MUNICIPAL
SEWER & WATER™
FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS
June 2014
www.mswmag.com

WATER: INCREASED STORAGE SAVES RATEPAYERS MILLIONS
PAGE 12

EXPO SPOTLIGHT: SMART FORMS SAVE TIME AND MONEY
PAGE 16

HUMAN SIDE: BOOST YOUR PRODUCTIVITY AND EFFICIENCY
PAGE 18

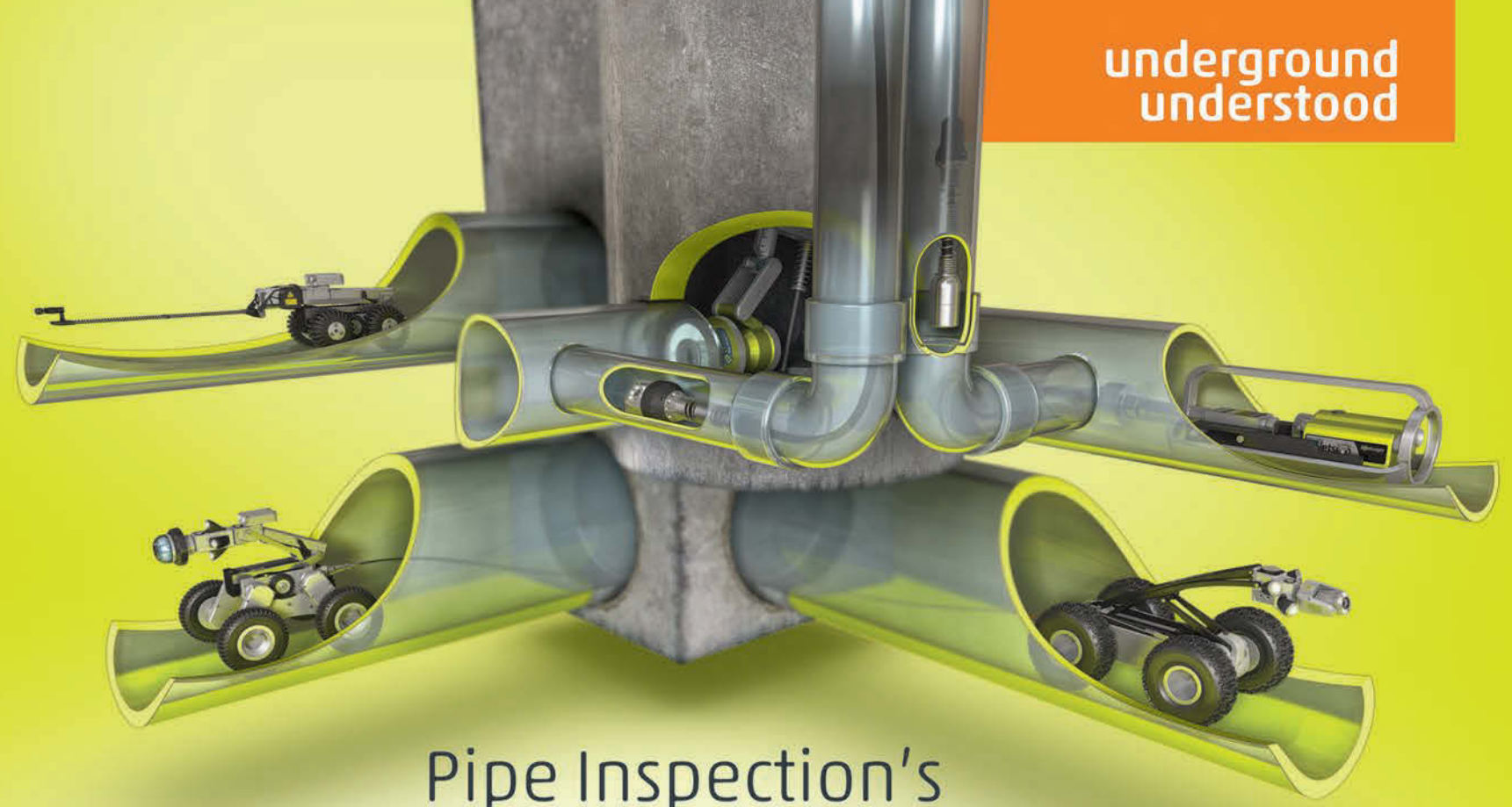
Dan Roberts, Utilities Director Palm Bay, Florida

