

M U N I C I P A L

SEWER  
&

WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

January 2019

www.mswmag.com

HUMAN SIDE: KEEP YOUR  
BEST EMPLOYEES ON BOARD

PAGE 18

TECH TALK: SMART VALVES HANDLE  
DEMANDS OF AGING PIPES

PAGE 32

STAYING SAFE: UNDERGROUND WORK  
REQUIRES CAREFUL PREPARATION

PAGE 38

# CLIMBING BACK FROM HARVEY

After cleaning up and  
drying out, Houston is  
working through poststorm  
problems and planning major  
infrastructure improvements

PAGE 12

PIPELINE REPAIR &  
REHABILITATION  
DIRECTORY

PAGE 30

Clarence Wittwer  
Assistant Director  
Houston Wastewater Operations

PRODUCT FOCUS:  
PIPELINE REHABILITATION AND RELINING



# Share Sewer Inspections with **Anyone, Anywhere**

1  
Download  
projects with  
pre-populated  
headers.

2  
Upload  
complete  
PACP-compliant  
inspections.

3  
Share securely  
online with  
anyone,  
anywhere.



**ROVVER X  
Makes It  
Possible.**

With our new crawler controls, you can wirelessly download assigned projects, complete PACP-compliant inspections on the touchscreen and upload your results to the cloud to share instantly. **See what else ROVVER X makes possible – request a FREE demo.**



**EnviroSight**

[www.envirosight.com/rvx](http://www.envirosight.com/rvx) • (866) 936-8476



# RDB | 1015™

Takes the  
“work”

Out of  
work

Ready To Go In  
Seconds – Without  
Breaking a Sweat

The NEW Vactor RDB 1015 (Rapid Deployment Boom) telescopes 10 feet out and extends the debris hose down 15 feet minimizing, even eliminating the need for additional vacuum tubes to do the work at hand. **This revolutionary new boom speeds and eases setup and teardown reducing operator fatigue. WHAT A RELIEF!** And it can stow with the primary vacuum tube attached during transport from site to site. **Simply put, the RDB 1015 saves time, improves efficiency and ups productivity – without breaking a sweat.**

**NOW AVAILABLE**

on 2100i and 2100 plus units,  
both new and retrofittable.

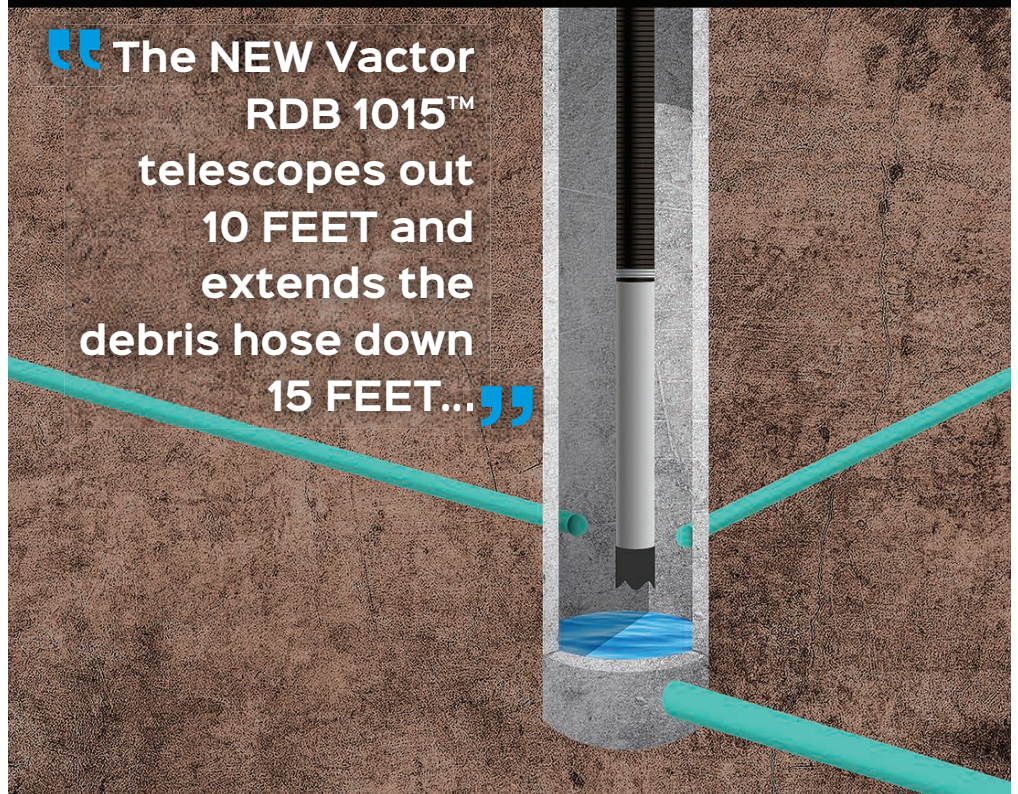
Contact your authorized Vactor dealer  
for a demonstration or visit

**vactor.com**

©2018 Vactor, A Subsidiary of Federal Signal Corporation. All rights reserved.



“The NEW Vactor  
RDB 1015™  
telescopes out  
10 FEET and  
extends the  
debris hose down  
15 FEET...”



**THIS CHANGES EVERYTHING.  
AGAIN.**



Exclusively from

**VACTOR®**  
Subsidiary of Federal Signal Corporation

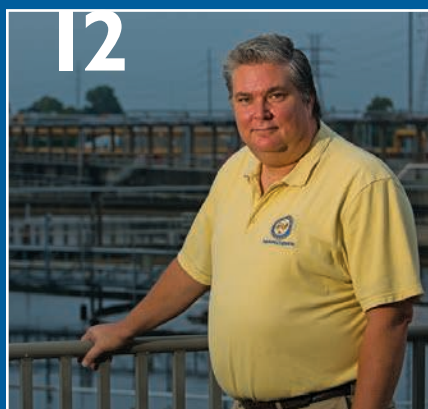


# INSIDE:

PIPELINE REHABILITATION AND RELINING



ON THE COVER: Clarence Wittwer, assistant director of Houston Wastewater Operations, at Houston's 69th Street Wastewater Treatment Plant. The facility is one of the largest in the country, and the city's 39 wastewater treatment facilities handle a combined average of 250 mgd. (Photography by Mark Mulligan)



## COMING IN FEBRUARY 2019

### Pipeline & Infrastructure, Hydrants

- ◆ HUMAN SIDE: Good managers are critical to success
- ◆ BETTER MOUSETRAPS: Breaking the manhole corrosion cycle
- ◆ TECH CLOSE-UP: Gearing up with Wipes Ready

## FEATURES

- 12 WATER: Climbing Back From Harvey**  
After cleaning up and drying out, Houston is working through poststorm problems and planning major infrastructure improvements.  
By Jim Force
- 22 WATER: Quenching a District's Thirst**  
Southern California water district makes the most of limited resources and builds resiliency for the future.  
By Giles Lambertson

## COLUMNS

- 8 FROM THE EDITOR: One Accident is Too Many**  
Celebrate the new year with a pledge to stay safe and see another.  
By Luke Laggis
- 10 @mswmag.com**  
Visit daily for news, features and blogs. Get the most from *Municipal Sewer & Water* magazine.
- 18 HUMAN SIDE: Stopping the Brain Drain**  
Data analytics can help organizations detect flight-risk employees and keep them on board.  
By Ken Wysocky

## 30 PIPELINE REPAIR & REHABILITATION DIRECTORY

- 32 TECH TALK: Water Needs Its iPhone Moment**  
Smarter systems will help utilities cope with the demands of aging infrastructure.  
By Jon Daniels
- 36 NASSCO CORNER: Addressing a Serious Safety Issue**  
NASSCO introduces new Specification Guideline for Cross Bore Prevention and Detection.  
By Sheila Joy
- 38 STAYING SAFE: Make a Call for Safety**  
Excavating and working around underground utilities requires careful preparation and constant communication.  
By Doug Riesden
- 42 PRODUCT FOCUS: Pipeline Rehabilitation and Relining**  
By Craig Mandli
- 48 CASE STUDIES: Pipeline Rehabilitation and Relining**  
By Craig Mandli
- 50 PRODUCT NEWS**  
Product Spotlight: Water recycling innovations come stateside.  
By Craig Mandli
- 52 INDUSTRY NEWS**
- 56 WORTH NOTING**  
People/Awards; Learning Opportunities; Calendar

JANUARY 2019

MUNICIPAL  
**SEWER**  
&  
**WATER**



# ZERO DIG

Trenchless  
PIPE REPAIR

## SECTIONAL MAIN LINE POINT REPAIR

NOW INTRODUCING **STYRENE-FREE SILICATE** RESINS  
**FOR RAPID CURE TIMES**

100% AMERICAN MADE

100% TRENCHLESS

100% SUPPORTED

## SECTIONAL POINT REPAIR SYSTEM

- ✓ 3+ Repairs in a Single Day
- ✓ 3 Man Crew Required
- ✓ Structural Repair
- ✓ 6" Diameter Pipes and Larger
- ✓ 2 FT Length Repairs and Longer
- ✓ Sold in Kit Form - No Measuring or Waste

## COMPLETE SYSTEM & TRAINING FOR LESS THAN \$15,000

- ✓ PLI Certified Installer Onsite Training
- ✓ 10 Sectional Point Repair Kits (8" x 4')
- ✓ Installation Equipment
- ✓ PLI Certified Technical Support
- ✓ PLI Marketing Support & Lead Generation
- ✓ Proudly Made in the USA

CALL TO SCHEDULE A **ONE-ON-ONE DEMONSTRATION!**



**TURN-KEY TRAILERS  
& TURN-KEY BOX  
TRUCKS**

**PERMA-LINER™  
INDUSTRIES, LLC.**











**ZERO DOWN, NO  
PAYMENTS FOR  
90-DAYS**












To learn more call **1-866-336-2568** or visit **www.perma-liner.com**



# ADVERTISER INDEX

COMPANY	PAGE
3T Equipment Co. Inc. ....	49
 American Highway Products, Ltd. ....	28
AP/M Permaform .....	19
 Applied Felts, Inc. ....	11
 Aries Industries, Inc. ....	21
 Cam Spray .....	49
Cretex Specialty Products .....	33
 CUES .....	37
Doug Meadows Co., LLC .....	53
 Duke's Root Control, Inc. ....	15
 EnviroSight .....	2
 Enz USA Inc. ....	20
 Epoxytec .....	25
 GapVax, Inc. ....	59

COMPANY	PAGE
HOBAS Pipe USA .....	23
 InfoSense, Inc. ....	33
Infrastructure Repair Systems, Inc. ....	46
 Kaiser Premier LLC .....	35
LADTECH, Inc. ....	20
Miller Pipeline .....	28
 NozzTeq, Inc. ....	39
Olsson .....	27
 Perma-Liner Industries, LLC .....	5
Petersen Products Co. ....	56
Pipeline Renewal Technologies .....	17
 RapidView IBAK North America .....	58
Reline America, Inc. ....	8
RELINER/Duran Inc. ....	53
SAERTEX multiCom LP .....	39
Sealing Systems, Inc. ....	51
Sewer Equipment .....	29
Simpson Strong-Tie .....	41
 Sonetics .....	55
 Southland Tool Mfg. Inc. ....	47
 Super Products LLC .....	9
 T&T Tools, Inc. ....	51
 Ultra Shore .....	19
 Vac-Con, Inc. ....	60
 Vactor Manufacturing .....	3
 WinCan, LLC .....	7
WWETT Show .....	34, 40
CLASSIFIEDS .....	57
MARKETPLACE .....	54

Beyond  
buckets  
& blades.

**digDIFFERENT**

**FIND OUT HOW.**  
FREE subscription  
at [digdifferent.com](http://digdifferent.com)

MUNICIPAL  
**SEWER  
&  
WATER**

FOR SANITARY, STORM AND WATER  
SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:

 COLE publishing

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



[www.mswmag.com](http://www.mswmag.com)

© Copyright 2019, COLE Publishing Inc.

No part may be reproduced without permission of publisher.

In U.S. or Canada call toll free 800-257-7222

Elsewhere call 715-546-3346

Email: [info@mswmag.com](mailto:info@mswmag.com) / Fax: 715-546-3786

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

**SUBSCRIPTIONS:** A one year (12 issue) subscription to *Municipal Sewer & Water*™ in the United States, Canada and Mexico is free to qualified subscribers. A qualified subscriber is any individual or company in the United States, Canada and Mexico that maintains, manages, designs or installs municipal or commercial sewer, water and storm infrastructures. To qualify, visit [www.mswmag.com](http://www.mswmag.com) or call 800-257-7222.

Non-qualified subscriptions are available at a cost of \$60 per year in the United States and Canada/Mexico. Subscriptions to all other foreign countries cost \$150 per year. To subscribe, visit [www.mswmag.com](http://www.mswmag.com) or send company name, mailing address, phone number and check or money order (U.S. funds payable to COLE Publishing Inc.) to the address above. MasterCard, VISA, American Express and Discover are also accepted. Include credit card information with your order.

Our subscriber list is occasionally made available to carefully selected companies whose products or services may be of interest to you. Your privacy is important to us. If you prefer not to be a part of these lists, please contact Nicole at [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com).

**CLASSIFIED ADVERTISING:** Submit classified ads online at [www.mswmag.com/classifieds](http://www.mswmag.com/classifieds). Minimum rate of \$25 for 20 words; \$1 per each additional word. All classified advertising must be paid in advance. DEADLINE: Classified ads must be received by the first of the month for insertion in the next month's edition. PHONE-IN ADS ARE NOT ACCEPTED. Fax to 715-546-3786 only if charging to MasterCard, VISA, Discover or AmEx. Include all credit card information and your phone number (with area code). Mail with check payable to COLE Publishing Inc. to the address above. CLASSIFIED ADVERTISING APPEARS NATIONWIDE AND ON THE INTERNET. Not responsible for errors beyond first insertion.

**DISPLAY ADVERTISING:** Contact Jim Koshuta or Kayla Bisnette at 800-994-7990. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.



Jim Koshuta






Kayla Bisnette

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

**REPRINTS AND BACK ISSUES:** Visit [www.mswmag.com](http://www.mswmag.com) for options and pricing. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com). To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email [jeff.lane@colepublishing.com](mailto:jeff.lane@colepublishing.com).

**CIRCULATION:** 2018 average circulation was 37,385 copies per month (U.S. and international distribution).

 [www.facebook.com/MSWmag](http://www.facebook.com/MSWmag)  
 [www.twitter.com/MSWmagazine](http://www.twitter.com/MSWmagazine)  
 [www.youtube.com/MunicipalSewerWater](http://www.youtube.com/MunicipalSewerWater)  
 [www.linkedin.com/company/municipal-sewer-&-water-magazine](http://www.linkedin.com/company/municipal-sewer-&-water-magazine)

  
Water & Wastewater Equipment,  
Treatment & Transport Show

Water & Wastewater Equipment,  
Treatment & Transport Show  
**[www.wwettshow.com](http://www.wwettshow.com)**

Education Day: Wed., Feb. 20, 2019  
Exhibits: Thurs.-Sat., Feb. 21 - 23, 2019  
Indiana Convention Center, Indianapolis, Ind.





# WinCan



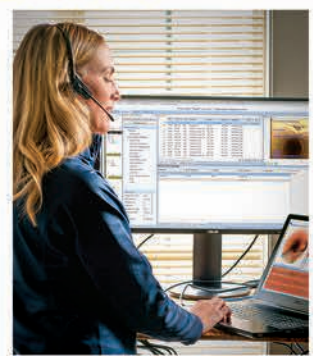
BOOTH  
4142



## Online Insight, Trusted Support

Share your sewer asset data on the cloud effortlessly and securely with WinCan Web. From the moment you sign on, our support specialists guide you toward better insight, better decisions and better teamwork. It's just one more way we never stop innovating.

[www.wincan.com/web](http://www.wincan.com/web)





# ONE ACCIDENT IS TOO MANY

Celebrate the new year with a pledge to stay safe and see another



## FROM THE EDITOR

Luke Laggis

**T**he new year is upon us, and here's hoping all of you make it through 2019 safely.

One of the stories in this issue of *Municipal Sewer & Water* focuses on the efforts the Houston Wastewater Operations team has made to recover, rebuild and improve its systems after Hurricane Harvey devastated the city in 2017.

Houston's wastewater system is one of the nation's largest, and the damage was significant: treatment plants underwater, significant portions of the collections system totally flooded for nearly a week, and lift stations completely submerged. Across the area, treatment plants and systems in as many as 11 counties were partially or completely submerged. It was the wettest tropical cyclone on record in the U.S. and equaled a one-in-1,000-year flood event.

Lives were changed. Luckily, people in the most affected areas had evacuated. The treatment and collections staffs, however, were dealing with the fallout from the storm on two fronts: home and work. Some weren't able to go home so they stayed at the plants. The department's 800 people rotated on 12-hour shifts, but the crews needed rest and fatigue was high.

Today, over a year after the storm, Houston continues to repair and recover its wastewater infrastructure, but it will take a long time. Systems are all up and running, but things aren't ever going to be the same.

Hurricanes and natural disasters are beyond your control, but you can still prepare for the dangers you face day to day. It's the perfect time of year to review and reinforce all your safety procedures and the importance of following them at all times.

This month's Staying Safe column is a good refresher on some of the critical steps you need to take before starting any underground utility work. There are more than 300,000 incidents each year related to utilities being struck during repairs and installation of new services in the water and wastewater industry. That's bad for your utility infrastructure, but the consequences of these incidents can at times be life-threatening to your crews.

And the safety risks your crews encounter on a daily basis go well beyond striking underground utilities. Do a quick Google search on "sewer worker accident." You'll see page after page of headlines like these:

"Chicago Sewer Worker's Death Investigated by OSHA."

"Kansas City Water Worker Dies in Sewer Line Accident."

"Nitrogen Is Implicated in Middletown Sewer Worker's Death."

"Worker, 22, Dies After Being Trapped in 20-Inch Sewer Pipe."

"Three Sanitation Workers and One Policeman Die in an Underground Sewage Pumping Station in Kentucky."

I hate seeing those headlines pop up. In most cases it's completely avoidable. Don't ever let your crews forget about the very real dangers they face or become complacent when it comes to safety protocols. It's easy to think it won't happen to you, until it does.

Keep safety top of mind at all times, and make sure your workers make it home every night.

Stay safe. And enjoy this month's issue. ♦

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

## UV GRP:

more than just a CURE  
for aging sewer lines...



60" twin storm drains  
rehabilitated with  
Alphaliner® UV GRP

our large diameter rehabilitation capabilities  
make Alphaliner® an ideal remedy for your  
stormwater and DOT projects too!

Call Today To Start Optimizing Stormwater Project Outcomes

**RELINER  
AMERICA**

866.998.0808  
[relineamerica.com](http://relineamerica.com)

STRONG AMERICAN TRENCHLESS SOLUTIONS FOR STRONG AMERICAN INFRASTRUCTURE



# Camel Maxxx<sup>®</sup>

## 12 Yard Sewer and Catch Basin Cleaner

- ◆ A large 7-inch display on the front control panel operates a number of functions including vacuum and engine speed; water flow and pressure; emergency stop switch; LED panel lights; and panel controls
- ◆ A heavy-duty transfer case with a hot shift blower control at front operator's station, eliminating trips back inside the cab to turn the vacuum pump on and off
- ◆ Front-mounted hose reel extends 18 inches and capable of 270 degree rotation including when fully retracted, lockable in any position
- ◆ Also available with Camel's wastewater recycling system. Fill it once; work all day.

