip was named among the Best Places to Work by the *Charlotte Business Journal*. The company was chosen for its open-office environment and community involvement. This is the second consecutive year the company has received the award.

Pipe Restoration Technologies receives patent

Pipe Restoration Technologies, maker of the ePipe product line, received U.S. patent 8887660 for its ePipe system. The patent covers methods and process steps for mapping, cleaning and providing barrier coating to interior walls of piping systems.

Geospatial revamps website

Geospatial Corp. has revised its GeoUnderground website, www.geounderground.com. The revised site enables users to securely gather, share, view and edit geo-referenced information from a laptop, tablet or phone.

Vac-Con conducts food drive

Vac-Con employee owners conducted a peanut-butter-and-jelly food drive to benefit The Food Pantry of Green Cove Springs (Fla.) and donated non-perishable food items. Donations totaled 527 pounds. ♦

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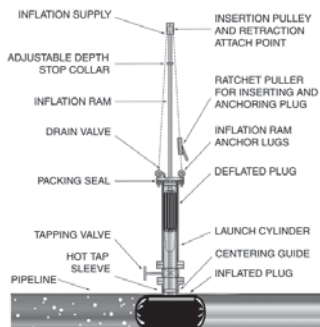
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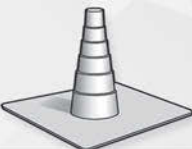


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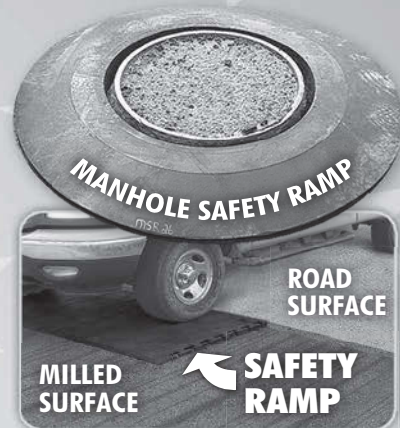


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TOOLS

RIDGID model #300 with stand, RIDGID tri-stand vises, RP 330 ProPress kit. The Cable Center: 800-257-7209. (CBM)

T&T Tools: Probes, hooks. Probes feature steel shafts with threaded and hardened tips. The insulated **Mighty Probe™** tested to 50,000 volts. **Top Poppers™** open man-hole covers easily. Free catalog. www.TandTtools.com. Phone 800-521-6893. (CBM)

TV INSPECTION

CUES K2 SYSTEM: Steerable Compact Pipe Ranger (CPR), OZ3 camera, 1000' gold cable, auto cable reel, CPU, CCU, wireless controllers, six different wheel sets, two different wheel spacer sets, tool and manual. Like new (app. 40 hours) at 20% off list. Call 866-936-8476 or email office@envirosight.com. (MBM)

NEED TRACTION? We make aftermarket more aggressive pads and chain assemblies for all chain-driven camera tractors. Custom, dependable, double-hole fabrication secured to high quality carbon steel chain, or just pads and rivets. Samples upon request. **Pipe Tool Specialties LLC:** 888-390-6794; Fax 888-390-6670; www.yourtractionpads.com or email pts4422@yahoo.com (MBM)

Used and rebuilt camera kits in stock: RIDGID Mini Compact, Mini Color, Standard Self-Leveling, General Gen-Eye I, II and III, Aries Seeker, and SRECO kits. The Cable Center: 800-257-7209. (CBM)

WATERBLASTING

40,000 psi Sapphire Nozzles, UHP hoses & replacement parts. Excellent quality & prices. 772-286-1218, info@alljetting.com, www.alljetting.com. (CBM)

PEOPLE/AWARDS

EPTDESIGN, a California-based landscape architecture firm with offices in Pasadena and Irvine, received a 2014 Quality of Life Design Merit Award from the Southern California Chapter of the American Society of Landscape Architects for the River Oaks Park project in San Jose. The project is a result of a private-public partnership between the City of San Jose and the developers of Crescent Village. The 5-acre public park provides important community space for San Jose's longtime residents and Silicon Valley's expanding job market. The project preserves existing mature trees on site, in addition to featuring an innovative stormwater runoff system that highlights the beauty and benefit of low-impact design.

The **Jayhawk Boulevard Project** on the University of Kansas campus received a 2014 Sustainable Success Story Award from the Mid-America Regional Council. The award highlights projects that advance the three pillars of sustainability — social equity, economic vitality and environmental stewardship. The Jayhawk Boulevard Project was honored for keeping sustainability in mind “by improving transit stops, providing green solutions for stormwater management, creating additional places for student interaction and green space, and reviving the historic landscape and street canopy.”