IT KEEPS GETTING BETTER

Palm Bay draws on employees' knowledge to enhance all aspects of utilities operation

PAGE 30

underground understood



Pipe Inspection's All-star Lineup

new

preferred build-outs

We've analyzed the most popular inspection vehicle configurations and geared up to deliver them faster and more affordably. Order with confidence knowing your build-out reflects industry preferences.

updated

crawlers

Pan/tilt SAT is updated with new controls, drive train and camera; new RX400 crawler inspects pipe up to 10" dia.

new

pan/tilt push camera

Reaching as far as 330' into laterals, VeriSight Pro 360 tilts ±135 degrees and pans 360.

new

video nozzle

Now view lines up to 24" with JetScan extension rollers, and record up to 16 hours of footage.

ROVVER X dominates our industry—it's the most agile, capable crawler out there, with a single system letting you perform CCTV, lateral launch, side scanning and laser profiling in any size line.

But let's face it, even a performance crawler like ROVVER X isn't always the best way to see inside pipe. That's why Envirosight has pioneered game-changing technologies like zooming and video nozzles, and why we've perfected the push camera.

Ultimately, Underground Understood is about having the best equipment to answer any inspection challenge. **Schedule a free on-site demo and find out what it means to go all-star.**

Envirosight

www.envirosight.com • 973.252.6700

inspection technology • asset strategies

WHETHER IT'S REGULAR MAINTENANCE OR ALL HELL BREAKING LOOSE, entire cities count on you. Only Vactor sewer cleaners are built to have your back, no matter what you're up against. And with reduced noise, improved safety and greater fuel economy, you can push these machines even harder, every time. **VISIT VACTOR.COM OR CALL 815-672-3171** to learn more about the equipment that won't let you down.

VACTOR
WORK ASSURED™

INSIDE:

PUMPS, LIFT STATIONS AND CONVEYANCE

ON THE COVER:
Palm Bay (Fla.) Utilities Director Dan Roberts encourages a culture of continuous improvement within his department. The efforts to improve overall operations earned a platinum award from the Association of Metropolitan Water Agencies in 2013. (Photography by Keith Carson)

COMING IN JULY 2014

Product Focus: Chemical & Mechanical Root Control

- Water: Mesa, Ariz., takes gold for exceptional performance
- Tech Talk: Sniffing out wastewater contamination
- Sewer: Middlebury, Vt., ices down its force mains

FEATURES

COLUMNS

JUNE 2014
MUNICIPAL SEWER & WATER

PERMA-LINER™ INDUSTRIES, LLC.™

ZERO DIG TRENCHLESS PIPE REPAIR

Satisfaction.

Getting A Job Done On Time And Under Budget.

It's easy to reline 1000' of pipe in a day and costs less than conventional methods.

Perma-Main™ Continuous Lining Top Gun System and Perma-Liner™ Point Repair Systems are two great systems that control your underground rehab repairs and saves money at the same time.

> Certification Training Classes
> Re-Training Support Classes
> 24/7 Technical Support
> Marketing Support Programs
> Lead Generation Program

Contact us Today!
866.336.2568

Call us for a LIVE demonstration: 866-336-2568

MADE IN U.S.A PRODUCT

PERMA-LINER INDUSTRIES LLC

YouTube

1-866-336-2568 Toll Free
1-727-507-9749 Int'l
www.perma-liner.com

ADVERTISER INDEX

MUNICIPAL SEWER & WATER

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:

COLEpublishing

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

www.mswmag.com

In U.S. or Canada call toll free 800-257-7222
Elsewhere call 715-546-3346
Email: 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 and Canada is free to qualified subscribers. A qualified subscriber is any individual or company in the United States or Canada that maintains, manages, designs or installs municipal or commercial sewer, water and storm infrastructures. To qualify, visit 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 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 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 nicolel@colepublishing.com.