***Learn more about the Camel Maxxx 1200 today!***



**Super Products**  
TRUCK MOUNTED VACUUM EQUIPMENT

800.837.9711 • [www.superproductsllc.com](http://www.superproductsllc.com)

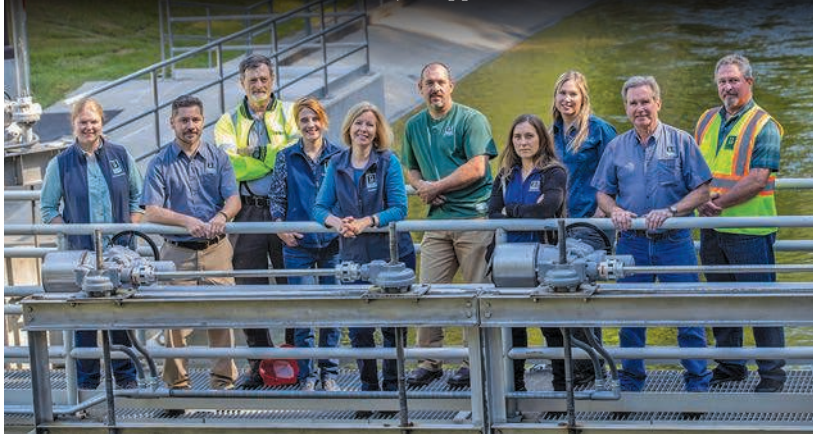


Visit the site daily for new, exclusive content. Read our blogs, find resources and get the most out of *Municipal Sewer & Water* magazine.

## AN UPHILL BATTLE

### Raising Environmental Awareness

Public utilities sometimes find themselves at odds with consumers — raising rates for utility service, pushing for compliance with environmental mandates, or invoking science in the face of citizen complaints. America's northwest region is stereotyped as an area more welcoming to environmental initiatives than some other regions. But Kathleen Cahall says Bremerton water authorities still have to work for their community's support. [mswmag.com/featured](http://mswmag.com/featured)



## FIGHTING WET WIPES

### A Viral Campaign

A series of strikingly illustrative photographs from the removal of a massive pump blockage recently brought a spike of public attention to Charleston, South Carolina's so-called "flushable" wipes problem. After noticing rising levels and determining a blockage was the cause of a backup in one of its 100-foot-deep wet wells, Charleston Water System contracted a diving team to jump in and remove the blockage. Read about the diving operation and Charleston's social media campaign in this online exclusive article. [mswmag.com/featured](http://mswmag.com/featured)



## REDUCING COSTS

### Data-Based Asset Management

At Johnson County (Kansas) Wastewater, they don't have to guess about the condition of their sewer system. The staff is using a unique data-based tool called the Collection System Asset Management Plan to take in data from the division's CCTV units and assess sewer conditions, identify critical needs, and recommend the most effective solutions. Developed with the help of engineering firm HDR, the program has saved Johnson County significant money. [mswmag.com/featured](http://mswmag.com/featured)



## OVERHEARD ONLINE

“The kids not only utilized different materials and structural concepts, but made it uniquely theirs by decorating their water towers to match their creative sides.”

— *Creative Spirit on Display at Model Water Tower Competition* [mswmag.com/featured](http://mswmag.com/featured)



### Emails & Alerts

Visit [MSWmag.com](http://MSWmag.com) and sign up for newsletters and alerts. You'll get exclusive content delivered right to your inbox, and you'll stay in the loop on topics important to you.



### Join the Discussion

Find us at:  
[facebook.com/MSWmag](https://facebook.com/MSWmag)  
[twitter.com/MSWmagazine](https://twitter.com/MSWmagazine)





# THE WORLD'S LEADING CIPP LINERS, **REINFORCED** WITH PERSONAL CARE.



Applied Felts uses innovative technology for the precision manufacturing of our custom, quality felt and reinforced cured-in-place liners for gravity sewer, pressure pipe and potable water applications. Our liners are world-class, but it's the people behind the product that make Applied Felts a global leader. With over 200 million feet of successful installations around the world, our personalized care and close attention to the smallest of details—from using only the highest quality raw materials, manufactured with our state-of-the-art equipment, to our rigorous 28-stage QA/QC testing program—help our customers grow right along with us. **Visit [appliedfelts.com](http://appliedfelts.com)**



## APPLIED FELTS

YOUR SUCCESS IS OUR SUCCESS™

Visit us at UCT Booth #639

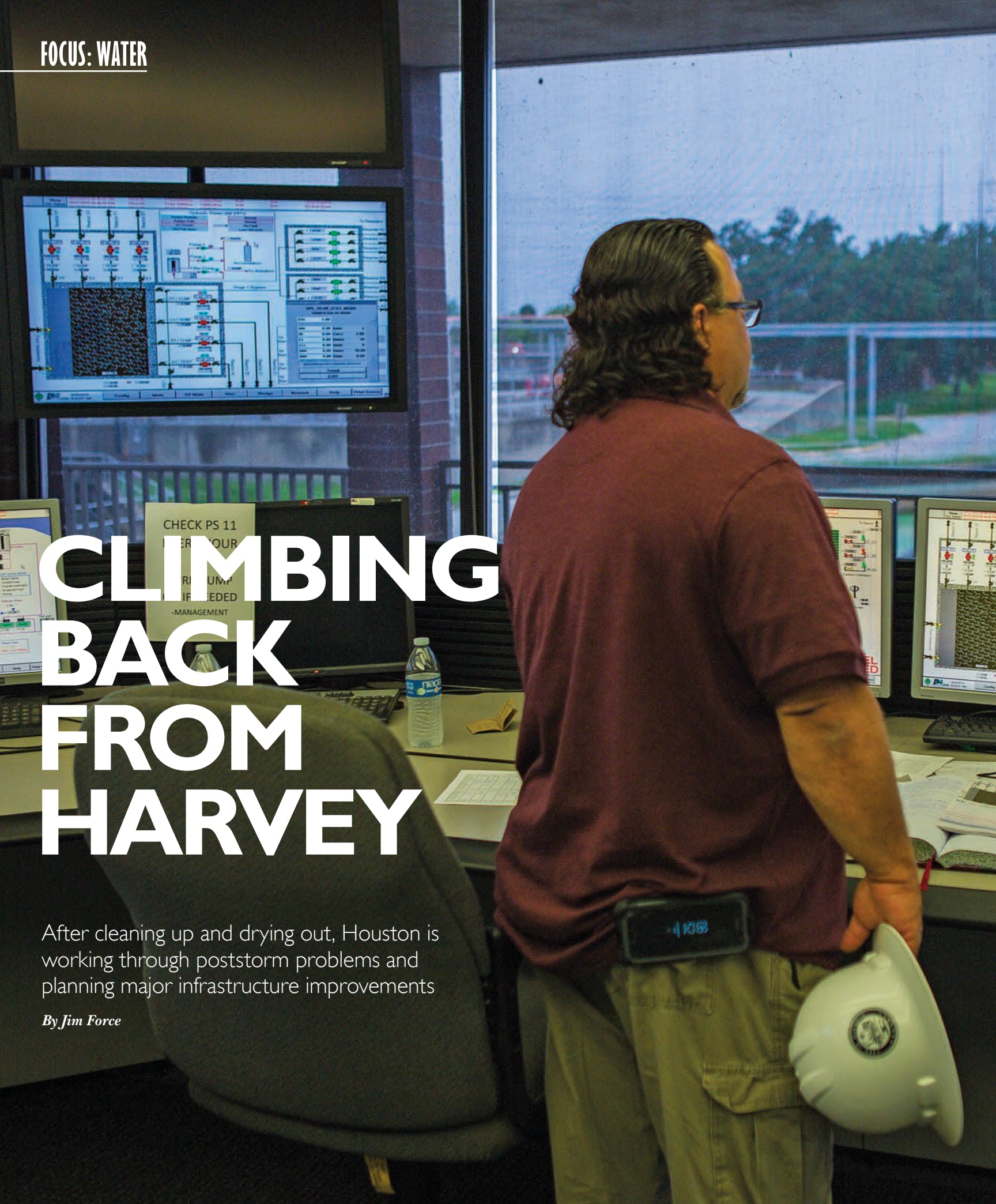




# CLIMBING BACK FROM HARVEY

After cleaning up and drying out, Houston is working through poststorm problems and planning major infrastructure improvements

*By Jim Force*





“We’re not sure we fully understand what happened. And we’re just starting to see the extent of the long-term damage. We can’t televise 6,200 miles of sewer all at once.”

Shannon Dunne



CONTRIBUTED FROM HOUSTON PUBLIC WORKS



Houston Wastewater Operations assistant manager Pedro Munive monitors the various pumps and lift stations from a control room at Houston’s 69th Street Wastewater Treatment Plant. The facility is one of the largest in the country. The city has 39 wastewater treatment facilities that handle an average of 250 mgd. (Photography by Mark Mulligan)

How many wastewater utilities can handle 51 inches of rain in 72 hours?

Probably none. But that’s what challenged the Houston Wastewater Operations service line when Hurricane Harvey drenched South Texas in late August 2017.

The devastating results:

- 18 of 39 Houston wastewater treatment plants underwater
- Electrical circuits and equipment completely soaked
- 30 percent of the collections system totally flooded for nearly a week
- 81 lift stations completely submerged
- And a nonpressurized sewer system turned into a pressurized system by the storm, breaking pipes and joints.

“I’ve been through hurricane winds and hurricane floods before,” says Shannon Dunne, Houston Wastewater’s senior assistant director. “I’ll take the winds every time.”

Today, over a year after the storm, Houston continues to repair and recover its wastewater infrastructure, but it will take a long time. “We’re still assessing the damage and developing solutions, but we’re open for business,” says Clarence Wittwer, assistant director of Wastewater Operations. “But it took about six months for us to return to normal — and it’s a new normal. Things aren’t ever going to be the same.”

### The Houston system

Houston’s wastewater system is one of the





**Pedro Munive (left) talks with mechanic Gary Archie about the new heavy solids pumps they will be installing in one of the pump stations at Houston's 69th Street Wastewater Treatment Plant.**



## PROFILE:

## Houston Wastewater Treatment System

### FOUNDED:

Houston's first lift station-drying bed sewer system dates to 1902

### POPULATION SERVED:

2.1 million people

### SERVICE AREA:

669 square miles

### COLLECTIONS SYSTEM:

6,200 miles of sewers, 383 pumping stations, 127,000 manholes

### TREATMENT PLANTS:

39, treating a total of 239 mgd; permitted capacity is 565 mgd. 3 wet-weather facilities

### STAFF:

Shannon Dunne, senior assistant director; Clarence Wittwer, assistant director of Wastewater Operations

### AWARDS:

In 2017, six Platinum Peak Performance Awards, nine Gold Awards and 10 Silver Awards by the National Association of Clean Water Agencies; and five facilities have earned Platinum Status for more than five consecutive years; two Operator of the Year from the Water Environment Federation Technical Exhibition and Conference; one Project of the Year by the American Public Works Association's Texas Chapter; one Utility of the Future and one Leading Utilities of the World; one Texas Water National TOP OPS State Title Competition

### ANNUAL OPERATING BUDGET:

\$167 million

### WEBSITE:

[www.publicworks.houstontx.gov](http://www.publicworks.houstontx.gov)

**“It’s like Russian roulette. We know a circuit or piece of equipment is going to fail; we just don’t know when. Just in the last three months, we’re starting to experience a lot of failures.”**

**Shannon Dunne**

nation’s largest. It dates to an early lift station sewer and drying bed system installed in 1902 and today serves over 2 million people and covers some 669 square miles. Over 6,100 miles of sewers carry wastewater to 39 different wastewater plants, which together treat about 239 mgd. Permitted maximum capacity is 565 mgd.

The system contains 383 lift stations, 127,000 manholes and three wet-weather facilities.

Under normal operating conditions, Houston rehabilitates about 950,000 linear feet of sewer lines each year, in accordance with a 10-year plan to reduce sanitary sewer overflows. The utility uses a variety of technologies, including sliplining and pipe bursting. The nonstructural component of the plan involves televising and cleaning 30 million linear feet over the 10-year period.

## One in a thousand

It had been nine years since the last major hurricane hit the Gulf Coast, but Harvey made up for lost time. The howler came ashore near Corpus Christi on Aug. 25, 2017 with winds of 115 to 130 miles per hour. Soon after, it turned into a mon-

strous tropical storm that wandered around South Texas for days, dumping record amounts of rain, flooding whole communities and their infrastructure. Treatment plants and systems in as many as 11 counties were partially or completely submerged. It was the wettest tropical cyclone on record in the U.S. and equaled a one-in-1,000-year flood event.

The deluge caused damage and suspended operations throughout Houston’s sprawling wastewater collections and treatment system.

Sewers were among the most serious issues, as 30 percent of the system was underwater for nearly a week, and 10 percent of it was submerged for three to four weeks, including critical lift stations.

A large amount of silt and debris accumulated in the sewers, and many household sewer connections were damaged or even washed away.

*(continued)*





Visit us at UCT Booth #635

## SSO prevention starts here.

**Duke's Razorooter® II is a diquat-based herbicide that is registered by the EPA for controlling roots in sewer lines.**

Duke's has sewer root control down to a science. Nearly 40 years of experience, 300 million feet of treated sewer lines, and a quality guarantee make Duke's the root and grease control company you can count on. This long-term success is possible because of what happens behind the scenes. Duke's trained team of experts in the laboratory, on the street and in the office constantly work to develop the best products, deliver world-class customer service and ensure every application is successful. Guaranteed. **Visit [dukes.com](http://dukes.com) or call 1-800-447-6687 today.**

**Sewer root control done right.**





## THE TOLL ON PEOPLE

Hurricane Harvey took its toll on people as much as it did on facilities — including wastewater customers as well as the operators and management at the Houston Wastewater Department.

“We set up an emergency response system on our 311 phone line,” explains Shannon Dunne, senior assistant director. “And we had extra people on as emergency operators.

“But we didn’t get a huge increase in calls,” he says. A lot of that resulted from the fact that people in the most affected areas weren’t in their homes.

“In some of the neighborhoods, the homes were empty for almost a month,” adds Clarence Wittwer, assistant director of Wastewater Operations. “It was search and rescue. We used airboats, dump trucks, water vehicles of every type.

“I think overall, our customers were very accepting of our efforts.”

The treatment and collections staffs were likewise affected, some doubly so. “A lot of our operators’ homes were flooded, too,” Dunne says. “They weren’t able to go home so they stayed at the plants.”

Dunne says the department has about 800 people. “We rotated on 12-hour shifts,” he explains. “The city paid overtime and gave comp time to salaried employees and provided people the staff could talk to. But the crews just needed rest. Fatigue was tough.”

Dunne and Wittwer agree the staff was totally committed to helping customers. “Our crews were outstanding,” Dunne says. “Once the water went down, they were like ants running around and fixing things.”

Crews used CCTV to locate point repairs. They filled major sinkholes. “Once we assessed damage, our crews often had things up and running, 24/7,” Dunne says.

“The first responders cleaned things up as well as they could. Then we had contractors come in and repair pipes,” Wittwer says.

“Some of the areas stayed flooded for over a month. Many employees worked 28 days straight after the storm. After that, we finally got a chance to breathe.”

“Wastewater here is a family,” Dunne adds. “We leaned on each other; we stuck together.”



CONTRIBUTED FROM HOUSTON PUBLIC WORKS

**Hurricane Harvey dropped 51 inches of rain over Houston in a 72-hour period, causing significant damage to a large portion of the city’s wastewater system.**

Wittwer says city crews along with a number of outside contractors have worked for several months to clear the lines. The city is using 2100 Series Vactor combination sewer cleaners, with Subsite Electronics (formerly RST) camera systems, while contractors use similar systems and are required to meet City of Houston Standard Specifications.

The main issue wasn’t that sewage was backing up into homes, since people had left their property and in some cases couldn’t return for weeks.

Rather it was that the amount and weight of the water turned the normal low-flow gravity sewers into pressure sewers, which typically have watertight joints and no manholes. “We went from a nonpressurized to a pressurized system,” Wittwer notes. “Our system is simply not designed for that.”

As a result, Houston continues to deal with many cracked and broken pipes and separated joints.

“We’re not sure we fully understand what happened,” Dunne adds. “And we’re just starting to see the extent of the long-term damage. We can’t televisé 6,200 miles of sewer all at once.”

The problems have been compounded by sinkholes that have caused pipes as large as 100 inches in diameter to shift and break. “There’s been a lot of settlement across the whole zone,” Dunne says.

### Washout

While entire sections of the city’s collections

network were affected by the storm, the most serious situation occurred in the area of the Buffalo Bayou — normally a slow-moving river that flows through the city. Dunne explains that as the flood-water built up, certain reservoirs had to release water, as required by federal law. The rushing water eroded a whole section of bank along a right-of-way, taking inverted siphons, aerial crossings, and about a mile of 42-inch sewer pipe.

“The bank was about 30 feet wide and 50 feet deep,” Wittwer explains. “That 42-inch line was simply gone. We had to install three bypasses (to carry wastewater) while it took about four months to rebuild the bank. People literally had the Bayou in their backyards.”

The city’s treatment plants didn’t escape the flooding. Nearly half were flooded out, forcing the Houston staff to shut them down, and wait — oftentimes stranded — for the floodwater to recede. “Two of our major treatment plants were completely submerged under 6 to 8 feet of water for two weeks,” Dunne says.

Like the collections system, some of the plants have experienced subsidence from the weight of the water and the downward pressure.

### Mobile equipment

In some cases, the normal treatment plant systems were so flooded that mobile equipment had to be brought in while the fixed equipment dried out.

“We brought in temporary clarifiers, temporary aeration systems and temporary pump stations. It was almost like a package plant,” Dunne says. “We had to piecemeal the West District and Turkey Creek facilities back together so we could resume treatment.”





The city put out a call for assistance from vendors and selected Aqua Tecture to provide the equipment until operations could be resumed.

While most facilities were back online within one day, plants that were completely flooded could not return to normal operations until all the electrical and mechanical equipment had been evaluated. Gearboxes

on blowers and clarifiers needed to be purged of all the contaminated oil and needed to have new oil put in its place.

Dunne says the electrical switchgear and motors needed to be dried out and some components replaced due to damaged parts. "We had to replace a couple of transformers, PLCs, starters, relays, some motors that went to ground, coils, ground fault relays, and GFI receptacles, and repull some wire."

Even then, the water damage has made much of the electrical equipment unreliable.

"In the last few months, a lot of electrical failures have popped up, randomly," Dunne says.

"It's like Russian roulette. We know a circuit or piece of equipment is going to fail; we just don't know when. Just in the last three months, we're starting to experience a lot of failures." He says blowers, motors, electrical panels — all are affected.

"It's like if you drop your cellphone into the water: It will eventually dry out, but it may act crazy."

### Looking ahead

So where does Houston Wastewater go from here? "You can't keep Houston folks down," Dunne says. "They get to work (and address the problems). We're open for business, overcoming the hurdles piece by piece. The city doesn't work without wastewater."

"Still," he says, "there is concern about another flood in the future."

"We're going to see a lot of pipes and plants being moved above the flood plain, and a lot of new tunnels to store stormwater. We've hired 43 outside consulting firms to make an assessment of the whole system, at a cost of \$20 million. We'll decide what to fix, what to harden, what to eliminate. It could take up to 10 years."

"The mayor and city government are closely involved in preparing for future floods. We'll be better at controlling water."

To that end, Houston voters recently passed a \$2.5 billion bond issue to address future flooding problems. As Dunne predicted before the vote, the support was nearly unanimous, with more than 85 percent of voters approving the funding.

Those bonds will be used to fund 237 projects, including three large detention basins across the county.