Mark Jaconski and Joe Jaconski, owners of Stanley's True Value Hardware Store in Roxborough, Pa., were honored as Stormwater Pioneers by the Philadelphia Water Department. The Stormwater Pioneers Program is an initiative established to recognize Philadelphia property owners, developers and designers for their innovation and dedication to better managing stormwater runoff. In 2010 the Jaconski brothers embarked on a plan to build a new,

larger building on the existing site of their family-owned, 66-year-old hardware store. Faced with the new challenge of stormwater on their larger property, they called upon the Ruggiero Plante Land Design Company in Manayunk to assist them with creating a system to manage their water efficiently and environmentally.

LEARNING OPPORTUNITIES

American Society of Civil Engineers

The ASCE is offering the following courses:

- March 5-6 – Leadership Development for the Engineer, Cincinnati
 - March 12-13 – Computer Workshop, Reston, Va.
 - March 12-13 – Pumping Systems Design for Civil Engineers, Baltimore
 - March 19-20 – Financial Management for the Professional Engineer, Orlando, Fla.
 - March 26-27 – Storm Sewer System Design Using SWMM, Las Vegas
- Visit www.asce.org.

Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering the following courses:

- March 23-24 – Using WinSLAMM v.10.1: Meeting Urban Stormwater Management Goals, Madison
 - April 13-14 – Advanced Modeling Using HEC-RAS, Madison
- Visit <http://epdweb.engr.wisc.edu>. ♦

CALENDAR

March 30-April 1

American Water Resources Association Spring Conference: Water for Urban Areas, Los Angeles Airport Hilton, Los Angeles. Visit www.awra.org.

April 12-15

American Public Works Association North American Snow Conference, DeVos Place, Grand Rapids, Mich. Visit www.apwa.net.

June 7-10

American Water Works Association Annual Conference and Exposition, Anaheim, Calif. Call 303/347-6181 or visit www.awwa.org.

July 26-29

American Society of Agricultural and Biological Engineers International Conference, New Orleans. Visit www.asabe.org.

Aug. 2-6

StormCon North American Surface Water Quality Conference & Expo, Austin, Texas. Visit www.stormcon.com.

Aug. 30-Sept. 2

American Public Works Association International Public Works Congress and Exposition, Phoenix Convention Center, Phoenix. Visit www.apwa.net.

Sept. 28-30

National Rural Water Association WaterPro Conference, Oklahoma City. Visit www.nrwa.org.

Oct. 11-14

American Society of Civil Engineers 2015 Convention, New York City. Visit www.asce.org.

Oct. 12-16

American Water Works Association 2015 Water Infrastructure Conference and Exposition, Bethesda, Md. Visit www.awwa.org.

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

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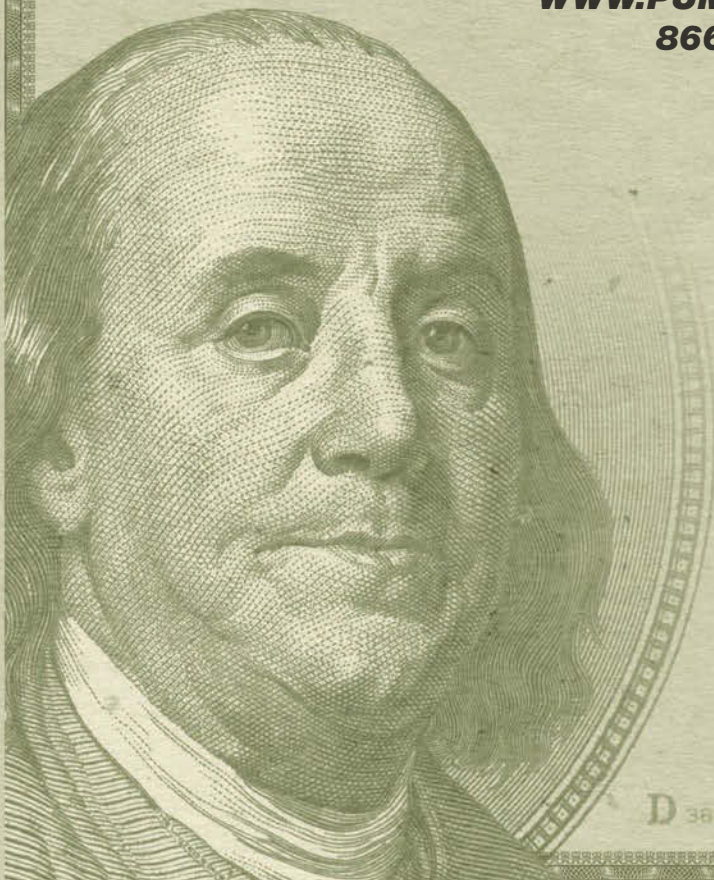
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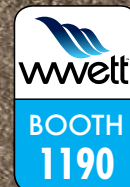
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