CLASSIFIED ADVERTISING: 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.

REPRINTS AND BACK ISSUES: Visit www.mswmag.com for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email jeffl@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email nicolel@colepublishing.com.

CIRCULATION: 2013 average circulation was 40,000 copies per month (U.S. and international distribution).

www.facebook.com/MSWmag
www.twitter.com/MSWmagazine
www.plus.google.com
www.youtube.com/MunicipalSewerWater
www.linkedin.com/company/municipal-sewer-&-water-magazine

What Makes **HOBAS®** The Standard?

Precision centrifugal casting, consistent high quality, fiberglass-reinforced, polymer mortar pipes

Responsive customer service, on-site field reps backed by extensive engineering support

HOBAS®

- **Time Proven**
- **Leak Free**
- **Long Lasting**
- **Corrosion Resistant**
- **High Strength**
- **Quick, Easy Installation**
- **High Flow Capacity**

HOBAS PIPE USA
281-821-2200
www.hobaspipe.com

EFFICIENT OPERATIONS

Utilities strive to reduce costs and improve operations for the benefit of their customers

FROM THE EDITOR

Luke Laggis

Good municipal utilities are always looking for ways to increase efficiency and save their ratepayers money. It's part of providing the best service possible.

In Farmington Hills, Mich., profiled in this month's issue of *Municipal Sewer & Water,* it's all about reducing the amount of water drawn during peak use periods, because that water is more expensive.

Farmington Hills owns its own water and sewer systems, but the Detroit Water and Sewerage Department (DWSD) provides all of the city's water. Rates are calculated for each of the communities served by the DWSD on different models, based on peak hour demand or maximum day demand, and distance and elevation from the water treatment facility.

Water rates are based on meeting peak demand with a certain pressure and flow. For Farmington Hills, peak demand hours are from 6 to 10 a.m. To help offset those peak rates, the city decided to build a new water tower, allowing the utility to shave off the peak demand and satisfy it with water drawn into the system at off-peak hours.

In addition to adding storage to reduce peak demand, the water tower also provides Farmington Hills with additional supply and capacity during power outages and improves fire protection for the city.

Clearly, both of these utilities have efficiency and the interests of their customers high on their priority lists. Most utilities do, but these two are great examples of how to implement strategies to support those priorities.

Detroit announced water rate hikes in January 2014, and it looks as though the new water tower is already making a difference. On July 1, Farmington Hills' residential water rates will rise about 1.5 percent, compared to neighboring Farmington's 4.2 percent. Local officials attribute the difference to the tower's anticipated effect on peak demand.

In next month's issue of *MSW,* you'll read about the Mesa Water Resources Department in Mesa, Ariz., another utility working hard to reduce expenses during peak demand periods.

Like all water and wastewater utilities, MWRD's systems consume a lot of electricity, so the emphasis has been on reducing energy use and cost wherever possible.

The MWRD's SCADA system monitors and controls pump stations, and manages the water distribution system and storage reservoirs for energy savings. The utility tries to run equipment at off-peak hours as much as possible, and the savings continue to grow.

MWRD is constantly monitoring pump performance at its well sites, pump stations and throughout the distribution system. Older models are replaced with high efficiency pumps whenever and wherever necessary. At three of Mesa's largest pump stations, higher efficiency pumps resulted in electrical cost savings of 15 percent.

Energy consumption is also on the radar screen at the treatment plants. Digester methane gas captured at one of the utility's reclamation plants is used as fuel for cogeneration, saving about $5,500 per month.