"We understand more floods may be coming," Wittwer says. "But we're not just going to build back. We're going to build it better." ♦

**"We've hired 43 outside consulting firms to make an assessment of the whole system, at a cost of \$20 million. We'll decide what to fix, what to harden, what to eliminate. It could take up to 10 years."**

Shannon Dunne

### FEATURED PRODUCTS FROM:

**Subsite Electronics**  
800-846-2713  
www.subsite.com

**Vactor Manufacturing**  
800-627-3171  
www.vactor.com  
(See ad page 3)

**1,000,000  
Installed!**



## Point Repair That Solves Infiltration



Pushed in by your crawler and expanded with air, a Quick-Lock sleeve delivers structural trenchless sewer repair with heavy-gauge stainless steel and stops infiltration with a one-piece rubber gasket. It installs in minutes with two people and minimal equipment.

digging  
resin • pot life  
wet-out • cure  
bypass pumping  
wash-outs

Quick-Lock is also offered as an end sleeve to protect installed CIPP liners.





**BOOTH  
5224**



for on-site demo, visit [www.pipelinert.com/ql](http://www.pipelinert.com/ql) or call (866) 936-8476

infiltration • offsets • roots • abandoned laterals • holes • cracks



# STOPPING THE BRAIN DRAIN

Data analytics can help organizations detect flight-risk employees and keep them on board

By Ken Wysocky

**We invite readers** to offer ideas for this regular column, designed to help municipal and utility managers deal with day-to-day people issues like motivation, team building, recognition and interpersonal relationships. Feel free to share your secrets for building and maintaining a cohesive, productive team. Or ask a question about a specific issue on which you would like advice. Call editor Luke Laggis at 800-257-7222, or email [editor@mswmag.com](mailto:editor@mswmag.com).

**W**ith all the negatives associated with high employee turnover, it would be great if companies had a crystal ball that would show them which employees are likely to leave. Actually there is a way to determine which employees are more likely to leave, but it's science-based, not magic: Predictive modeling uses historical data to glean insights into which employees are more likely to seek greener pastures.

By compiling key employee data — often already on file — and running it through such a model, organizations can then take steps to try to keep in the fold those employees identified as high flight-risks. And by doing so, they can minimize negatives like high recruiting

costs and low morale, says Jacque Carlson, a data scientist for BlueGranite, a data and analytics consulting firm ([www.blue-granite.com](http://www.blue-granite.com)).

"Predictive models offer another way you can reduce costs associated with things like advertising for job openings, the time it takes to do interviews, onboarding costs and so on," she explains. "Then there's the low morale that high turnover creates. ... When the rats are fleeing the ship, those that stay behind start wondering if

they should leave, too. And if you have an empty position, it puts you at risk for losing customers. So you also get degraded customer-satisfaction issues."

(To better understand the actual costs of employee turnover, Carlson suggests Googling "employee turnover calculator.")

## Data and discussion

Using predictive models comes with some caveats, however. First of all, it's important for organizations to understand that different categories of employees require different data models; there's no one-size-fits-all model for an entire company. "All career paths are qualitatively different," Carlson explains. "So you need to create different models depending on the group on which you're focusing."

In addition, the accuracy of predictive models depends on the integrity of the data upon which they're built. Or as Carlson puts

it, output equals input. "The model is only as accurate and unbiased as the data fed into it."

The breadth of data matters, too. A good predictive model needs at least two to three years of data to provide accurate results. Moreover, a predictive model is not the ultimate arbiter in reducing turnover. Instead, it should serve as just one of a collection of tools aimed at divining what drives employee turnover, she says.

After data has been collected and analyzed, it's important to recognize that the numbers alone don't tell the whole story. To make the most of the data collected, it's incumbent on organizations to probe behind the numbers. That means talking to employees tagged as high flight-risks; during that discussion, manager must be able to explain how that was determined.

"They'll ask you why you think they're a flight risk," Carlson says. "And if you can't answer that question, the model has no value."

## Keep employees in the loop

That raises another important point: It's critical for organizations to let employees know it's collecting data and to give them the opportunity to opt out if that makes them uncomfortable. "Transparency is the important point. It's the first thing I talk about with clients," she says. "In terms of ethics, collecting data for models about human beings is qualitatively different than collecting data about, say, a machine that makes steel. The machine will never care about that, but employees sure might."

So what kind of data should organizations collect that can indicate employees are flight risks? The list is long, but here are a few examples, some obvious and some not so much:

- How far they commute, especially if bad weather strongly impacts the quality of commute for long periods of time.
- The number of supervisors an employee has had (a revolving door of managers may create disjointed career paths for their direct reports, which spurs their departure).
- How many times they've been promoted or received a raise, as well as how long it's been since their last promotion.
- How much personal time off employees use compared to what's allotted; employees that receive, say, two weeks of PTO annually and rarely use it are good candidates for burnout — and flight.

**"Predictive models offer another way you can reduce costs associated with things like advertising for job openings, the time it takes to do interviews, onboarding costs and so on."**

Jacque Carlson





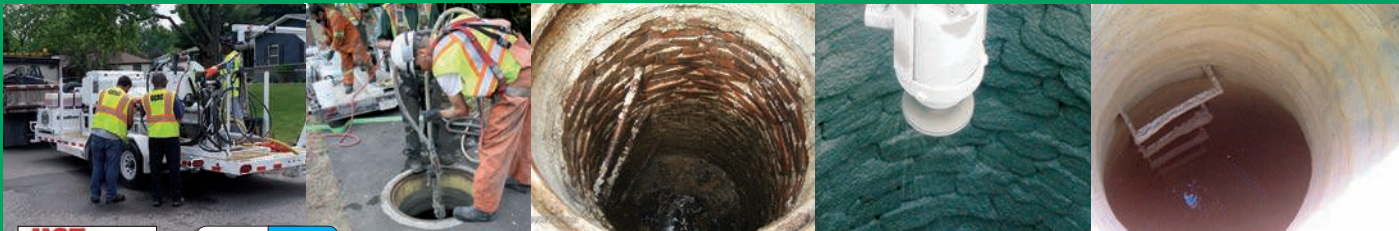
**AP/M PERMAFORM**  
The trenchless solutions company

## COUNTY AND MUNICIPAL SELF-INSTALL REHABILITATION SYSTEM

for  
MANHOLES, CATCH BASINS,  
AND DRAINAGE STRUCTURES

***"With the AP/M Permaform trailer and spincaster, our own two-man crew is able to complete a basin rehabilitation in just two or three hours, and if conditions are right they can do as many as eight in one day."***

Randall Dellaposta, Director of Equipment and Facilities at the Genesee County Road Commission (GCRC)



UCT BOOTH  
518

WVWET BOOTH  
3012

AP/M Permaform • 800-662-6465 • [www.permaform.net](http://www.permaform.net)

- Other demographic data, such as gender, age, ethnicity and education level, along with factors such as whether or not they're parents, homeowners and divorced. This information can be gathered in a variety of ways, including having employees periodically fill out forms to update information, Carlson says.

### Accuracy is critical

How accurate are these predictive models? While predictive modeling is very complex to explain, in the end, a data scientist compares the results produced by the model to acceptable standards of something called evaluation metrics.

"Most models are rejected if the accuracy is less than 90 percent," Carlson explains. "However, if the data is good quality and there is more than a sufficient amount of data, the standards for the model should be quite high. The evaluation metrics should all be in the high 90s."

Given the complexities of predictive modeling and given that data science is a relatively young field, most companies and organizations aren't capable of building flight-risk models. But management or human resources leaders can self-educate themselves and compile data, then hire a data scientist to build a predictive model.

What companies do after that, in terms of how they go about convincing flight-risk candidates to stay, is not within the data scientist's purview. But one thing is certain: With a shrinking labor pool creating intense competition for new employees, there's definitely value in identifying those departure-minded employees and trying to keep them on board.

"Ignoring the value of predictive models can be companies' downfall," Carlson says. "The models can provide great insights into things happening in organizations that drive the risks of leaving." ♦

**ultra LIGHT – ultra VERSATILE – ultra SAFE**

**ultraSHORE**  
P R O D U C T S

WVWET  
BOOTH  
5019



Quick to Install.  
As light as 130lbs.



Roll Your Own.  
Optional wheel kit.



Stacks easily with  
2' & 4' high panels.

***This is What Aluminum Shoring Was Meant to be!***



1-800-683-8837

**1-800-SH-ORING**

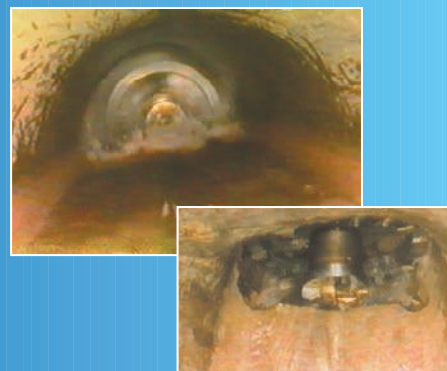
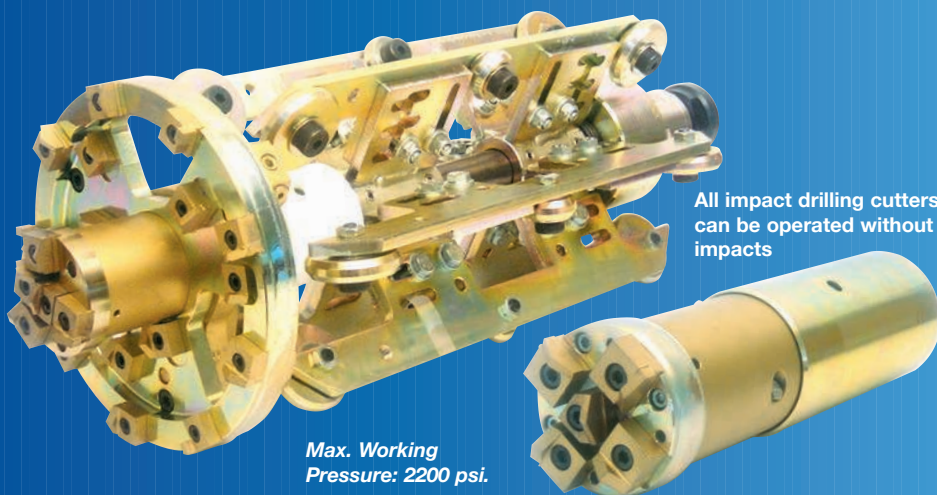
CALL TOLL-FREE NATIONWIDE • 1-800-746-7464

**[www.shoring.com](http://www.shoring.com)**



## PERCUSSION MILLING CUTTERS beat even the toughest challenges!

These tools are a radical innovation for milling-off deposits in pipes. The *enz golden jet*® impact drilling cutters are designed to remove the most stubborn deposits like concrete, injection cement, calcareous layers, etc. Provided with carbide-tipped teeth, the beating cutter head mills off everything with a cadence between 600-3000 impacts per minute.



- Higher capacity than all marketable cutters
- Long edge life
- Easy handling
- Very low maintenance cost
- Rugged construction
- Range of application: ø4"- 24"



1585 Beverly Ct., Unit 115 • Aurora, IL 60502  
Tel. (630) 692-7880 • Fax (630) 692-7885  
[www.enzusainc.com](http://www.enzusainc.com)



## This is your brain on "CRACKed" Concrete manholes

- How much do you spend on REHAB?
- How much do you spend on I&I?
- How much do you spend on WORKERS' COMP?



'LADTECH SYSTEM®' your HDP (recover)E

### The First alternative to concrete and mortar

Ladtech Inc. guarantees a full five year limited warranty, if for any reason you return adjustment rings to the manufacturer they will be replaced at no charge.

Ladtech, Inc. 100% recycled HDPE manhole risers provide a watertight system that prevents I&I and costly rehabilitation. A single 4" plastic adjustment ring weighs a mere 12 pounds verses it's concrete counterpart at 180 pounds. It's a no brainer...REALLY!! Visit Ladtech on our website or call for more info: 877-235-7464



Concrete ADJ Rings Installed 1997



Ladtech ADJ Rings Installed 1997





# PORTABLE.

# POWERFUL.

# PROFITABLE.

**NEW!**



**PATHFINDER**  
INSPECTION SYSTEM

## VERSATILE MAINLINE INSPECTION

The lightweight and rugged Mobile Pathfinder is easy to transport and set up. An all-in-one controller with an 8.4-inch LED screen ensures quick and efficient assessments.

This compact, integrated system features:

- Aircraft-grade aluminum reel with 1000 feet of lightweight cable
- Quick set-up for pipes from 6- to 36-inch and larger
- Pan & Tilt camera with self-cleaning lens & electric lift

Contact Aries to learn how the Mobile Pathfinder can improve your profitability.

All-in-one  
controller



**ARIES**  
INDUSTRIES, INC.

See what you're missing.

[ariesindustries.com](http://ariesindustries.com)  
(262) 896-7205

© Aries Industries, Inc.



Rowland Water District operator Alex Zaragoza takes a routine water sample from one of the district's reservoir tanks. (Photography by Collin Chappelle)

# QUENCHING A DISTRICT'S THIRST

Southern California water district makes the most of limited resources and builds resiliency for the future

*By Giles Lambertson*

**Y**ou can't make more water. But the Rowland Water District makes the most of what it has.

The Rowland district is comprised of 17.2 square miles in southeastern Los Angeles County and serves residents in three unincorporated areas and two cities — Industry and West Covina. Created 65 years ago to provide water for ranchers and farmers, it now serves commercial, light industrial and residential customers.

Tom Coleman is general manager of the district. He was born and raised in the region and has worked his way up in his profession over two decades, including stints in such places as the Alhambra Municipal Water Department and a water district serving Whittier. He became manager of the Rowland district four years ago and oversees an organization with a \$23 million budget.

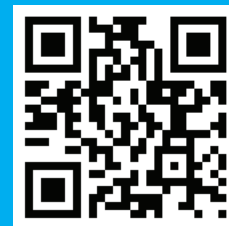
Coleman acknowledges that there is an undercurrent of unease associated with  
*(continued)*



# Quality is Our Priority

## Proven by Our History of Success

The HOBAS standard is based on supplying products which far exceed the minimum national standards. HOBAS Pipe USA's experienced staff will assist you from project inception through completion. To achieve success on your next project, specify HOBAS performance.



HOBAS PIPE USA  
281-821-2200  
[www.hobaspipe.com](http://www.hobaspipe.com)



constantly needing to replenish a water supply from places other than the heavens. To alleviate some of this pressure, the district has undertaken a partnership with a neighboring water district to give themselves “a little bit more comfort.”

Specifically, the Rowland and Walnut Valley districts agreed in 2009 to budget \$20 million apiece to buy surplus water from the Metropolitan Water District of Southern California, which is the largest distributor of treated water in the country. For the money, the communities are acquiring 25,000 acre-feet of water and dumping it into an underground basin as a reserve source. Rowland’s 12,500-acre-feet share constitutes more than a year’s supply.

So, if the 240-mile-long aqueduct carrying water to Southern California from the Colorado River and the 440-mile-long California Aqueduct bringing water from the Sacramento region of Northern California both failed — think earthquake or terrorist sabotage — Rowland Water District customers would draw from their underground source and carry on as usual. “We probably would enact a drought conservation ordinance and start conserving 50 percent of our water right away,” Coleman says. “We would be ultraconservative. But it would have to be a very, very dire situation.”

In 2014, an emergency statewide declaration required Rowland, among other districts, to certify that it had enough water sourcing to meet customer demand for three years. The district was able to do so because the Metropolitan Water District assured its member communities that it could provide the needed water — plus Rowland had started its underground reserve.

Coleman is high on Metropolitan Water District, which supplies 90 percent of Rowland’s potable water. “Metropolitan Water District has done a great job of water forecasting, building needed structures, storing water and so on. I can’t think of another agency in the country that does a better job.”

### Teaching conservation

Coleman and other district leaders are not content to sit on their stored water supply and lean on Metropolitan Water District in an emergency. They have instituted a variety of alternate water strategies that, together, are giving water users opportunities to help themselves. Some of it falls under the banner of education, perhaps all of it. Some parts are purely teaching. Coleman refers to the educational initiatives as “The Brittne Factor.”

Brittne Van De Car coordinates the district’s education program, among other public affairs

responsibilities. As such, she visits pre-K and elementary classrooms around the district to lead classes in hands-on water activities, such as teaching children about nature’s water cycle (a bracelet is constructed that represents the various stages of the cycle).

Last August, a new education initiative targeted Boy Scouts and Girl Scouts. To earn a merit badge or patch, a scout must explain principles of water conservation and good stewardship activities, create a public service announcement, research the state’s native drought-resistant plants, and so on. When the program was launched in August, Coleman described it as a way “to teach the scouts their role in water conservation and show each of them how to make using water wisely a way of life for the future.”

The theme of conservation being a way of life is embroidered on all of Rowland’s initiatives, tying together such disparate recommendations as eschewing grassy lawns in favor of desert landscaping and buying water-efficient toilets. It is all an effort to win the hearts and minds of a population who otherwise might take their imported water for granted.

The approach is well-suited to the demographics of Rowland Heights, where the district is headquartered. The unincorporated community is 60 percent Asian — Chinese, principally — with an average household income just shy of \$100,000. One might assume such a relatively stable and affluent community would be responsive to communitywide appeals. Yet Coleman says such an assumption is misleading because the water district also serves officially designated disadvantaged communities.

“Our district is very diverse. Some areas of our community have been identified as having an annual income 40 to 60  
(continued)



### PROFILE: Rowland (Calif.) Water District

**CUSTOMERS:**  
13,500 connections, 58,000 residents

**SERVICE AREA:**  
17.2 square miles

**WATER VOLUME:**  
18 mgd summer consumption,  
10 mgd in winter

**INFRASTRUCTURE:**  
150 miles of potable waterline,  
18.1 miles of pipeline for recycled water

**EMPLOYEES:**  
26

**WEBSITE:**  
[www.rowlandwater.com](http://www.rowlandwater.com)

**“I think that winning support  
for conservation is really  
about education.”**

**Tom Coleman**

**Operations Supervisor  
Dusty Moisio makes a routine  
inspection of the Whittier Booster  
Pump Station. This pump station  
is dedicated to adding stored  
groundwater into the system.**



**DESIGNED FOR WATER & WASTEWATER INFRASTRUCTURE**

# ONE RIG. SPRAYS 3 STRUCTURAL- GRADE LINERS.

CPP SPRAYLINER - for large wall tanks  
and WWTP structures

CPP SPRAYLINER 61 - for potable  
drinking water

CPP SPRAYLINER MH -for sanitary  
sewer collection

*Engineering Design Specifications Available*



**JOIN EPOXYTEC'S NETWORK  
OF CERTIFIED CONTRACTORS  
AND START SPRAYING TODAY!**



info@epoxytec.com  
877.GO.EPOXY





The Rowland Water District service area encompasses a 17.2-square-mile area in southeastern Los Angeles County. The district currently provides potable and recycled water for approximately 58,000 people through 13,500 service connections in portions of Rowland Heights, Hacienda Heights, La Puente and the cities of Industry and West Covina.

**“We could do it today. It is getting people to trust the technology that is the challenge. It’s getting the regulator and elected officials to embrace and truly trust the technology.”**

**Tom Coleman**

percent below the state median income.” (In 2016, the state median was \$68,000.) “I think that winning support for conservation is really about education.”

Other district educational initiatives include poster contests, desert landscaping classes, customer appreciation weeks and a lottery in which a high-

end irrigation controller is the prize.

### Recycling

A more direct water conservation method is recycling. That is, reusing water over and over again. In an ideal world, wastewater routed to a treat-

ment plant would leave the plant as potable water fully useable for any human application. “We are not there,” Coleman says of 100 percent conversion. He hesitates to speculate how soon the district might reach total water reuse.

One obstacle to such complete recycling is human distrust of the process. The science is

there, Coleman says. “We could do it today. It is getting people to trust the technology that is the challenge. It’s getting the regulator and elected officials to embrace and truly trust the technology. There probably are even some in the water community who wouldn’t trust it.”