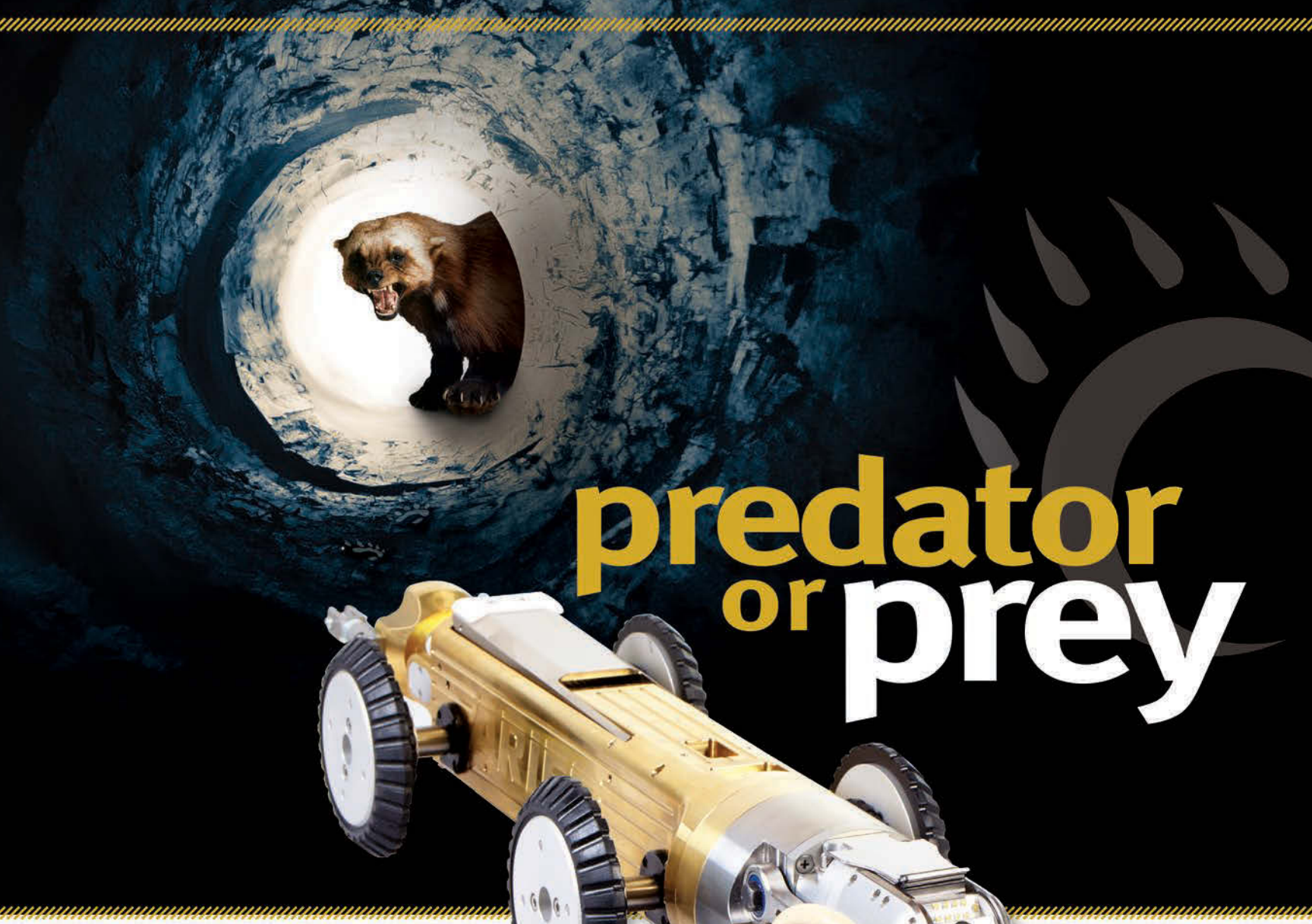
For its overall efforts to improve operations, MWRD received a Gold Award for Exceptional Utility Performance from the Association of Metropolitan Water Agencies in 2013. The utility was honored for several reasons, including cost control.

The Gold Award from the AMWA made specific mention of the utility's per capita operating costs, which are 30 percent lower than the national average.

Clearly, both of these utilities have efficiency and the interests of their customers high on their priority lists. Most utilities do, but these two are great examples of how to implement strategies to support those priorities.

Enjoy this month's issue, and keep an eye out for the July 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.



predator or prey

WOLVERINE CUTTING SYSTEM

Are your budgets getting eaten up due to long set-up times? Have you been a victim of low productivity due to poor cutter performance? Now you can attack the challenge of lateral reinstatement cutting with the Wolverine Cutting System.

Hunt down and reinstate your laterals rapidly and accurately with this self-propelled cutter. The Wolverine provides a feature-rich, powerful alternative to your current cutting equipment.

Are you predator or prey when it comes to pipeline rehabilitation?
Call Aries today and start tracking your success.

www.ariesindustries.com | (800) 234-7205

ARIES INDUSTRIES, INC.

See what you're missing.

@mswmag.com

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

OVERHEARD ONLINE

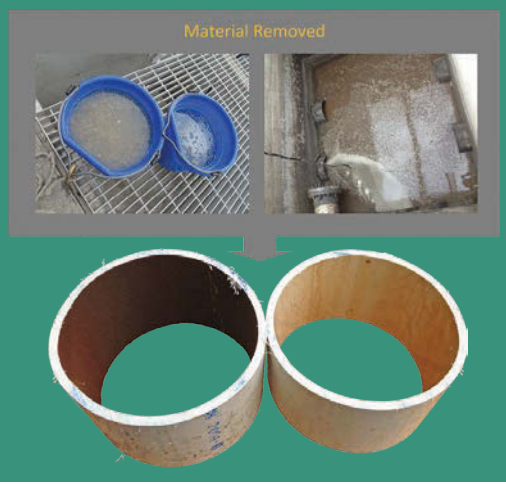
"Maybe it's time for more municipalities to jump on the decorative manhole bandwagon. In a country where infrastructure is often overlooked, every little bit of attention is welcome."

— ***Decorative Manhole Covers? Now That's an Infrastructure Win***
www.mswmag.com/featured

CLEANING TECHNIQUES

What the Heck is Ice Pigging?

You might be familiar with traditional pigging, which uses a mechanical device for pipe cleaning and inspections. But are you familiar with its descendant? Ice pigging substitutes abrasive ice brine slurry for the mechanical pig. Learn about this technique, its origins and more.
www.mswmag.com/featured



WINTER WOES

State Seeks Disaster Relief

Fresh off one of the harshest winters on record, Wisconsin municipalities are now facing a new problem: how to pay for millions of dollars in unbudgeted expenses from water main breaks, unbilled water and frozen pipes. The state is gathering data to apply for federal disaster relief. Learn more about this developing story and see how cities and towns across the state fared this winter.
www.mswmag.com/featured

GO TEAM!

Keeping it Together

Strong teams have two things in common: great communication and respect for other team members. See how several top utilities have excelled by maintaining transparency, listening to employee ideas and using job titles that dictate professionalism. Take these tips and build an award-winning team.
www.mswmag.com/featured

Join the Discussion

Find us at:
www.facebook.com/MSWmag
www.twitter.com/MSWmagazine

Emails & Alerts

Visit **www.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.

TOTAL SYSTEM RESPONSIBILITY.

reliableliftstations.com

WHAT DOES IT MEAN FOR YOU?

VISIT US AT ACE14 BOOTH #931

Auto-Start Booster Station

6x6 Above-Ground Booster Station

Base Mounted Booster Station

7x10 Above-Ground Booster Station

Modular Enclosures

QUALITY ENGINEERED WATER BOOSTER/REUSE STATIONS

Since 1933, you've trusted Gorman-Rupp to manufacture the best-performing, most durable pumps in the industry. Easy to specify, purchase and install, our systems come precisely engineered and completely tested by a company that has been building complete pumping stations for over 40 years.