So Rowland and other districts are settling for reusing treated water for nonpotable tasks such as irrigation, industrial cooling, concrete production and agriculture. Recycled water is distributed through a network of pipes painted purple to distinguish them from drinking-water pipes. The cost of operating a dual-pipeline system argues against wholesale expansion. The district

## EDUCATING THE NEXT GENERATION

How many people are required to operate a water system in naturally arid Southern California, a district with 13,500 connections serving 58,000 residents? Fifty employees? A hundred? How about 26. It is a small number by design.

“We do not hire or add appreciably to our staff, largely because we embrace technology — software and outsourcing and GIS. We are an agency that embraces technology,” says Tom Coleman, general manager. The latest example is the district’s adoption of advanced metering

infrastructure. The AMI meters are currently being retrofitted throughout the system. Not only will water usage and bills be calculated as before, the process of collecting the data will be simplified and automated and the water system as an asset will be better monitored and managed.

Technology notwithstanding, Coleman acknowledges that his staff members are the heart of the program. “We wear a lot of hats. Our staff members are very dedicated and we have a great culture, but we also utilize software. For us, it is all about looking at our rates and keeping those rates affordable for our customers.”

The district also uses interns to accomplish its work. It instituted an intern program after people showed interest in pursuing a career in

water work. Coleman says water agencies want to hire people who already are somewhat conversant with the work, so Rowland worked with local school and adult education programs to create the program. From school referrals, the district selects interns who are paid \$15 an hour and work full time for the district for six months.

“They are immersed in our culture, working on breaks in lines and at reservoirs and in reading meters. We give our interns the skills and real-life experience to go out and become employed in the industry,” Coleman says. The program would have to be deemed a success: Eight men and women have completed the internship and five of them have started their careers in the industry.



hopes eventually to have a third of the potable water supply annually purchased from Metropolitan Water District — about 12,000 acre-feet — supplanted by recycled water.

Oddly enough, the district's success in persuading its customers to conserve water is hurting the district's recycling efforts. Because less potable water is being used by conservation-minded customers, less water is flowing out of homes and into the system's treatment plant where it can be recycled. "We can't expand recycling because we don't have the supply of wastewater to do so," Coleman says.

Besides its water conservation and recycling efforts, the Rowland Water District has led in combating nitrification, which is a biological process wherein chlorinated water gets out of balance. A local company developed a process to "true up" water quality by rebalancing the ratio of water and additives, and Rowland was among the first to utilize it. "Our reservoirs are full, and the quality of water in them has improved tremendously," Coleman says. "Our management of the issue has been highlighted in various publications, and a number of water districts have asked us about it. In that area, we definitely have been a leader."

#### A new source

Rowland Heights is a lot closer to the Pacific Ocean than the Colorado River. San Diego already has an operating desalination plant. A second plant nearing completion in Huntington Beach will replicate the San Diego plant's daily output of 50 million gallons of desalted water. Unfortunately, Rowland Water District won't benefit from either plant. "The water from Huntington Beach won't make it to the Rowland Water District," Coleman says, citing the district's relatively hilly inland location.

What *could* become a new source of water is an advanced wastewater treatment plant being developed in nearby Carson. Metropolitan Water District has a huge wastewater facility there that primarily handles industrial waste. Metropolitan Water District is partnering with Los Angeles sanitation districts in a \$17 million, 500,000-gallon-a-day demonstration facility for advanced treatment. If it all proves out, a \$2.7 billion full-scale facility could produce up to 100,000 acre-feet of recycled water annually — and some of that could be routed to Rowland.

None of the potable water from these coastal facilities is bargain-priced. The San Diego product is priced at about \$1,600 an acre-foot, comparable to what the Carson water is projected to cost water users. The Huntington Beach water is expected to be available at about \$1,700 to \$1,800 an acre-foot. Those prices compare to \$1,100 per acre-foot that Metropolitan Water District currently charges for treated aqueduct water. Coleman also

notes that "untreated water can be bought for \$325 an acre-foot less than treated water and you can treat it yourself."

#### Upgrading the system

The other major overhead for Rowland Water District is its infrastructure, upon which some \$2.5 million is expended each year. The money is spent on reservoir management, new equipment and replacement of main distribution lines. Currently, an upgrade of the district's water meters has begun. Rowland is switching to an advanced metering infrastructure system, which will allow officials to

continuously monitor the health of the system, as well as take monthly usage readings.

The district is also on the verge of a major pipeline replacement project. While the district workforce handles most repair and maintenance work, major reconstruction work is contracted out. The system's pipes are 20 to 40 years old for the most part, though some sections of the network go back 60 to 70 years.

"We are just now starting to see some of our pipelines reach the end of their useful life," Coleman says. "We are entering a new era." ♦



West Haymarket / Lincoln, NE

We turned a railyard into *The Railyard*.

# ALL ABOARD!

## olsson

**We're Olsson, engineers who understand that where there's a project, there's a purpose.** Find out how we transformed six blocks of brownfields into a bustling entertainment district at **olsson.com**.



# SEALED WITH A GUARANTEE.

When it comes to seals, there's only one thing that matters: a guaranteed tight seal that never leaks. That's why our WEKO-SEAL® is the industry standard internal joint seal for any type of pipe, sizes 18"-216" and larger. It's non-corrodible, never leaks, and requires no further maintenance. Ever.



**WEKO-SEAL®**  
BY MILLER PIPELINE

[www.weko-seal.com](http://www.weko-seal.com)



## AMERICAN HIGHWAY PRODUCTS LTD. RAISING AMERICA, ONE INCH AT A TIME

### the **PIVOTED TURNBUCKLE** Manhole Riser



**The Most Efficient and Powerful Expanding Riser on the Market.**

Riser heights  $\frac{3}{4}$ " and up in all diameters. 1" diametric variance and DOT approved in most states.

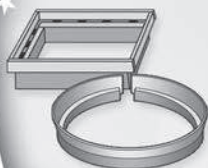
**NEW! INCLINED RISER.** Now you can RAISE & TILT the manhole cover.

### **SAFETY RAMPS** **ELIMINATE**

- Vehicle Damage Claims •
- Material Cost for Cold Patch •
- Labor and Disposal Costs •



**Catch Basin & Valve Box Risers**  
reduce costs and streamline adjustments



**I.D. Locator** allows for easy location of common utilities and aids in identifying striping



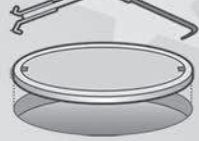
**Sewer Lid Seal Kit** eliminates lid vibration and reduces moisture penetration



**Rubber Adjusting Ring** protects sub-structure, eliminates noise and vibration



**EZ Lift** will unseat, lift, and set down a manhole cover in one smooth motion



Toll Free 1-888-272-2397 • [www.ahp1.com](http://www.ahp1.com) • e-mail: [sales@ahp1.com](mailto:sales@ahp1.com) • Free DVD/CD ROM



**COME AND  
EXPERIENCE...  
THE MAGIC  
BEHIND THE  
CURTAIN**



**UNVEILING THE FUTURE OF  
SEWER CLEANING TECHNOLOGY**






**TWO NEW PRODUCTS. SAME DAY LAUNCH.**

**WWETT SHOW 2019  
THURSDAY, FEBRUARY 21  
BOOTH #3125 AT 10AM**










**[WWW.NEWATWWETTSHOW.COM](http://WWW.NEWATWWETTSHOW.COM)**



# '19 PIPELINE REPAIR & REHAB DIRECTORY

COMPANY	BURSTING	CIPP	GROUTING	LATERAL REHAB	MANHOLE REHAB	REINSTATEMENT CUTTERS	RELINING	SEALING/ SPOT REPAIR	SHORING
<b>American Highway Products</b> 11723 Strasburg Bolivar Rd. NW, Bolivar, OH 44612 888-272-2397 • 330-874-3270 Fax - 330-874-3800 sales@ahp1.com • www.ahp1.com See Ad, Page 28					■				
<b>AP/M Permaform</b> PO Box 555, Johnston, IA 50131 800-662-6465 • 515-276-9610 Fax - 515-276-1274 info@permaform.net • www.permaform.net See Ad, Page 19					■		■		
 <b>APPLIED FELTS</b> <small>YOUR SUCCESS IS OUR SUCCESS</small> 450 College Dr., Martinsville, VA 24112 276-656-1904 info@appliedfelts.com • appliedfelts.com See Ad, Page 11		■		■			■		
 <b>ARIES INDUSTRIES, INC.</b> 550 Elizabeth St., Waukesha, WI 53186 800-234-7205 • 262-896-7205 Fax - 262-896-7099 sales@ariesindustries.com • www.ariesindustries.com See Ad, Page 21		■	■	■		■	■		
<b>Cretex Specialty Products</b> N16 W23390 Stoneridge Dr, Ste. A, Waukesha, WI 53188 800-345-3764 • 262-542-8153 Fax - 262-542-0301 info@cretexseals.com • www.cretexseals.com See Ad, Page 33					■			■	
 <b>CUES, Inc.</b> <small>"The Standard of the Industry"</small> 3600 Rio Vista Ave., Orlando, FL 32805 800-327-7791 • 407-849-0190 Fax - 407-425-1569 salesinfo@cuesinc.com • www.cuesinc.com See Ad, Page 37			■	■	■	■			
 <b>THE SHOOTER®</b> 527 NW Elm Ave., Ste. 3-405, Redmond, OR 97756 541-504-0416, option 6 ray.i@emagineered.com • www.theshooterccipp.com See Ad, Page 20		■					■		
<b>Enz USA, Inc.</b> 1585 Beverly Ct., Unit 115, Aurora, IL 60502 800-369-8721 • 630-692-7880 Fax - 630-692-7885 sales@enzusainc.com • www.enzusainc.com See Ad, Page 25						■			
 <b>EPOXYTEC</b> <small>REPAIR   PROTECT   MAINTAIN</small> 3000 N. 29th Ave., Hollywood, FL 33020 800-463-7699 • 954-961-4656 Fax - 954-961-2395 info@epoxytec.com • www.epoxytec.com See Ad, Page 25				■			■	■	
<b>HammerHead Trenchless</b> 500 South C.P. Ave., Lake Mills, WI 53551 800-331-6653 • 920-648-4848 Fax - 920-648-1781 cdenissen@hammerheadmole.com www.hammerheadtrenchless.com See Ad, Page 46	■	■		■				■	
<b>Infrastructure Repair Systems, Inc.</b> 4301A 34th St. North, St. Petersburg, FL 33714 877-327-4216 • 727-327-4216 Fax 717-327-4118 info@irsi.net • www.irsi.net See Ad, Page 20				■	■			■	
<b>LADTECH, Inc.</b> 902 Barton Ave. NW, Buffalo, MN 55313 877-235-7464 Fax - 651-415-1090 adjring@ladtech.com • www.ladtech.com See Ad, Page 20					■				



COMPANY	BURSTING	CIPP	GROUTING	LATERAL REHAB	MANHOLE REHAB	REINSTATEMENT CUTTERS	RELINING	SEALING/ SPOT REPAIR	SHORING
 <b>Miller Pipeline</b> 8850 Crawfordsville Rd., Indianapolis, IN 46234 800-428-3742 • 317-293-0278 Fax - 800-293-8502 info@millerpipeline.com • www.millerpipeline.com See Ad, Page 28	■	■					■		
 <b>Perma-Liner Industries, LLC</b> 13000 Automobile Blvd., Ste. 300, Clearwater, FL 33762 866-336-2568 • 727-507-9749 Fax - 727-507-9849 info@perma-liner.com • www.perma-liner.com See Ad, Page 5		■		■	■	■	■	■	
 <b>Petersen Products</b> 421 Wheeler Ave., Fredonia, WI 53021 800-926-1926 • 262-692-3100 sales@petersenproducts.com www.petersenproducts.com See Ad, Page 56			■	■	■		■	■	
 <b>Pipeline Renewal Technologies</b> 111-B3 Canfield Ave., Randolph, NJ 07869 866-936-8476 • 973-252-6700 Fax - 973-252-1176 mail@pipelinert.com • www.pipelinert.com See Ad, Page 17		■				■		■	
<b>Pow-r Mole Sales LLC</b> 1400 Commerce Pkwy., Lancaster, NY 14086 800-344-6653 • 716-683-2486 Fax - 716-683-6372 brian@powrmole.com • www.powrmole.com	■			■					
 <b>Reline America, Inc.</b> 116 Battleground Ave., Saltville, VA 24370 866-998-0808 • 276-496-4000 info@relineamerica.com • www.relineamerica.com See Ad, Page 8		■					■		
 <b>SAERTEX multiCom LP</b> 13201 Reese Blvd., Huntersville, NC 28078 317-464-9717 m.hallett@saertex.com • www.saertex-multicom.com See Ad, Page 39		■		■	■		■	■	
<b>Sealing Systems, Inc.</b> 9350 County Rd. 19, Loretto, MN 55357 800-478-2054 • 763-478-2057 Fax - 763-478-8868 pam@ssisealingsystems.com • www.ssisealingsystems.com See Ad, Page 51					■				
 <b>SPARTAN</b> 1506 W. Division, Mendota, IL 61342 800-435-3866 sales@spartantool.com • www.spartantool.com SINCE 1942	■						■		
 <b>Sprayroq, Inc.</b> 4766 Grantswood Rd., Ste. 150, Irondale, AL 35210 205-957-0020 Fax - 205-957-0021 jhuckaby@sprayroq.com • www.sprayroq.com			■		■		■		
 <b>Thermoform</b> <b>Warrior Trenchless Solutions</b> 1400 Commerce Pkwy., Lancaster, NY 14086 716-601-7760 www.thermoformliner.com		■		■			■		



# WATER NEEDS ITS iPhone MOMENT

Smarter systems will help utilities cope with the demands of aging infrastructure

By Jon Daniels

**Y**our customers expect flawless service and don't hesitate to complain when problems arise. Yet they understand little of the work you do.

Leaks plague water utilities with both operational and reputational problems. Maintenance and diagnosis usually entails costly excavation works.

As a result, most utilities are in a constant search for ways to be smarter — to know about (and fix) problems before the customer sees the effect, to better predict and more accurately map leakages to reduce losses and hone maintenance issues, to go from reactive to proactive.

But when up against increasing demands and often aging infrastructure, that's easier said than done. It's unlikely we'll get there with piecemeal improvements either — the industry needs a radical innovation moment that shakes up the fundamentals of how things work. Much like the iPhone did to the mobile phone market in 2007. And, as it turns out, valves are a good place to start.

## Tough times

A "smart" approach has long been on the industry's wish list, but it becomes increasingly important day by day.

As populations grow around the world, placing ever-greater demands on water infrastructure, and climate change increases incidences of extreme weather such as drought, smarter approaches to water will become even more pressing.

Of course, there has been innovation and improvement in the water sector over the years. But it has been an incremental kind, tweaking engineering designs and adding a patchwork of digital assets, such as pressure sensors here and there.

This incremental approach is crucial — as was the progression

through Nokia 3210, 3310, 3410 — but now it's time for the iPhone moment, something that makes a much more radical, lasting and digital change.

## Getting smart

Now though, we are at inflection point where the need for digitalization is pressing and the technology is becoming mature enough to meet that need.

A smart system must be proactive, not reactive. That means predicting, identifying and (preferably) fixing problems before they affect customers, or if that's not possible, communicating ahead of time that there will be disruption.

This applies to leaks, but also to water quality. At the moment, water quality is typically tested by taking samples from the tap and packing it off to a lab. There is no visibility within the distribution infrastructure.

So, imagine a system where problems are identifiable and fixable before they reach the customer, where problems could be spotted and located to a fine level of granularity, making maintenance and repairs easier, cheaper and more efficient. Such a system would allow utilities to optimize their systems against multiple parameters across the breadth of their network.

That would represent an iPhone moment, fundamentally altering the relationship utilities have with their infrastructure.

The next generation of pressure-reducing valves is one crucial technology for realizing this vision. Pressure-reducing valves have been around for over a century, only recently undergoing significant innovation from an engineering standpoint. Now, however, they are undergoing a second, digital transformation.

Modern pressure-reducing valves are equipped with sensors, collecting information on metrics such as pressure and even water quality. Crucially — thanks to modern, more affordable battery, communication, and energy-harvesting technologies — these can now feed this information back to the control room for analysis and action. For example, if leaks are detected, the valve can be

**Once a data-rich, sensor-soaked network is in the ground, utilities will be able to more easily implement incremental upgrades over time.**





# THE CHOICE IS EASY



**VS**



wwett BOOTH 1413

**25**  
year  
WARRANTY

## CONCRETE

- Heavy
- No warranty
- Unreliable
- Prone to breakage
- Safety concerns
- Short lifespan
- More expensive over time
- Multiple angles not achievable

*Get the best value in  
manhole grade adjustment  
systems....*



## PRO-RING

- Lightweight
- Industry leading 25 year warranty
- Reliable-50 year design life
- High strength & traffic rated
- Safer to install
- Durable
- Less expensive over the long haul
- Variety of heights and angles

800-345-3764 • info@cretexseals.com • www.cretexseals.com

controlled remotely to reduce pressure and therefore losses. PRVs will be the smart valves at the center of an intelligently optimized and controlled network, used to deliver fine pressure control in any way needed.

The smartest systems will then use technologies such as analytics and machine learning to constantly analyze that incoming stream of data to optimize maintenance schedules and asset replacement and even predict problems before they occur.

In a flash, utilities that implement such a system would find themselves managing lit networks rather than dark ones, enjoying visibility and control that they never had before.

### Future-proofing

Water infrastructure upgrades are expensive and time-consuming; creating truly smart networks is not a trivial matter. However, this would represent an iPhone moment in another respect: Once the radical shift is made, the market can return to incremental innovation. The first iPhone may have been a revolution, but the subsequent models have been evolutions since.

Once a data-rich, sensor-soaked network is in the ground, utilities will be able to more easily implement incremental upgrades over time. Connectivity means that software and firmware can potentially be upgraded without excavation and the control room can invest in evermore advanced analytics.

A lot has been written about topics such as the industrial internet of things, or IIoT. Undoubtedly, we stand to gain a great deal as societies from smart factories, grids and cities. But a smarter approach to water is an equally important step. With modern valve, sensor, communication, battery and energy-harvesting technologies, forward-thinking utilities are poised to take it. By doing so, we stand to cut leakages and improve water quality. ♦

### About the Author

*Jon Daniels is a water networks specialist at Oxford Flow.*

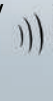
## OUR TECHNOLOGY IS BASED ON SOUND SCIENCE

**Inspect More, Clean Better**

**Active  
Acoustics  
screen for  
blockage  
with no  
flow contact**

**MILLIONS OF FEET INSPECTED**

- Save time, water, AND money
- Screen 2+ miles per day
- EPA validated
- Highly portable and easy to operate



**SL-RAT®**



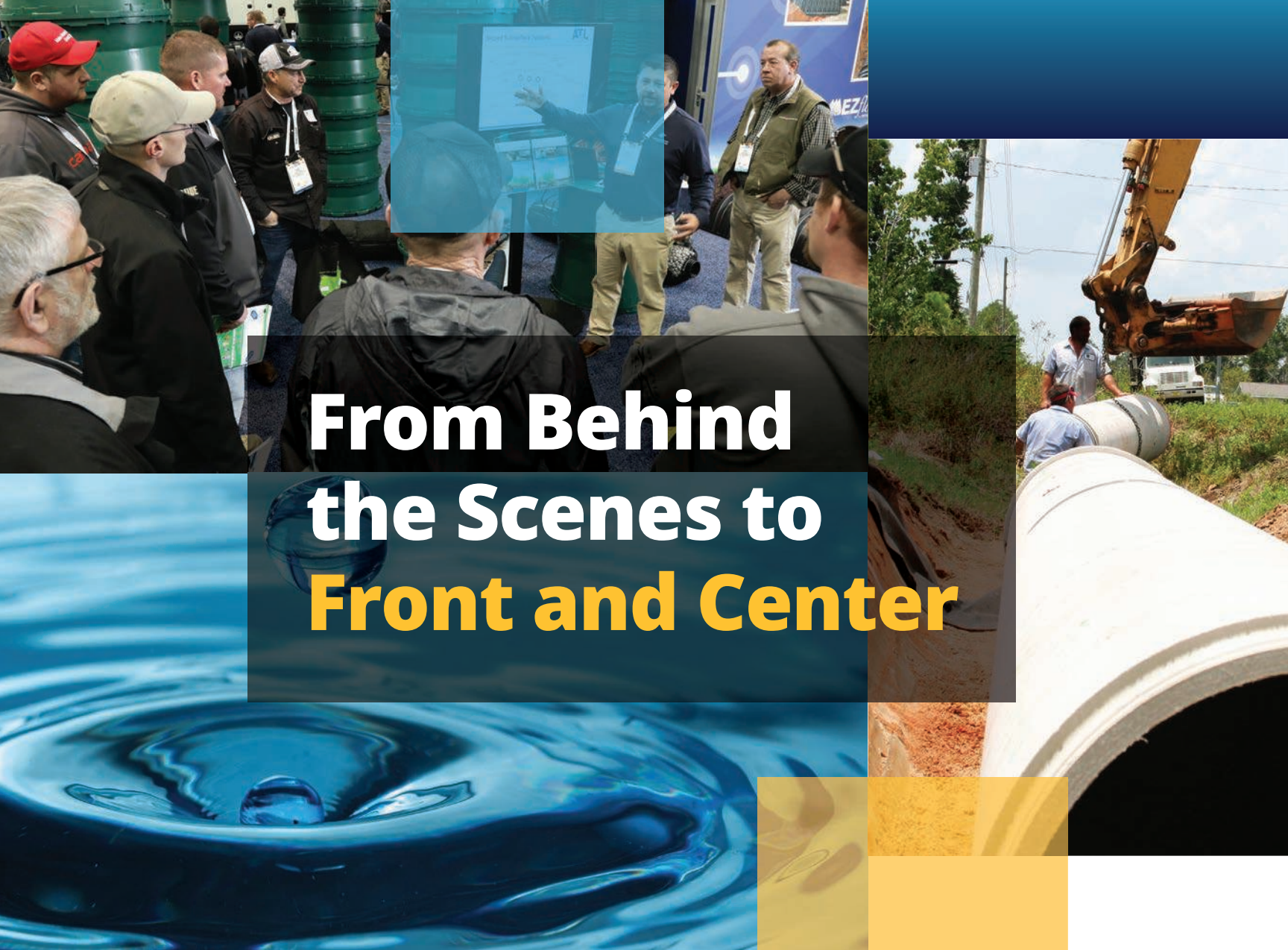
**InfoSense, Inc.**  
Innovating Acoustic Inspection Technology

**877-747-3245**

sales@infosense.com • www.infosense.com

wwett  
BOOTH  
2011





# From Behind the Scenes to Front and Center

## KEEPING US ALL GOING STRONG

Planning for the future of your community's water and sewer needs is a complex and demanding challenge. While you provide an essential service, you don't always get the recognition you deserve. At the WWETT Show, you will. Surrounded by other wastewater professionals who understand your daily challenges, you'll discover the newest technologies, tactics and tools designed to streamline your services and generate new sources of revenue. Try out the newest equipment and get hands-on training and demos. Earn CEUs through industry classes. Attend courses tailored to your business needs in marketing, hiring and budgeting. **Step into the forefront of your industry and career.**

**REGISTER TODAY** | [www.wwettshow.com](http://www.wwettshow.com)



Water & Wastewater Equipment, Treatment & Transport Show

**FEBRUARY 20 - 23, 2019**

Indiana Convention Center  
Indianapolis, IN





**KAISER  
PREMIER**



**KAISER  
RENTAL**

## **AquaStar® Combination Sewer *Recycler***

**CHECK ALL THE BOXES**

- ☒ **INCREASE PRODUCTIVITY**
- ☒ **PROVEN TECHNOLOGY**
- ☒ **SAVE MILLIONS OF GALLONS OF WATER PER YEAR**



**Kaiser. Performance counts.**

KAISER's AquaStar recycler has been proven world-wide over the past 35 years and is now an emerging technology here in the USA. Requiring only a single operator, the AquaStar improves productivity up to 100% through ease-of-operation and efficiency. By eliminating time consuming trips to offload and refill with fresh water, the Kaiser Premier AquaStar will reduce water usage, save fuel, and eliminate wasted operator hours.

[www.kaiserpremier.com](http://www.kaiserpremier.com) • [sales@kaiserpremier.com](mailto:sales@kaiserpremier.com) • tel. 970-542-1975



# ADDRESSING A SERIOUS SAFETY ISSUE

NASSCO introduces new Specification Guideline for Cross Bore Prevention and Detection

By Sheila Joy

One of the most important responsibilities of the NASSCO committees is developing specification guidelines for a variety of underground infrastructure assessment, maintenance and rehabilitation technologies.

NASSCO's specification guidelines — written and vetted by a cross section of industry professionals, including competitors — are designed to provide objective guidance on the proper inspection of pipes and installation of trenchless technologies.

NASSCO's Infrastructure Condition Assessment Committee, seeing the need to better address cross bores, released the *Specification Guideline for Cross Bore Detection and Prevention* last fall.

Cross bore is a term used to describe an instance where a new, underground utility is installed directly through an existing utility. This is usually a result of horizontal boring or directional drilling techniques in the installation of new conduit, with the install being drilled directly through an existing, crossing utility. Gas lines, for example, can cross-bore into sewer laterals, damaging the pipe and blocking flow, eventually leading to sewer backups. Clearing the line with a root cutter can result in a catastrophic explosion with significant property damage and, occasionally, loss of life.

NASSCO's *Specification Guideline for Cross Bore Prevention and Detection* was created to support the prevention of further damage to gravity pipeline infrastructure and to locate existing cross bores.

Prevention programs, designed to address new/replacement installations, utilize robotic inspection cameras equipped with locating transmitters to identify the location and approximate depth of all subsurface gravity pipelines at the intended crossing points of the horizontal bore path. These prevention programs should include both pre- and post-construction inspection for new utility installations, as well as the replacement of existing utilities.

Legacy programs, to address existing pipelines, include a process to inspect gravity pipeline infrastructure that was historically subject to damage due to trenchless technology practices without a formal or adequate prevention program.

The *Specification Guideline for Cross Bore Prevention and Detection* details the preconstruction process, which includes trenchless technology considerations, the utilization of CCTV cameras, and information on pipeline cleaning and blockages. The post-construction process portion of the guideline includes leading practices, quality assurance/quality control, locate cards, GIS, sewer tags, what to do when a cross bore is found, legacy inspections, and potholing.

To download the *Specification Guideline for Cross Bore Prevention and Detection*, along with specification guidelines for a variety of other trenchless technologies, please visit [www.nassco.org/resources](http://www.nassco.org/resources). ♦

**NASSCO (National Association of Sewer Service Companies)** is

located at 2470 Longstone Lane, Suite M, Marriottsville, MD 21104; 410-442-7473; [www.nassco.org](http://www.nassco.org)

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

## Get the EDge Training and Continuing Education Courses

### PACP TRAINING

#### January 8

##### Dallas, TX

Includes: MACP, LACP, PACP  
Trainer: Paul Booth

704-681-3989 • [woodsidenenv@gmail.com](mailto:woodsidenenv@gmail.com)

#### January 8

##### Whitestown, IN

Includes: LACP, PACP, MACP  
Trainer: Brandon Conley

248-349-0904 • [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

#### January 15

##### Northville, MI

Includes: PACP, MACP, LACP  
Trainer: Brandon Conley

248-349-0904 • [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

#### January 18

##### Northville, MI

Includes: PACP

Trainer: Brandon Conley  
248-349-0904 • [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

#### January 22

##### Antioch, CA

Includes: PACP, MACP, LACP  
Trainer: Brandon Conley

248-349-0904 • [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

#### January 23

##### Santa Fe, NM

Includes: PACP, MACP, LACP  
Trainer: Sammy Maestas

505-412-3362 • [sammymaestas@yahoo.com](mailto:sammymaestas@yahoo.com)

#### January 28

##### Fort Worth, TX

Includes: PACP

Trainer: Rod Thornhill  
214-221-5474 • [rodthorn@swbell.net](mailto:rodthorn@swbell.net)

#### January 29

##### Santa Cruz, CA

Includes: PACP, MACP, LACP  
Trainer: Marilyn Shepard

(916) 899-8961 • [mshepard1@hotmail.com](mailto:mshepard1@hotmail.com)

#### February 5

##### Phoenix, AZ

Includes: MACP, LACP, PACP  
Trainer: Marilyn Shepard

(916) 899-8961 • [mshepard1@hotmail.com](mailto:mshepard1@hotmail.com)

#### February 5

##### Denver, CO

Includes: PACP, MACP, LACP  
Trainer: Paul Booth

(704) 681-3989 • [woodsidenenv@gmail.com](mailto:woodsidenenv@gmail.com)

#### February 5

##### Twinsburg, OH

Includes: MACP, LACP, PACP  
Trainer: Brandon Conley

(248) 349-0904 • [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

#### February 11

##### Marriottsville, MD

Includes: MACP, LACP, PACP  
Trainer: Irvin Gemora

(410) 458-9591 • [irv.gemora@comcast.net](mailto:irv.gemora@comcast.net)

#### February 12

##### Covington, GA

Includes: PACP, MACP, LACP  
Trainer: John Jones

(678) 572-4212 • [plumblineconsultant@gmail.com](mailto:plumblineconsultant@gmail.com)

#### February 12

##### Dallas, TX

Includes: PACP, MACP, LACP  
Trainer: Paul Booth

(704) 681-3989 • [woodsidenenv@gmail.com](mailto:woodsidenenv@gmail.com)

#### February 12

##### Bolton, Ontario

Includes: PACP, MACP, LACP  
Trainer: Brandon Conley

(248) 349-0904 • [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

#### February 19

##### St Louis, MO

Includes: LACP, PACP, MACP  
Trainer: Jerry Weimer

(513) 659-5008 • [jerryweimerconsulting@gmail.com](mailto:jerryweimerconsulting@gmail.com)

#### February 27

##### Marriottsville, MD

Includes: PACP

Trainer: Irvin Gemora  
(410) 458-9591 • [irv.gemora@comcast.net](mailto:irv.gemora@comcast.net)

NASSCO  
**PRO**  
TRAINING



### OTHER CLASSES FORMING

Contact one of the trainers listed above if you are interested in having a class at your facility or in your area.



"The Standard of the Industry"



# GO THE DISTANCE

## PRECISE Manhole Inspection

GO THE DISTANCE GO THE DISTANCE GO THE DISTANCE GO THE DISTANCE



Quickly prioritize and identify sewer issues with CUES manhole inspection equipment.



Water & Wastewater Equipment, Treatment & Transport Show

Come see us! Booth #6030

Make the best use of your time and money by using CUES manhole inspection equipment to inspect your manholes and mainline pipes. CUES manufactures numerous manhole inspection systems designed to reduce system operation/management costs and quickly identify high-risk areas of wastewater and stormwater systems. Inspect and assess 50 manholes or more per day, increasing your revenue, while reducing your expenses. Call today for a free demo and learn how CUES can help you GO THE DISTANCE!



800.327.7791 | [salesinfo@cuesinc.com](mailto:salesinfo@cuesinc.com)

• • • • • [www.cuesinc.com](http://www.cuesinc.com) ◀



# MAKE A CALL FOR SAFETY

Excavating and working around underground utilities requires careful preparation and constant communication

*By Doug Riseden*

Utility lines for electricity, phone, cable TV and many others are increasingly being buried underground, making repairs to water pipelines more and more complicated. While putting lines in the ground offers aesthetic improvements and helps protect utilities from storms, it means there are countless obstacles for utilities and contractors doing underground work.

Statistics show that on average there are more than 300,000 incidents each year related to utilities being struck during repairs and installation of new services in the water and wastewater industry. These incidents cost millions of dollars in lost time, damages, loss of service and loss of fire suppression services. Not long ago, workers building a new section of Interstate 4 in Orlando, Florida, struck a natural gas line. The ensuing excavation and repair closed this busy east-west corridor for over 12 hours, causing serious delays and closures of local businesses. As you can imagine, there was a lot of anger from the travelling public and businesses seeking damages.

There are four primary precautions for ensuring that you stay safe and minimize the chances of causing damage during excavation:

- Call 811
- Take notes and photos
- Use the right tools
- Communicate with other utilities.

## Call 811

811 is a nationwide service that will give you all the information you need to make a request to locate pipes and other underground infrastructure. When you call 811, you can find out if it's safe to dig, with requests usually completed within two to three days and a locate lasting 30 days. This process can also be done online: Simply Google "811" with your state and the appropriate website will most likely be at the top of the search.

Make sure that you wait for the locate to be completed before you dig — it's the law. Almost all utilities are a member of 811 and will be willing

There are more than 300,000 incidents each year related to utilities being struck during repairs and installation in the water and wastewater industry, costing millions of dollars.



to come to your dig to help ensure that their utilities don't get hit. In case of an emergency repair, it is also critical to call 811 before you start. The staff can quickly provide info and provide service around the clock. If you uncover an issue or hit a utility line during a dig, 811 staff has contact information to reach the right people at any time to help find someone who can make the repair. You might have to pay the repair costs depending on many factors, but regardless, the repair must be made and can't be ignored.

## Take notes

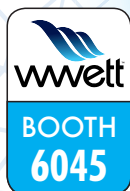
Make sure that you take plenty of pictures before, during and after the excavation is done. Note the locate marks and flags prior to digging, but keep in mind that occasionally the actual location of the utility and the marks are very different. Take pictures of where lines are actually located. Is the natural gas line underneath the waterline or next to it? Gas lines have a minimum bury depth of 24 inches, while water has a 36-inch minimum bury depth. However, it's not uncommon to find some strange things in the trench such as lines that cross over top of yours at intersections or Ts. Take lots of notes and use them to update your utility maps, and educate other workers and management. Take the time to help your employer and your utility become a better and safer place to work.

## Get equipped

The right tools are critical for safe excavation. Vacuum trucks and trailers are ideal for both identifying other utilities and safely excavating the work area. There will be exceptions, mostly for new construction when you could use backhoes and mini-excavators, but in every other case, the ground



# The UV Cured **SAERTEX-LINER®**: Next Generation of GRP Liners!



**High Strength GRP Liner for Sewer, Pressure and Water Pipes**

SAERTEX multiCom LP | 12200 - A Mt. Holly-Huntersville Rd. | Huntersville, NC 28078 | USA | Phone: +1 317 464-9717  
Fax: +1 704 464 - 5922 | E-Mail: [multicom@saertex.com](mailto:multicom@saertex.com) | [www.saertex-multicom.com](http://www.saertex-multicom.com)

has been previously disturbed so a vac unit will be the best, safest and most economical way to go. Using a probe while looking for other utilities during your dig is necessary but requires caution. Use your experience and common sense when probing for utilities to avoid lines being struck.

## Communicate

With so many lines crisscrossing underground, the issue of other utilities attempting to make their repairs at the same time happens more frequently and has resulted in many changes, including the need to schedule repairs, new businesses being formed to locate utilities, and 811 laws. Look to have a representative of a specific utility on site to assist your dig. If you're the utility that is required to be on site, this will be time well-spent and it will pay to be patient. An ounce of prevention is worth a pound of cure, and a little precaution before a crisis is better than a huge repair afterward.

Get to know the other utility companies in your area and consider having monthly or quarterly meetings to discuss issues and ongoing or future projects. Use photos and notes from your previous repairs to point out issues and problems to other utilities. If you build friendships with these other folks, you're more likely to be able to reach them after normal business hours (since this is when most of our emergencies take place).

Working near utilities is complicated business and the lack of space underground will become further complicated as utilities get replaced. If you take the steps above, you will be in a much better position to excavate more effectively, avoid striking other utilities, and save time and money. ♦

## About the Author

*Doug Riseden is the technical support manager for Krausz USA.*

## Break The ICE!

Equipment  
Engineered  
for Long Lasting  
Performance™

BOOTH  
2307

SEE  
US  
AT

CALL TODAY  
FOR AN  
ON-SITE  
DEMONSTRATION

Contact Us For A FREE DVD

C-Ray 400™	Orca™	Jaws® 100	Ice Bear™
Manta™	Paikert®	Lumberjack®	Fir™
BL Swiper™	C-Ray 800™	Monro-Jet®	
Lumberjack® 75 series	Spinner™	Jaws®	

Member

NozzTeq®

Taking Science To The Sewer®

www.nozzteq.com

1.866.620.5915

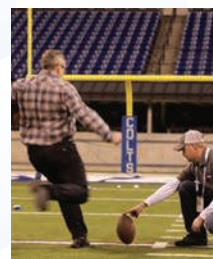




## THE BEST EVENTS AT THE INDUSTRY EVENT OF THE YEAR

Who will be at the Industry Event of the Year? Everybody. You can meet them all at the Spartan Tool Kick Off Party and at the WWETT Show Industry Appreciation Party. Meet industry leaders. Get to know business owners. Hang with old friends. Make new ones.

WWETT Show 2019. It's the place to be.




**wwett<sup>TM</sup>19**

CONFERENCE: FEBRUARY 20-22

MARKETPLACE: FEBRUARY 21-23

INDIANA CONVENTION CENTER

## WHY SHOULD YOU ATTEND?

- ✓ **Explore the Marketplace** for tools and resources you need for your business
- ✓ **CEUs** from some of the best and brightest speakers in the industry
- ✓ **Events** to network with your peers - or just kick back with friends.





# Repair and strengthen all in one shot.



Repair, protect and strengthen aging, damaged or overloaded concrete and masonry structures in one application and significantly reduce your installed cost. The new **FRCM Externally Bonded Composite Strengthening System** combines high-performance sprayable mortar with carbon fiber mesh to create thin-walled, reinforced concrete shells without adding significant weight or mass to the structure.

To learn more visit [go.strongtie.com/frcm](http://go.strongtie.com/frcm) or call (800) 999-5099.





## PIPELINE REHABILITATION AND RELINING

By Craig Mandli

### CIPP

#### Aries Industries Anaconda UV Curing System

The **Anaconda UV Curing System** from **Aries Industries** provides consistent lining installation, with one-third less curing time than steam-cured processes. CCTV inspection before and during the cure allows any sags and wrinkles to be corrected. UV curing requires less equipment, less setup, and smaller crews, which reduces service disruptions. No hot-water usage eliminates the steam truck for less fuel consumption. Lingering odor and downstream contamination are prevented. Portable UV-curing units are available for 6- to 12-inch-diameter pipe, or a vehicle-mounted system is available for 6- to 60-inch-diameter pipe. 800-234-7205; [www.ariesindustries.com](http://www.ariesindustries.com).



#### Emagineered Solutions THE SHOOTER

**THE SHOOTER** from **Emagineered Solutions** is a continuous air-inversion machine for CIPP. Two fast and reliable models are available: the mobile SHOOTER 12 with built-in lubrication system and knife gate for after the tail passes for 6- to 12-inch pipe, and the trailer-mounted SHOOTER 24 for 15- to 24-inch lines. An optional conversion kit for the SHOOTER 12 inverts 15-inch liners and one for the SHOOTER 24 inverts 6- to 12-inch liners using the larger machine. A water-cure flange is also available. The new lubrication system includes an oil overspray guard that keeps operators dry. The fully adjustable, structurally reinforced LIPs are robust and are available in 4 through 24 inches. 541-504-0416; [www.theshootercipp.com](http://www.theshootercipp.com).