Carefully inspected, they carry an industry-leading warranty. **And, most importantly they carry the Gorman-Rupp name - giving you the confidence that your pumping system will stay on the job so you don't have to.**

GORMAN-RUPP PUMPS

THE GORMAN-RUPP COMPANY
P.O. BOX 1217 | MANSFIELD, OHIO 44901-1217 | USA
419.755.1011 | GRSALES@GORMANRUPP.COM | GRPUMPS.COM

Gorman-Rupp – Mansfield Division is an ISO 9001:2008 and an ISO 14001:2004 Registered Company

STRENGTH FROM ABOVE

From left, OHM Construction Manager Alan McComb, Farmington Hills Director of Public Services Greg Mekjian and his assistant, Karen Mondora, Oakland County Water Sources Commissioner Jim Nash and Farmington Hills DPW Superintendent Kevin McCarthy stand in front of the City of Farmington Hills' almost-finished 3-million-gallon water storage tank. (Photography by Amy Voigt)

Farmington Hills is building a massive water storage tower designed to reduce peak demand charges and save ratepayers millions of dollars annually

By Peter Kenter

The Department of Public Services of the City of Farmington Hills, Mich., prides itself on providing the "meat and potatoes" of city services at a responsible price to customers. The city's most recent major undertaking is the construction of a 3 million gallon water tower, a $16.9 million project expected to save water customers $3.5 million annually by reducing peak demand on the system.

Farmington Hills is a city of about 80,000 people located a half-hour's drive northwest of Detroit. Its city services — roads and roadways, water mains and sanitary sewers, rubbish removal and recycling — are all managed by the Department of Public Services. The Detroit Water and Sewerage Department (DWSD) provides all of the city's water and sewage needs.

Rates based on peak

Water rates are calculated for each of the communities served by the DWSD on different rate mod-

"Finding an ideal location for the tower was key. We were fortunate that our headquarters are located in more of a commercial/industrial area of the community that isn't surrounded by any residential properties. It made the site selection process a lot less complicated."

– Karen Mondora

els, based on peak hour demand or maximum day demand and distance and elevation from the water treatment facility.

"There is no tiered structure to the rates for various demand levels," says Gary Mekjian, director of Public Services with the City of Farmington Hills. "The water rate is based on meeting that peak demand with a certain pressure and flow. For our community, peak demand hours are from 6 to 10 a.m. By building this tower, we're planning to shave off the peak demand, and satisfy it with water we draw into the system at off-peak hours."

Mekjian, however, notes that the tower is built on the back of a healthy water system — there's no other low-hanging fruit that could achieve the same level of savings for the same investment.

"The age of the system is relatively new, with the oldest pipes dating back only to the World War II era," says Mekjian. "The bulk of it was built during the 1970s, '80s and '90s, and water main breaks in the system are pretty rare."

About 75 percent of the system is 8 inches in diameter, with about 15 percent at 12 inches. The remainder of the system is divided about evenly between 16-, 24- and 30-inch pipe. The system employs a variety of pipe materials, ranging from ductile and cast iron, to asbestos cement, high-density polyethylene (HDPE) and polyvinyl chloride.

"The replacement pipe is generally ductile iron or HDPE," Mekjian says. "It can go either way depending on which is cheaper at the time."

Both the water and sewer system are owned by Farmington Hills but all system maintenance and utility billing for the county are handled centrally from an office in Pontiac, the Oakland County seat.

"It's a sweet arrangement in that their staff responds to any water main breaks or sewer problems," Mekjian says. "As their largest client, they did try to place a maintenance office in Farmington to see if it would be more efficient, but we found that the service level was about the same, so the incremental expense wasn't worthwhile."