#### Logiball Sleeve Installers

**Logiball's** line of **Sleeve Installers** covers 3- to 36-inch pipes in lengths as long as 25 feet if required. The multisize flow-through bladders have proven over time and through abuse to be very resistant and reliable. Large

flow-through rigid sleeve installers are available for the installation of mechanical locking sleeves and multisize flexible sleeve installers for ambient-cure CIPP sectional liners. In the event of a damaged sleeve, all installers can be factory resleeved at a fraction of the replacement cost. 800-246-5988; [www.logiball.com](http://www.logiball.com).



#### Nu Flow Technologies Vertical and Horizontal CIPP Connection Liner

The **Vertical and Horizontal CIPP Connection Liner** from **Nu Flow Technologies** is designed for vertical and horizontal small-diameter T and Y connections for the most common sizes in the system. It can be easily installed from upstream or downstream access with a two-man crew, allowing rehabilitation of the entire fitting structurally with no worries of reinstating or coating failure. It has a reusable silicone bladder for multiple installations. Installation times are between 1 to 1 1/2 hours per connection, allowing technicians to install six per day. 800-834-9597; [www.nuflowtechnologies.com](http://www.nuflowtechnologies.com).



#### Perma-Liner Industries Vinyl Ester

**Vinyl Ester** high-performance epoxy resin from **Perma-Liner Industries** provides corrosion resistance, durability and toughness for CIPP applications. It is well-suited for specific applications where fluid temperature is relatively higher and also for high-pressure and corrosive environments. The molecular architecture delivers a number of benefits, including superior mechanical properties and catalyzed pot life. 866-336-2568; [www.perma-liner.com](http://www.perma-liner.com).





## Pipe Lining Supply Quik-Pox 60

**Quik-Pox 60** resin for CIPP lateral lining from **Pipe Lining Supply** is a versatile resin for use in lateral rehabilitation. Its non-VOC nature doesn't pose the health risks associated with esters. Additionally, the resin covers a wide range of lining situations, giving the user the ability to control working time up to 3 hours before needing to get the liner in the ground, yet can be cured in about an hour after it is in the ground. With a heat deflection temperature allowing effluent temperatures up to 250 degrees F before softening, it can handle the hottest temperatures of any resin system. **888-354-6464; www.pipeliningssupply.com.**



## PIPE BURSTING TOOLS

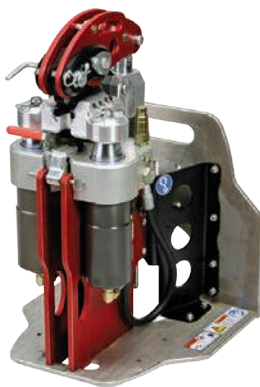
### Pow-R Mole Sales Trenchless Solutions PD-33M

The **PD-33M** pipe bursting machine from **Pow-R Mole Sales Trenchless Solutions** is designed to replace existing underground pipes 2 to 6 inches in diameter. Its nonslip, cylinder-activated jaws prevent cable damage while providing 60,000 pounds of pulling force. It offers a cost-effective alternative to open-cut excavation, reducing customer disruption and increasing company profits. The process replaces the existing pipe with a fused HDPE pipe, which eliminates all joints, and allows the operator to pull through bends such as 45-degree fittings. This system is modular and can be easily disassembled and reassembled for manhole and basement applications. With a compact design and very small footprint of only 20 by 20 inches, this unit can be used in tight locations. **800-344-6653; www.powrmole.com.**



### Spartan Tool UnderTaker

With 30 tons of lateral pulling force, the **UnderTaker** pipe bursting system from **Spartan Tool** employs a hydraulically powered cylinder that pulls a bursting head through the existing line while simultaneously replacing it with seamless, high-flow, code-approved high-density polyethylene pipe. With a small hole at each end of the run, the user can pull pipe from the building to the main, accommodate bends in the pipe, increase diameter and lay new line at a rate of up to 5 feet per minute. The system allows replacement of 2- to 6-inch pipe with up to three 45-degree bends in the pipe. It can also upsize from 4- to 6-inch pipes. When assembled, the unit weighs 210 pounds, but it disassembles into four separate components for



easy transport, with no part weighing more than 70 pounds. **800-435-3866; www.spartantool.com.**

## PIPE CUTTERS

### CUES Kangaroo Cutters

**CUES** small and large **Kangaroo Cutters** are designed to reinstate wastewater service laterals, remove protruding taps, and brush-finish existing cuts. The cutters function in a range of 6- through 30-inch pipe, are equally effective in CIPP or fold-and-form liners, and can be installed on any CCTV manufacturer's truck-mounted system. A 0.9 hp air motor for the small Kangaroo Cutter line provides more power, increased productivity and a smoother cut when operating in 8- to 12-inch relined pipe. Kits are available to retrofit existing cutters, and service kits can be purchased for regular maintenance intervals on existing motors. **800-327-7791; www.cuesinc.com.**



### RIDGID 286 Soil Pipe Cutter

The **RIDGID 286 Soil Pipe Cutter** is designed for accurate, single-stroke cutting of soil pipes up to 6 inches. Its articulating outward-facing hooks simplify connecting cast iron and clay pipe, while the handles can easily be adjusted and set for repeated cuts. Long handles and a built-in cutting mechanism also provide the mechanical advantage to minimize cutting effort and enhance ergonomics. Chain extenders can be added to cut up to an 8-inch soil pipe (up to 15-inch if you are cutting clay pipe only). **800-769-7743; www.ridgid.com.**



## PIPE FUSION

### McElroy Hornet

The **McElroy Hornet** is an all-in-one outlet fusion tool for polypropylene pipe that provides an alternative to manual outlet fusion. Its design allows it to self-align on the center of the pipe, while a guided carriage facilitates the drilling of the outlet hole and fusion of the fitting for perfect alignment without repositioning the machine. A quick-change drill and fitting adapters keep the outlet hole and



(continued)



fitting aligned throughout the entire process for a more accurate fusion. With a small footprint and weighing just 11 pounds, it performs outlet fusions in any orientation, making it suitable for overhead and vertical fusions in tight spaces. It works with all McElroy socket heaters and fusion outlet adapters. An integrated ratchet strap allows it to attach to a wide range of main sizes from 40 to 630 mm while installing outlets for 20- to 63-mm branches. **918-831-9236; [www.mcelroy.com](http://www.mcelroy.com).**

### Reed True Peel PE Prep Tool

The **True Peel PE Prep Tool** from **Reed** removes dirt and oxidation from the outside diameter of the pipe in preparation for electrofusion. Its spring-loaded blade does not skip and keeps consistent pressure on the pipe to yield a smooth, finished surface. The blade completely peels even out-of-round pipe with the help of the close-fitting mandrel, which rerounds oval pipe.

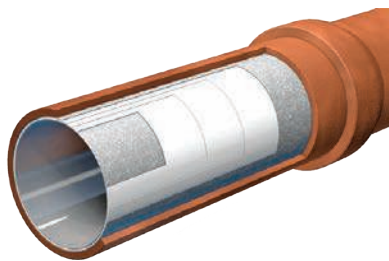
The blade may be rotated to provide a second cutting edge, giving twice the blade life. An observation window allows the operator to view peel completion. These tools can be used on the ends of pipe or on tapping tee outlets. Each model is size-specific for both pipe size and wall thickness. Its low profile allows it to be used on tapping tee outlets with limited clearance. **800-666-3691; [www.reedmfgco.com](http://www.reedmfgco.com).**



## PIPE LINING

### Applied Felts Aquacure RP

Specifically designed for added strength in gravity sanitary and storm sewers, **Aquacure RP** from **Applied Felts** combines multiple layers of classic felt with fiberglass reinforcement, delivering an installed product with a thinner wall profile. Conforming to ASTM 1216, it is available in custom lengths of up to 100 inches diameter for pipes with a wall thickness of 3 to 55 mm. **276-656-1904; [www.appliedfelts.com](http://www.appliedfelts.com).**



### Epoxytec CPP Sprayliner 61

**Epoxytec CPP Sprayliner 61** is a two-component, 100 percent solids, high-build, spray-applied, structural-grade epoxy system. It is formulated specifically for use in potable, drinking water environments (certified ANSI/NSF 61) and utilizes a blended cycloaliphatic curing system for increase chemical resistance and UV



tolerance. Similar to standard CPP once cured, this version is packaged conveniently for applicators seeking to spray with heated plural-component equipment. The material can be sprayed ultrahigh build, up to 1/4 inch per pass. Blended with reinforcing agents and various fibers, the liner when cured creates reinforcement lining as a fiber-reinforced polymer, with high-strength and flexural properties for partially or fully deteriorated structures. **877-463-7699; [www.epoxytec.com](http://www.epoxytec.com).**

### Flow-Liner Systems Neofit+

**Neofit+** from **Flow-Liner Systems** is an environmentally friendly pipe lining system that helps maintain the life expectancy of the existing service pipe. Designed for 1/2- to 2-inch-diameter pipe in up to 300-foot sections, it is made from a strong and durable virgin PET. The NSF 61 approved liner keeps drinking water pure and out of contact with the host pipe, such as lead or copper, and can rehabilitate pipes by sealing pinholes, cracks and small defects. It is a trenchless technology, thus its installation procedure avoids the risk of damage to other services since there is no disturbance of the ground around the pipe. Because it is a no-dig system, the surrounding environment is protected; therefore, it eliminates both the possibility of ground contamination and harm to existing plant and animal life. **800-348-0020; [www.flow-liner.com](http://www.flow-liner.com).**



### Infrastructure Repair Systems point repair system

The point repair system from **Infrastructure Repair Systems** is a no-dig, ambient cure, permanent solution to repair any size pipe with minimal interruption of service. The complete, user-friendly point repair kit includes an easy-to-wrap sewn fiberglass and felt liner that stays in place and creates a permanent watertight seal without O-rings. Point repair kits are made to specified lengths, size and thickness, along with custom transition and elbow kits. It stops root infiltration and seals cracks, leaks and holes without any shrink or creep over time. It is available in four liner options with premeasured epoxy formulated for summer or winter environments. **877-327-4216; [www.irs.net](http://www.irs.net).**

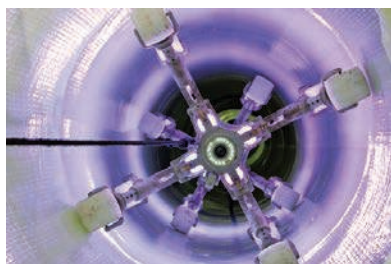


### Inliner Technologies STX

**STX** UV-light-cured liner from **Inliner Technologies** combines a woven fiberglass tube with a light-cured resin to produce a high-strength product, resulting in a thinner wall design. CIPP from Inliner Technologies allows for the renewal of damaged underground pipes without excavation. Licensees are contracted by municipalities and manufacturing-based industrial facilities to renew storm, waste and process sewer piping that has been damaged by corrosion and/or structural deterioration. The product combines



a nonwoven engineered tube or liner with an array of thermosetting resins determined by the pipeline problem and surrounding environment. The technology can span pipe from 4 to 120 inches in diameter; renew pipes with bends, diameter changes or noncircular geometries; and be used in gravity and pressure applications. 812-723-0704; [www.inliner.com](http://www.inliner.com).



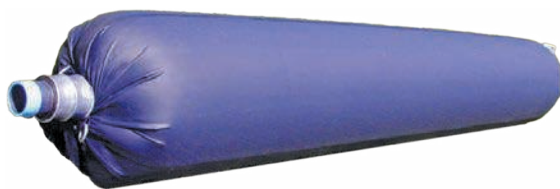
### LMK Technologies T-Liner

The **T-Liner** from **LMK Technologies** is a one-piece main to lateral connection system with Insignia hydrophilic gasket sealing technology. It is fully compliant with ASTM F2561, and the full circle CIPP mainline portion creates a 50-year structural repair while the lateral portion simultaneously renews the lateral up to 150 feet. It uses ASTM F3240-compliant Insignia O-ring gaskets at the lateral termination and a connection hat, both made of hydrophilic rubber, at the main-to-lateral connection, creating a long-term watertight seal to match the structural life. This system can be installed with either polyester or epoxy resin in lined or unlined mainlines. 815-640-9302; [www.lmktechnologies.com](http://www.lmktechnologies.com).



### Petersen Products Multi-Flex Packer

The **Multi-Flex Packer** from **Petersen Products** is available for steam, hot water and ambient cure, with or without a Flow-Thru By-Pass, and it has the flexibility and light weight for easier installation to speed point repair projects. Flexibility allows it to navigate through manholes and confined spaces. It is available for air, water or steam application of lining. Configurations can be provided for most relining requirements. Almost any length and diameter is available. It deflates to a small, flexible size for easy insertion. It may be customized to meet a customer's specific requirements. Standard packers utilize nylon reinforced EPDM covers, with other materials also available. It has a pressure range of 10 to 25 psig. 800-926-1926; [www.petersenproducts.com](http://www.petersenproducts.com).



### Picote Solutions Dual-Color Epoxy Brush Coating System

The **Dual-Color Epoxy Brush Coating System** from **Picote Solutions** allows technicians to rehabilitate pipes from 1.25 to 12 inches for drains, sewers, water pipes, electrical conduits, and heat and air-conditioning ducts by brush casting a coating. The coating resin forms a pipe inside the original pipe that is a tested, safe and environmentally friendly product. The

new pipe is dampproof, corrosion-resistant, wear-resistant and noncorrosive. It is ASTM and NSF certified (NSF/ANSI 61-5). It is a 100 percent solids epoxy, and the method allows for clear visual verification during the application process. Apply to small areas or all drains in multistory buildings. The system is practical and easily fits in tight places. 219-440-1404; [www.picotesolutions.com](http://www.picotesolutions.com).



### Prime Resins PRI0 ACLM

**PRI0 ACLM** acrylamide from **Prime Resins** is an economical grout suitable for use in mainline joints, laterals, pipe penetrations, manholes, lift stations, tunnels, mine shafts and for below-grade waterproofing. It is also an effective and cost-friendly option for stabilizing sandy, silty soils. It has a super low viscosity (1-3 cP), allowing grout to follow the same path as infiltrating water. It also has a higher strength compared to acrylates and greater longevity compared to silicates. Gel times are adjustable from a few seconds to hours to allow for travel (pipe grouting) or for thorough permeation (soil stabilization). It can be implemented via several versatile methods including remote packers, curtain grouting, probe grouting and TAM grouting. 800-321-7212; [www.primeresins.com](http://www.primeresins.com).



### Source One Environmental GreyCoat Epoxy

**GreyCoat Epoxy** from **Source One Environmental** is a 100 percent solid monolithic epoxy that offers chemical resistance and lasting durability with adhesion to concrete substrates and metal surfaces. The epoxy can build up to 1/4 inch without sag or shrinkage, and it has a quick cure time depending on the temperature. It is designed to structurally repair a variety of substrates such as manholes, wet wells, and vaults and provides adhesion in damp, humid surfaces. The material's viscosity also allows installation on vertical and overhead areas. As an environmentally friendly product, it contains no VOCs, CFCs or HFCs and protects against hydrogen sulfide and other chemicals typically found in a sewer system. It is packaged in a two-part bagging system that eliminates guesswork and product waste. 877-450-3701; [www.s1eonline.com](http://www.s1eonline.com).

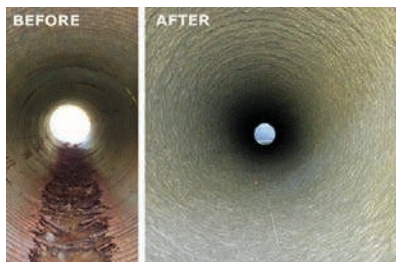


### The Strong Co. Storm Seal

**Storm Seal** from **The Strong Co.** is a solution for structural fatigue and corrosion in stormwater pipes. It provides a system for the rehabilitation of



corrugated metal, concrete, or masonry culverts, storm drains and catch basins to stop inflow, infiltration, exfiltration and restore structural integrity. It is a high building Type I/II Portland cement-based product blend with pozzolans, masonry sand, alkaline-resistant fiberglass reinforcement and performance-enhancing admixtures used to form a structural monolithic liner covering all interior substrate surfaces. It is centrifugally cast using a mixer, pump and spinner. It may also be sprayed manually. It is specially formulated for stormwater applications and culverts 24 inches in diameter or larger. 800-982-8009; [www.strongseal.com](http://www.strongseal.com).



### Warrior Trenchless Solutions Thermoform

**Thermoform** from **Warrior Trenchless Solutions** is a PVC-alloy structural pipe lining system designed for the trenchless rehabilitation of failing sewer and culvert pipes. It is an environmentally friendly, styrene-free thermoplastic. There are no harmful emissions, and it does not rely on any chemical reaction during installation. Factory-controlled production with

rigorous material testing ensures a consistent quality product that conforms to and exceeds the expected standards. The material is highly flexible, allowing it to expand and fit tightly to the host pipe, including changes in shape and dimensions. It is produced in sizes ranging from

4 to 36 inches in diameter, and the wall thickness can be varied according to the application. All installers must be accredited and audited to ensure the highest quality work possible. [www.thermoformliner.com](http://www.thermoformliner.com).



### SHORING

#### Efficiency Production Build-A-Box Sheeting Guide Frame

The **Build-A-Box Sheeting Guide Frame** from **Efficiency Production** uses lightweight corrugated sheets of aluminum to shore closely around existing cross-trench utilities. The sheets can be installed by hand, and the guide frame panel integrates seamlessly into any configured system. The result is a safe, maintained trench or pit that allows workers to access existing utilities.



It can be assembled in minutes to a wide variety of two-, three- or four-sided configurations. This flexibility enables work crews to make on-the-spot design changes to meet job requirements in conditions ranging from light to extreme. Most systems are easily transported in a pickup truck or trailer for quick application. It is also compatible with XLAP Aluminum Shields. 800-552-8800; [www.efficiencyproduction.com](http://www.efficiencyproduction.com).

#### Ultra Shore Trench Boxes

Lightweight **Ultra Shore Trench Boxes** are constructed from corrugated lightweight aluminum that is easy to transport, set up and use, making them a time- and money-saving option for plumbers, municipalities and utility contractors. All panels can be used horizontally or vertically and are stackable up to 12 feet in Class C soils. The boxes can easily be transformed into a three- or four-sided application with the use of quick-release end closure panels. Other accessories include 2-foot leg kits and wheel kits to help take full advantage of OSHA regulations. 800-746-7464; [www.shoring.com](http://www.shoring.com). ♦



## SHEAR BREAKS:

The nation's biggest I/I problem, but the easiest to fix.

**FIND OUT HOW**



# SOUTHLAND TOOL MFG. INC.

*Building Innovative Tools for Municipalities*



**SOLUTIONS TO SEWER  
CLEANING THROUGH:**  
CONCEPT  
DESIGN  
PRODUCTION



Manhole Tools • Debris Baskets • Vac-Traps • Root Saws • Calcium Cutters • Sewer Rods  
Handy Clams • Nozzle Extensions • Deep Vac Tube Holder • Grabbers Claws and Hooks  
Diamond Tap Cutters • Fiberglass Poles • Hydraulic Cutters • Top Manhole Rollers • Sewer Spoons  
Continuous Rod • Carbide Saws • Vacuum Coupling • Reducers • Hydro Excavation



1430 N. Hundley St  
Anaheim, CA 92806

ph: 714.632.8198  
fax: 714.632.8228

YouTube  
[www.SouthlandTool.com](http://www.SouthlandTool.com)



## Centrifugally cast pipe used to rehabilitate interceptor

### Problem:

A routine five-year inspection of a 36-inch reinforced concrete sewer interceptor in Rockland County (New York) Sewer District No. 1 revealed that the top half of the interceptor, which had been in good shape just five years previously, was almost completely rotted out by microbiologically induced corrosion. Even the reinforcing rebar was gone in 20- to 30-foot stretches of the 750-linear-foot sewer; only solid root masses were holding the soil in place. A failure in this 36-inch interceptor, just a mile upstream of the region's wastewater treatment plant, would affect hundreds of homes and businesses.



### Solution:

After consulting with contractors Ace Pipe and National Water Main Cleaning, the district selected a centrifugally cast concrete pipe process known as CentriPipe from **AP/M Permaform** to structurally rehabilitate the interceptor without digging. Some creativity was needed to stabilize the pipe prior to spincasting. Following stabilization and dewatering, the crew worked from manhole to manhole to apply a 1 1/2-inch-thick concrete pipe in three half-inch passes. To prevent future microbiologically induced corrosion damage, the high-strength, fine-aggregate concrete liner (**PL-8000**) was mixed with **ConmicShield**, an additive that makes concrete intrinsically and permanently resistant to the formation of *Thiobacillus* bacteria.

### RESULT:

The Rockland sewer interceptor was repaired quickly, safely and cost-effectively, and the completed project is structurally sound and inherently resistant to microbiologically induced corrosion. **800-662-6465; [www.permaform.net](http://www.permaform.net).**

## Prechlorinated pipe bursting provides new water mains without disturbing residents

### Problem:

Bloomfield Village in Oakland County, Michigan, was ready to replace

water mains, but it wanted to do so with minimal interruption of water service to local residents. Space along street right-of-ways was also limited, so officials wanted to limit excavation.



### Solution:

The village specified prechlorinated pipe bursting replacement in its plans and chose to upgrade the existing mains with 8- and 12-inch HDPE pipe. Pipe bursting specialist Bidigare Contractors was chosen for the job. For bursting operations, Bidigare Contractors used its own hydraulic pipe bursting machine from the **HammerHead Trenchless HydroBurst** line. Although the machine was capable of up to 100 tons of pulling force, Bidigare Contractors said the average burst required only about 20 tons.

### RESULT:

Bidigare Contractors replaced between 200 and 500 feet of pipe a day using this method. Residents were never without water service aside from the day the work was done. **800-331-6653; [www.hammerheadtrenchless.com](http://www.hammerheadtrenchless.com).**

## Seal system helps rehabilitate vault pipe

### Problem:

A 65-foot-deep vault containing a complex system of pipes, valves and infrastructure for drinking water sat approximately 45 feet below a major U.S. interstate. One of the 36-inch L-shaped joints of a cast iron, concrete-lined water main suffered a leak.

### Solution:

Foreman Patrick Whitehead reported to the site and conducted pre-job safety checks; he then ventured underground and found the leak. First he prepped the concrete with quick-curing hydraulic cement, then applied a 14-inch extra-wide **WEKO-SEAL** from **Miller Pipeline**. Once the seal was in place, he applied the standard two stainless steel retaining bands and one additional for added stability. Upon completion of the installation, an air test was performed on the seal.





#### RESULT:

From start to finish, installing a WEKO-SEAL took just over four hours, instead of the days it would have taken to replace the leaking pipe. This created huge cost-savings, and service was only interrupted for a few hours. **800-428-3742; www.millerpipeline.com.**

## Epoxy allows company to construct full manholes in-house

#### Problem:

In 2018, the city of Edmonton, Alberta, had several projects to install new manholes and replace old nonrepairable manholes.

#### Solution:

The projects were awarded to concrete manufacturer LafargeHolcim. Instead of the labor-intensive process of installing manholes and lining them in the field, they lined manhole rings with one-step 3-gallon kits of **Neopoxy International NPR-5305 Epoxy** at their manufacturing facility. After installation, gaps between rings were filled with the same product.



#### RESULT:

The company installed 80 manholes using concrete manhole rings lined with NPR-5305 epoxy resin. This approach resulted in less traffic disruption and improved lining quality, and it made the process faster and more efficient, thus reducing construction cost and time. **510-782-1290; www.neopoxy.us. ♦**



## PROWLER EASEMENT MACHINES

The Prowler Easement Machine is available in extendable track, track, wheeled or track over wheel configurations. Reel available in capacities To 1,000 feet. Many options available. For more information contact:

**3T Equipment Company Inc. 800-969-3001**

**tttequip@yahoo.com, Web Site at www.3TEquipco.com**



## Pressure Washers & Drain Jetting Equipment

## We Custom Build Machines To Your Specifications!

Van and Truck Mount Models Available  
See All The Features And Specifications At [CamSpray.com](http://CamSpray.com)

**800-648-5011**

**www.camspray.com**

**sales@camspray.com**



**BOOTH  
2201**

### STB Series

#### Trailer-Mounted Drain Jets



- DC-Powered Jet Hose Reel and 4-Nozzle Set
- Pressure Gauge & Hour Meter
- Electric Start with Low Oil Shutdown
- Pumps Handle Fluids Up To 160°
- Lockable Tool and Storage Boxes
- 150' Garden Hose on Manual Reel
- 300 Gallon Tank with Low Water Shut Off
- Gearbox Drive Triplex Plunger Pump with Ceramic Plungers and Stainless Valves
- Trailer with Industrial Painted Finish and 15" Aluminum Wheels

#### STB4012K \$18,999

- 12 G.P.M. @ 4000 PSI
- 999 CC Kohler • 400' x 1/2" Hose

#### STB3015K \$18,999

- 15 G.P.M. @ 3000 PSI
- 999 CC Kohler • 400' x 1/2" Hose

#### STB2712K \$13,499

- 11.5 G.P.M. @ 2700 PSI
- 689 CC Honda • 400' x 1/2" Hose

#### STB3708K \$13,299

- 8 G.P.M. @ 3700 PSI
- 689 CC Honda • 300' x 3/8" Hose

#### STB4007K \$13,299

- 7 G.P.M. @ 4000 PSI
- 689 CC Honda • 300' x 3/8" Hose



## TT4025HZ-35 \$52,995

- Produces 25 Gallons Per Minute at 4000 PSI
- 74 HP EPA Tier 4 Final Compliant Hatz Turbo Intercooled Diesel Engine
- Hydraulic Slide Out Swivel Reel with 500' x 5/8" Hose
- Air Purge Valve and 18 Gallon Anti-Freeze Tank and Freeze Protection
- Heavily Constructed Trailer with 2" x 4" Steel Tube Box Frame
- 26 Gal Fuel Tank Gives Hours of Run Time on a Single Fill
- Wireless Remote to Control Throttle Up and Down, Water Valve and More
- 350 Gallon Tank with 2" Hydrant Fill
- Features 150' Wash Down Hose and Front-mounted & Over-fender Tool Boxes



# Product Spotlight

## Water recycling innovations come stateside

By Craig Mandli

While combination sewer cleaners that recycle water are common in Europe, the concept is relatively new in the U.S. However, with increased emphasis on efficiency, improved productivity, and carbon footprints stateside, the makers of the AquaStar — Kaiser Premier — can see the proven unit's viability growing. And they're ready for it.

The AquaStar offers a combination of performance and versatility. Its KDU high-pressure water jetting pump delivers water at rates up to 132 gpm and water pressure of up to 2,900 psi. The large jetter hose reel can accommodate up to a 985-foot jetting hose. With its Kaiser liquid ring vacuum pump, the maximum air throughput is 2,390 cfm with a high vacuum of 25 inches Hg. Due to the combined jetting hose and suction boom, the vehicle can be positioned at a manhole for a sewer cleaning process that is both quick and safe. And with a large suction hose-reel capacity of 55.6 feet, tube extensions are not needed in most cases. The unique installation of the liquid ring vacuum pump in the freshwater chamber serves for cooling and noise insulation. The package is designed to reduce noise emissions while minimizing weight while delivering the required power to the work site.

"It's a good fit for municipalities and contractors that are looking for up to 100 percent increase in line cleaning productivity with fuel and disposal savings," says Dan Weber, president and CEO of Kaiser Premier. "Customers

love the simplicity, power and ease of clean-out at the end of the day."

With its ROTOMAX recycling system, the AquaStar is equipped to continuously clean sewer pipes as well as catch basins in poor conditions. With the flexible operation of the high-pressure system and the hose reel placement, it can even be used for hydroexcavation. Its KAISERtronic consumption-optimized hydraulic system reduces fuel consumption by adjusting the suction power in accordance with the vacuum rate. Cleaning quality in the sewer pipe is enhanced by the constant jetting hose drive with cruise control. This is all supported by the intelligent structure concept and its control/drive systems.

"Our customers love the simple, single-operator functionality and the quiet noise levels while in use," Weber says. "We feel we have a unit that offers ease of operation and maintenance with a high level of durability and productivity."

With KAISERteleservice remote diagnostics, the service engineer can log into the vehicle control system via modem, access all current data, perform any necessary troubleshooting, and even modify parameters if needed. Downtime is reduced to a minimum. 970-542-1975; [www.kaiserpremier.com](http://www.kaiserpremier.com).



## Weil Pump 575-volt explosion-proof submersible motors

Weil Pump announced its entire submersible 1600 and 2500 series sump and sewage pump products are now available in 575 volts with cUL approval. The pumps are available in high-density cast iron or cast 316 stainless steel and include the motor, case and impeller with the same materials of construction. The pumps come standard with moisture sensor, temperature limiter, flame arrestor, welded motor chamber plugs, welded cable nut fittings and stainless steel UL/cUL nameplates. The 575 volt also includes



Exact Tools AIR 360

vertical column pumps for pumping wastewater and other unscreened liquids containing solids. 262-377-1399; [www.weilpump.com](http://www.weilpump.com).

## Exact Pipe Tools PipeCut AIR 360 model

Exact Pipe Tools' PipeCut AIR 360 model cuts cement-lined cast and ductile iron pipe materials for maintenance applications in the water utility market. The air-driven saw cuts underground water-based pipes in a fixed position. The pipe can be used on a variety of different pipe materials including steel, stainless steel and plastics. 844-392-2800; [www.exacttools.com](http://www.exacttools.com).





Vac-Tron LP873

## ADS Environmental Services ECHO manhole site monitors

The ECHO from ADS Environmental Services is used for continuous monitoring of manholes and multiple associated pipe segments to determine when they need to be cleaned. The monitors provide visibility of water levels and changes that occur, preventing overflows. The ECHO has five alarms that are configured for each site and has 28 feet of total measure range. **800-633-7246; [www.adsenv.com](http://www.adsenv.com).**

## CUES remote evaluation diagnostic inspection kit

The CUES REDI pipeline inspection troubleshooting kit is designed to help diagnose electrical issues, allowing for quicker and more accurate definition and repair of problems while in the field. The kit features a high-resolution web camera for two-way video conferencing with CUES to expedite troubleshooting and parts identification. It also features a diagnostic test box for easy access to the TV cable conductors via test points, and a built-in mini-camera to send video back through the TV cable and truck. **800-327-7791; [www.cuesinc.com](http://www.cuesinc.com).**

## Vac-Tron Equipment LP 873 SDT vacuum excavator

The LP 873 SDT vacuum excavator from Vac-Tron Equipment includes a Yanmar 49 hp Tier 4 Final diesel engine with a 1,000 cfm vacuum blower for both wet and dry applications. The LP (low profile) series of excavators are available with gas or diesel engines and high or low cfm. The series starts with 300-gallon debris tanks and goes up to 1,200-gallon tanks. The units come standard with the patented Big Red CVS filtration system, a reverse pressure system and a heavy-duty I-beam trailer with Dexter torsion axles. The low-profile trailers are hand built at the Florida factory, and the components of the unit are easily accessible, providing great ground clearance for right-of-way maneuverability. **352-728-2222; [www.vactron.com](http://www.vactron.com).** ♦



**T&T Tools, Inc.**  
**800.521.6893**



### Hooks...

- ★ Heat treat for long life
- ★ Manhole Cover Hooks
- ★ Septic Tank Lid Hooks
- ★ Many styles available
- ★ "T" handles for two hands or compact "D" handles

### Probes...

- ★ Insulated, Standard and Specialty
- ★ Metal shafts: 3/8 round or hex
- ★ Replaceable hardened tips
- ★ Optional "slide" available to make your probe a mini-slide hammer

**Call for a FREE Catalog**

[www.MightyProbe.com](http://www.MightyProbe.com)

**Email: [sales@mightyprobe.com](mailto:sales@mightyprobe.com) Fax: 800.521.3260**

## Stop Leaking Manholes



Leaking manhole covers are a major contributor to rainfall induced inflow. Sewer evaluation studies indicate that a typical manhole casting cover allows an inflow rate from .20 to over 5 gallons per minute during rainfalls.

While the manhole cover is one of the leading contributors to collections system & I, ironically it is the easiest and most cost-effective problem to remedy.

Stop this unwanted inflow of rainwater with the strong, durable **SSI**

**Manhole Insert.** The inserts are custom sized to provide an enhanced fit and seal, and are manufactured from ultra high density polyethylene copolymer material known as Marlex HXM 50100. The SSI Manhole Insert can be easily installed by your "in-house" collection system maintenance personnel.



**Sealing Systems, Inc.**  
**800-478-2054**  
[www.ssisealingsystems.com](http://www.ssisealingsystems.com)



## COXREELS exceeds recommended salt spray testing hours

COXREELS announced that they recently exceeded 20 percent more hours than the industry recommended standard for salt spray testing. The independent lab test measured the corrosion- and UV-resistance of COXREELS' powder-coated materials, and results indicate the products ranked in the top tier of the grading system for both.

## Envirosight releases guide to grant applications

Envirosight released a resource for wastewater operators to learn the basics of the grant application process, from determining eligibility to evaluations. It also goes through the components of a grant application and how to produce them. It is a companion piece to Envirosight's Guide to Municipal Grants. The guide can be downloaded for free at <http://inbound.envirosight.com/municipal-grant-applications>.

## CUES launches redesigned website

CUES announced it launched a newly designed website, featuring a new look and feel with less text and more imagery. Streamlined menus and simplified navigation make it easier to use, and it has a responsive layout for all platforms, including smartphones and tablets.

## WinCan receives NASSCO certifications

WinCan was awarded the Pipeline Assessment and Certification Program 7.0 and Lateral Assessment and Certification Program 7.0 certification. Presented by NASSCO, it certifies that the company's software has been tested for version 7.0 of the relevant data dictionaries and contains and properly implements codes for both the PACP and LACP. The certification ensures that sewer inspection reports created within WinCan VX may be exported to version 7.0 of the NASSCO standard database.

## Tornado Global Hydrovacs announces strategic alliances

Tornado Global Hydrovacs announced that its wholly-owned subsidiary Tornado China entered into a five-year strategic partnership agreement with Anhui Jianghuai Yangtian Automobile to manufacture Tornado's lineup of hydrovac trucks. The trucks are customized to satisfy all the Chinese regulatory requirements for sale and operation in China.

Tornado also announced that Tornado China executed a strategic partnership agreement with Daqing Haotian Xinda Technology for an initial term of one year to assist Tornado China with developing a client base in the excavation market in the Heilongjiang province.

## InfoSense named a Fast 50 Awards winner

The *Charlotte Business Journal* named InfoSense as a 2018 Fast 50 Awards winner, making it a four-time recipient of the award given to the 50 fastest-growing private companies in the Charlotte, North Carolina, region.

## SJE-Rhombus launches new websites

SJE-Rhombus launched four new websites as part of the company's rebranding efforts. Existing sites for [www.csicontrols.com](http://www.csicontrols.com), [www.primexcontrols.com](http://www.primexcontrols.com), and [www.sjrhombus.com](http://www.sjrhombus.com) received a redesign, while an additional corporate site was created for SJE-Rhombus at [www.sjeinc.com](http://www.sjeinc.com). This new site contains all corporate information, such as history, ESOP, leadership and career opportunities.

## Valley Industries names new Comet product manager

Pete Gustin was named Valley Industries' new Comet product manager. He will be responsible for managing sales and product development for Comet pumps and accessories in North America. Gustin started working with Comet pumps in 1995 while working for his family's business, UNICO Spray Products. UNICO merged with Valley Industries in 2010 and provided the support for Gustin to expand Comet diaphragm pumps into new industrial applications such as carpet cleaning, softwash and liquid rubber.



**Pete Gustin**

## Ranger Design celebrates 30th anniversary in 2018

Ranger Design announced 2018 is the company's 30th anniversary. Originally started in founder Randal and Derek Cowie's small garage, the company now has over 300 distributors for its van shelving, ladder racks, drawers and bins, bottle holders, and other van accessories.



**Co-owners Brenda Jennissen, Felling Trailers CEO, and Bonnie Radjenovich, Felling Trailers vice president of human resources, are with bid winners Jon and Laurie Stein of Centre Dairy Equipment & Supply.**

## Felling Trailers holds sixth annual Trailer for a Cause Auction

Felling Trailers held its sixth annual online auction of an FT-3 drop-deck utility trailer to benefit a nonprofit organization. Minnesota Ovarian Cancer Alliance was the chosen organization for this year's auction. The winning bid of \$3,400 was placed by Jon Stein, owner of Centre Dairy Equipment and Supply in Sauk Centre, Minnesota. Stein's wife, Laurie, is an ovarian cancer survivor.

## Komatsu announces plans for new customer support and service center

Komatsu Equipment Co. announced plans to build a 189,000-square-foot service center on 30 acres in Elko, Nevada. The new building is planned to include a six-bay, full service construction equipment and mechanical rebuild shop; a heavy welding and fabricating shop large enough for the rebuild and manufacturing of large shovel and truck structures and the manufacturing of truck bodies; a heavy machine shop with large, horizontal milling and boring machines, plus vertical lathe capability; and a construction equipment and rental machine yard. It is planned for completion in early 2020 and will combine the staff and functions of three existing buildings.



# Wastewater Solutions from RELINER®/Duran Inc.

## Inside Drop Bowl Stainless Pipe Supports

Type 304 & 316 Stainless Steel



- Eliminate outside drops
- Reduce maintenance
- Simplify cleaning
- Stop corrosion
- Install quickly
- Outlets from 4" - 24"
- Optional force line hood



## Manhole Invert Channels

RELINER® Drop Bowl  
Fits any Structure

Flexible Pipe Coupler\*

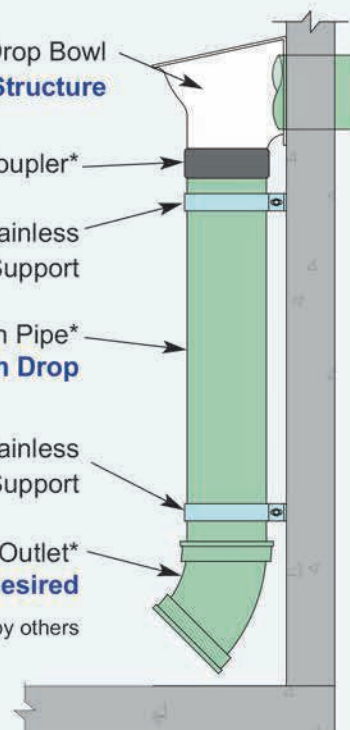
RELINER® Stainless  
Steel Pipe Support

Down Pipe\*  
Any Length Drop

RELINER® Stainless  
Steel Pipe Support

Bend at Outlet\*  
Orient as desired

\*Supplied by others



U.S. Patents #5553973, 6074130

[www.reliner.com](http://www.reliner.com)

Proudly made in the USA

1-800-508-6001

## PHCC names International Code Council as newest partner

The Plumbing Heating Cooling Contractors National Association announced a new corporate partnership with the International Code Council. Through this alliance, PHCC members will have increased access to I-Codes books and training, potentially through the PHCC associations.

## GPS Insight announces new CEO and executive promotions

GPS Insight announced the promotion of Gary Fitzgerald to CEO. Rob Donat, former CEO and founder, will remain with the company as chairman of the board. Wayne Holder, the company's controller, moves to the chief financial officer role; and Jason Walker, vice president of sales, becomes chief revenue officer. Fitzgerald joined the company in November 2016 from General Electric, where he served as an enterprise architect for 10 years. He served as vice president of technology for almost two years and led the company's product development efforts, technical teams and security practice.

## Utilicor Technologies welcomes new manager of field operations

Utilicor Technologies announced the appointment of Jody Robles as the company's manager of field operations. He will be responsible for working with the network of Ditch Witch dealers to provide sales teams and service technicians with enhanced product knowledge on key-hole coring technology. ♦



Jody Robles

# RHINO

**8 lb**

**"JAKE"**  
Manhole Cover Extractor

**12 lb**

**"MARY A"**  
Manhole Cover Extractor

- 8 lb. and 12 lb. (4140) ASTM A148 cast steel head breaks frozen covers free easily. Serrated edge strengthens pick-end and eliminates possibility of tool becoming bottlenecked in the cover.
- Combination sledge hammer and pick/pry bar. Two tools in one enables a worker to carry only one piece of equipment into the street
- Tapered saw-tooth pick fits 5/8" or larger drain holes and most pick slots.
- Top quality handle constructed of fiberglass.
- "Mary A" is patented.

OPEN EDGE PRY ("EP")

CONCEALED EDGE PRY ("AURORA PICK HOLE") ("APH")

CONCEALED EDGE PRY ("CEP")

**DMC**

Distributed by:  
**DOUG MEADOWS COMPANY, LLC**  
**1.800.588.3684**  
Fax (325) 695-7954

Web site: [www.dougmeadows.com](http://www.dougmeadows.com)



**WATER CANNON 35**

## Switch Blade Static Hydro Excavation Nozzle



**Ace Nozzle**  
SKU 1002036

**Deuce Nozzle**  
SKU 1002035

**3200 PSI**

**Quad Nozzle**  
SKU 1001928

- Max Water Temperature: 180° F
- Housing Material: Stainless Steel

**FREE SHIPPING\* TAX FREE Except FL**  
\*Some delivery restrictions may apply. Call for details.

**WaterCannon.com**  
**1.800.333.WASH**  
(9274)

**Now That's Smokin'!**


Tests up to 7500 cubic feet of pipe per minute

**Turbo Fog MH75**  
• Easy • Cost Effective • Compact •



**TURBO-FOG**

**1.800.394.0678 www.turbo-fog.com**



## Cua Claws

A Simple Solution for Slippery PVC Pipe -

### 18 Years of Service

We resurface all makes of steel transport wheels

**CALL JERRY AT 714-697-8697**  
**www.cuaclaws.com**

## "Your One-Stop Stopper Shop!"

FOR 31 YEARS - HOME OF THE ORIGINAL  
**PIPE PLUG & NB BAG/ PILLLOW DESIGN STOPPER**  
[ SINGLE SIZE OR MULTI SIZE PIPE STOPPERS 4" & UP ]

- » SINGLE & MULTI SIZE PASS THRU PLUGS
- » MULTI SIZE PLUGS & MULTI SIZE LEAK LOCATORS
- » SINGLE & MULTI SIZE TEST PLUGS
- » COMPLETE LINE OF SEWER & DRAINAGE TOOLS AVAILABLE

disc plugs | high pressure plugs | large inflatable pipe plugs | pipeline testing & acceptance plugs | pneumatic by-pass plugs

**SEWER EQUIPMENT CO. OF FLORIDA, INC.**

NEW SMYRNA BEACH, FL  
IN FL 800.225.2952 | OUT OF FL 800.635.2323  
IN CANADA 800.328.3318

**www.SewerEquipmentCo.com**



## = Thank You!

Hand-selected Wisconsin sausage and jerky delivered in a 20-qt. **RUGID** cooler.

**\$199.99** Delivered

*Meaty-Delivery™*

**meaty-delivery.com**  
**833-777-8443**



**Green Bison heavy duty degreaser**

Superb product for grease control in collection systems. Emulsifies grease, improves high pressure cleaning performance. Highly recommended for cleaning/degreasing of tools, equipment and machinery. With Green Bison you do not have to trade efficiency for safety. Green Bison is a certified environmentally responsible product that utilizes natural and bio based ingredients, delivers industrial strength cleaning power while keeping your cost down.

**Call us today 866-366-0587**

**safe-tee chemical**  
chemical  
cleaning responsibility since 1958  
safeteechemical.com

This product meets the Green Seal™ standard for cleaning/degreasing agents based on its reduced hazard to humans, reduced aquatic impacts, reduced smog production, and low ozone depletion potential.

**GREEN SEAL CERTIFIED**



## DYE TRACERS

**Solutions for:**

- Infiltration
- Septic Systems
- Cross Connection
- Leaks and more...

**BRIGHT DYES**  
Division of Kingscote Chemicals

**www.brightdyes.com • 1-800-394-0678**

**NSF**  
Certified to ANSI/NSF 60

**BOOTH 6102, 6105**



## CONFINED SPACE ENTRY PACKAGE

**ONLY \$3,195**

**The Best Package On The Market Includes:**

- 4-Gas Air Monitor (3 Year Sensor Warranty)
- 7' Tripod
- 3-Way Fall Protection
- Work Winch
- Full Body Harness

Add a **Blower** with 15' of duct for only **\$350!**  
Add a **5 Minute Escape Respirator** for only **\$500!**

**MTECH 800.362.0240**  
**www.mtechcompany.com**

## Let Us Build Your JETTER



**Diesel Propane Gas**

**Hot or Cold**

**AMERICAN JETTER.COM**  
**866-944-3569**



**WOLVERINE BRAND**  
PATENT #US 8,273,162

## IndustrialOdorControl.com

A Broad and Economical Range of Odor Control Solutions

- Manhole Odor Inserts
- Pollution Control Barrels
- Activated Carbon
- Lift Station Odor Control
- Septic Vent Filters
- Custom Solutions

**Simple Solutions**  
DISTRIBUTING LLC

**866-NO-STINK**  
(866-667-8465)  
**973-846-7817** in NJ

Makers of the Wolverine Brand of Odor Control Solutions



## Durable Gear for Extreme Conditions

**COLOR OPTIONS:** SNOW SAND SURF

20 QT - **\$149.99**  
60 QT - **\$239.99**

45 QT - **\$199.99**  
75 QT - **\$299.99**  
Pictured

**833-777-8443**  
**RUGID RUGIDGear.com**



# NOW THERE'S A BETTER WAY TO COMMUNICATE

If you're shouting to be heard, pushing buttons to talk, or relying on hand-signals to interpret actions— it's time to put on a Sonetics wireless headset and **EXPERIENCE THE BIG DIFFERENCE.**

## ***Sonetics***<sup>®</sup>

Hear what's important.

[soneticscorp.com/public-works](http://soneticscorp.com/public-works)  
877.959.9189





## PEOPLE/AWARDS

Several municipalities were recognized at the **National Municipal Stormwater and Green Infrastructure Awards**, developed by the Water Environment Federation in cooperation with the U.S. Environmental Protection Agency. The awards are in two classifications: Phase I encompasses cities with more than 100,000 customers, and Phase II encompasses smaller storm sewer systems outside of heavily populated areas. Winners include:

### Phase I

- Lexington-Fayette (Kentucky) Urban County Government, Division of Water Quality — Program Management and Overall Highest Score.
- Louisville (Kentucky) Metropolitan Sewer District — Innovation.

### Phase II

- City of Alexandria, Virginia — Innovation and Overall Highest Score.
- City of Auburn, Alabama — Program Management.

In addition to the winners, other applicants were categorized into levels signifying their status among other municipal separate storm sewer systems (or MS4) communities across the country. Each MS4 received a certificate indicating either Silver or Gold level status in both program management and innovation.

Silver recognition in Innovation

### Phase I

- Anne Arundel County, Maryland.
- City of Dayton, Department of Water, Ohio.
- City of Glendale, Water Services Department, Arizona.
- City of Los Angeles, LA Sanitation and Environment, Watershed Protection Division.

- City of Pensacola, Florida.
- District Department of the Environment, Washington, D.C.
- Fairfax County (Virginia) Department of Public Works and Environmental Services, Stormwater Planning Division.
- Jefferson Parish, Louisiana.
- State of Hawaii Department of Transportation, Highways Division, Oahu District.

### Phase II

- Capitol Region Watershed District, Minnesota.
- City of Richmond (Virginia) Department of Public Utilities.
- East Lampeter Township, Pennsylvania.
- Lake Havasu City, Arizona.
- Metropolitan St. Louis Sewer District.
- Sewerage and Water Board of New Orleans.
- St. Tammany Parish Government, Louisiana.
- Town of North Hempstead, New York.
- Town of Yarmouth, Massachusetts.

Gold recognition in program management

### Phase I

- Anne Arundel County, Maryland.
- City of Dayton, Department of Water, Ohio.
- City of Glendale, Water Services Department, Arizona.
- City of Los Angeles, LA Sanitation and Environment, Watershed Protection Division.
- District Department of the Environment, Washington, D.C.
- Fairfax County (Virginia) Department of Public Works and Environmental Services, Stormwater Planning Division.
- Jefferson Parish, Louisiana.
- State of Hawaii Department of Transportation, Highways Division, Oahu District.

### Phase II

- Capitol Region Watershed District, Minnesota.
- City of Richmond (Virginia) Department of Public Utilities.
- East Lampeter Township, Pennsylvania.
- Lake Havasu City, Arizona.
- Metropolitan St. Louis Sewer District.
- Sewerage and Water Board of New Orleans.
- Town of Yarmouth, Massachusetts.

Silver recognition in Program Management

### Phase I

- City of Pensacola, Florida.

### Phase II

- St. Tammany Parish Government, Louisiana.
- Town of North Hempstead, New York.

The **Town of Merrillville Stormwater Utility** received a Governor's Award for Environmental Excellence from the Indiana Department of Environmental Management for HDPE recycled stormwater infrastructure pipe standards. The utility implemented a new standard for town-owned stormwater infrastructure projects by incorporating pipe that contains at least 40 percent recycled HDPE material and meets strict American Association of State Highway and Transportation Officials standards.

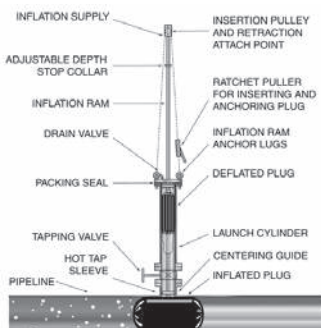
At the League of Kansas Municipalities Annual Conference, **Tom Brown**, mayor of McPherson, received the 2018 E.A. Mosher Excellence in Local Government Award. The honor is bestowed upon an elected city official who has demonstrated outstanding service to their city, promoted positive

## Petersen® Pipe Plugging Systems



Pipe Plugs and Packers for all your Pressure, Chemical, and Temperature Requirements. Call us to quickly customize a pipe plug or plugging system for your specific application.

### Economical Hot Tap Plugging Systems



[www.pipeplug.com](http://www.pipeplug.com)

**Petersen** PRODUCTS COMPANY  
Serving Professionals Since 1916

PHONE 800.926.1926 OR 262.692.2416  
FAX 262.692.2418



intergovernmental relationships, and had an active commitment to the league. Brown was a strong advocate for the establishment of a citywide stormwater utility.

**John P. Sullivan**, chief engineer for the Boston Water and Sewer Commission, received two awards honoring his public service. The Henry L. Shattuck Award is given to Boston municipal workers who are "unsung heroes and role models." Sullivan also was honored by the Charles River Watershed Association for his efforts to protect the Charles River.

The **City of Akron**, Ohio, received the 2018 Engineering Excellence Award and the 2018 Facility Image Award from the Ohio Water Environment Association. The engineering award was given for the city's Water Reclamation Facility's Step Feed Phase 1 project, which is the first stage in the city's long-term plan. The facility image award was given in recognition of Akron's Waterways Renewed! public outreach efforts. ♦

## CALENDAR

### March 5-8

American Water Works Association and Water Environment Federation Utility Management Conference, Renaissance Nashville Hotel, Nashville, Tennessee. Visit [www.awwa.org](http://www.awwa.org).

### March 14-16

National Utility Contractors Association Annual Convention & Exhibit, Naples Grande Beach Resort, Naples, Florida. Visit [www.nuca.com](http://www.nuca.com).

### March 23-27

American Water Resources Association Spring Specialty Conference: Setting Conditions for the Success of Integrated Water Resources Management, Embassy Suites by Hilton, Omaha, Nebraska. Visit [www.awra.org](http://www.awra.org).

### May 19-22

American Public Works Association North American Snow Conference, Salt Lake City. Visit [www.apwa.net](http://www.apwa.net).

### June 9-12

American Water Works Association ACE19 Annual Conference & Exposition, Denver. Visit [www.awwa.org](http://www.awwa.org).

### June 16-19

American Water Resources Association Summer Specialty Conference: Improving Water Infrastructure Through Resilient Adaptation, Nugget Casino Resort, Sparks, Nevada. Visit [www.awra.org](http://www.awra.org).

### July 7-10

American Society of Agricultural and Biological Engineers Annual International Meeting, Boston Marriott Copley Place, Boston. Visit [www.asabe.org](http://www.asabe.org).

### Sept. 8-11

American Public Works Association Public Works Expo (PWX), Washington State Convention Center, Seattle. Visit [www.apwa.net](http://www.apwa.net).

### Sept. 9-11

National Rural Water Association WaterPro Conference, Nashville, Tennessee. Visit [www.nrwa.org](http://www.nrwa.org).

### Oct. 9-13

American Society of Civil Engineers Annual Conference, Miami. Visit [www.asce.org](http://www.asce.org).

### Nov. 3-7

American Water Resources Association Annual Water Resources Conference, Sheraton Hotel, Salt Lake City. Visit [www.awra.org](http://www.awra.org).

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

## classifieds

see photos in color at [www.mswmag.com](http://www.mswmag.com)

### DEWATERING

**FOR SALE:** Two (2) Andritz 2.2-meter belt presses, unused after complete refurbishing to Andritz factory specifications throughout. Dyer Equipment Co. 970-454-3784, Ault, CO or [dyerequipment@aol.com](mailto:dyerequipment@aol.com) (M01)

### PIPELINE REHABILITATION

26-foot-long Hammerhead relining trailer and equipment, \$38,000. For more information call 605-996-1765. (C01)

A-1 Trenchless Technology is now offering the most efficient and productive steam trucks on the market. With a minimum 375cfm onboard compressor, generator, and water, we have truly an all-in-one unit. Units can be matched with a 50 bhp or a 100 bhp. Units can be truck or trailer built. Contact Josh today to get a quote. 605-209-3303 (C01)

New Trydent 80 TryTek lateral cutter. Used on one project. 72 hours on hour meter. Just serviced by TryTek. Unit is currently at TryTek in Pennsylvania for demo. Original price \$65,000. Asking \$45,000 OBO. Call 267-249-3774. (C01)

### POSITIONS AVAILABLE

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

### PUMPS

Honda model WP40X, 8 hp, 4" with hoses. Honda 4 hp, 2" pump with hoses. The Cable Center: 800-257-7209. (CBM)

### SERVICE/REPAIR

**Dynamic Repairs - Inspection Camera Repairs:** 48 hour turn-around time. General Wire, Ratech, RIDGID, Electric Eel Mfg., Gator Cams, Insight Vision, Vision Intruders. Quality service on all brands. **Rental equipment available.** For more info call Jack at 973-478-0893. Lodi, New Jersey. [www.dynamicrepairs.biz](http://www.dynamicrepairs.biz) (MBM)

## TOOLS

**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 manhole covers easily. Free catalog. [www.TandTtools.com](http://www.TandTtools.com). Phone **800-521-6893**. (CBM)

Bosch Brute hammer drill with cart irons. The Cable Center: 800-257-7209. (CBM)

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

## TV INSPECTION

**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. Also available: wheels and tires. Pad samples upon request. **Pipe Tool Specialties LLC:** 888-390-6794; Fax 888-390-6670; [pipetoolspecialties.com](http://pipetoolspecialties.com) or email [pts4422llc@gmail.com](mailto:pts4422llc@gmail.com) (MBM)

USED Envirosight ROVER Sewer Inspection Crawler: Overhauled with new parts and ready to run. Includes automatic cable reel, pan/tilt/zoom camera, steerable 6-wheel-drive tractor with various wheel sets, controls, and accessories. \$20,000. Call 973-252-6700. (MBM)

**CAMERA OPERATORS, STOP SPINNING YOUR WHEELS IN GREASY PIPE!** Aftermarket gritted polymer wheels, steel carbide wheels, gritted and treaded tracks, tow cables, kiel sticks and more. Fitting Aries, CUES, Envirosight, Ibak, Rausch, RST, Schwalm & IDTec. **ORDER TODAY** at [www.Trugrittraction.com](http://www.Trugrittraction.com); [info@trugrittraction.com](mailto:info@trugrittraction.com); 407-537-0746 (MBM)

PEARPOINT — Mainliner buying & selling used equipment. Canada & USA PEARPOINT MAINLINE EQUIPMENT ONLY. Will buy complete Pearpoint trucks. Will buy your old system. Do you need parts? 399, 599 reels; 420, 448 tractors: 494 digital and zoom 420 light heads. Call 800-265-4298 or [mainliner2075@hotmail.com](mailto:mainliner2075@hotmail.com) (CBM)

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

20,000 - 55,000 psi Sapphire Nozzles, OS4, OS6, OS7 replacements, UHP hoses & replacement parts. Excellent quality & prices. 772-286-1218, [info@alljetting.com](mailto:info@alljetting.com), [www.alljetting.com](http://www.alljetting.com). (CBM)



# Quicker Quieter Quality

"The new GATOR is the most powerful cutter we've ever used." - Contractor

"Having one cutter do so many different sizes of pipes makes it easy." - Contractor

"It is so quiet you can't hardly tell it is working. You don't have to disturb the homeowners with large air compressors or pumps." - Contractor



Now taking  
orders for  
Spring 2019  
delivery!

See us at  
WWETT 2019!  
Booth #2306

## Cutters just got a lot better.

The new MicroGATOR® 2.0 is a powerful, single-point, electric cutter and grinder manufactured to the exacting quality standards of IBAK. Have you ever wished that you could have this level of reliability, durability and attention to detail in your cutter system? Well, the wait is OVER! With longer cable lengths, powerful and quiet cutting motors, and drive units designed to withstand the toughest jobs, these cutters have reset the industry's expectations. Call us or visit [www.rapidview.com](http://www.rapidview.com) to find a dealer near you and see how we can keep you running!



**(800)-656-4225 | [www.rapidview.com](http://www.rapidview.com) | Past Proven. Future Ready.**

IBAK Inspection Equipment Manufacturing is Certified ISO 9001:2015 and ISO14001: 2015.



LEADING MANUFACTURER OF INDUSTRIAL AND MUNICIPAL VACUUM EQUIPMENT.

888-442-7829 JOHNSTOWN, PA

281-884-8658 LA PORTE, TX

WWW.GAPVAX.COM



#BESTCUSTOMERSINTHEBUSINESS #BESTTRUCKSINTHEBUSINESS  
#BESTEMPLOYEESINTHEBUSINESS



*Happy New Year!*  
*We are looking forward to another year of success, growth and new relationships!*  
*Call us today for a demo!*



**GAPVAX  
BOOTH  
6024**



**DON'T MISS OUR DEMO!**



# Demand **POWER**

wwett19

Booth #1061

# Command **PRECISION**



**Vac•Con®** and **Vector Technologies** offers the products you've been looking for in both truck and trailer-mounted options. Discover the power, portability, and precision firsthand at the 2019 WWETT Marketplace Expo.

Visit us in Booth #1061  
February 21-23 at the  
Indiana Convention Center



**VAC-CON**  
MORE **POWER** TO YOU

**WWW.VAC-CON.COM**  
**904.284-4200**