(continued)

PROFILE: Department of Public Services, City of Farmington Hills, Michigan

YEAR UTILITY ESTABLISHED:
1973

CUSTOMERS SERVED:
22,700 water customers; 22,400 sewer customers

AREA SERVED:
33 square miles

DEPARTMENT STAFF:
52 employees

INFRASTRUCTURE:
490 miles of water mains; 329 miles of sewer lines

ANNUAL DEPARTMENT OPERATING BUDGET:
$45 million (sewer and water: $29.4 million)

ASSOCIATIONS:
American Public Works Association

WEBSITE:
www.fhgov.com/Services/PublicServices/OverviewPublicServices.asp

WATER TOWER EVENTS INSPIRE COMMUNITY SUPPORT

The construction of a water tower by the Department of Public Services of the City of Farmington Hills, Mich., will help to keep future water rate hikes under control. However, at a cost of almost $17 million, the department wanted to ensure significant ratepayer buy-in.

"In addition to our public education efforts, one of our councilmen, Randy Bruce, came up with the idea of going to the community to seek out design proposals for the tower," says Karen Mondora, assistant to the director of Public Services at the city.

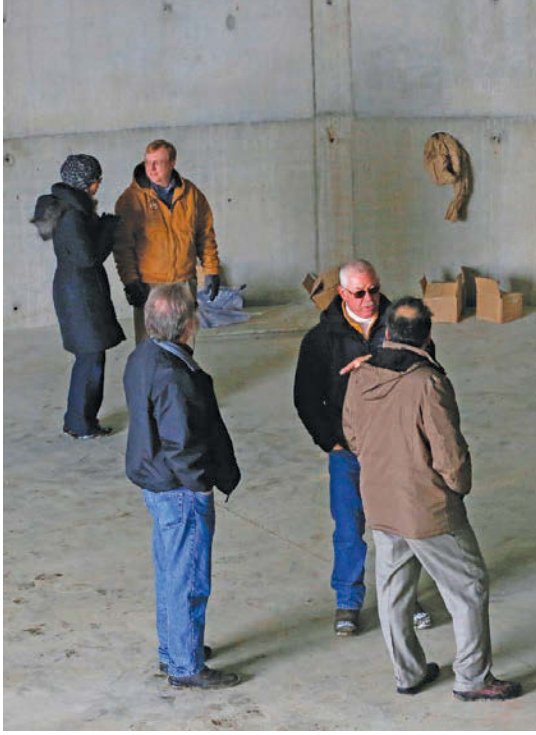
The department teamed up with the city's Cultural Arts Division to solicit design concepts from the public. The winning design from resident Lisa Sheldon featured the words "Live Farmington Hills, Love Farmington Hills" below the city's logo.

The design was painted onto the tank while its sections remained on the ground.

The city also turned the tower's steel water tank into a vehicle for charitable donations, with members of the public invited to sign the tank before it was raised into place. More than 200 residents placed their signatures on the tank and raised $2,600 for the American Cancer Society, the Graham E. Smith Memorial Fund for Suicide Prevention Awareness, the Farmington/Farmington Hills Foundation for Youth and Families, and the Friends of the Rouge, an environmental charity.

"Even though the tower benefits all of the city's ratepayers, both of these events helped to inspire grassroots community buy-in for the tower," says Mondora.

OHM Construction Manager Alan McComb looks over the construction layout of the water tower in a conference area on the water tower site in Farmington Hills, Mich.



"We've discovered that it isn't just a function of the age of the water meter that affects its performance. It's also how much water has passed through it. We're analyzing those figures to find the sweet spot for meter replacement."

– Gary Mekjian

Losses controlled at meter

Oakland County has piloted some acoustic leak detection programs in Farmington Hills, but has concentrated largely on ensuring that the city's commercial and residential water meters are maintained and replaced in a timely manner.

"We've discovered that it isn't just a function of the age of the water meter that affects its performance," Mekjian says. "It's also how much water has passed through it. We're analyzing those figures to find the sweet spot for meter replacement, even breaking it down to the difference between meters with 5/8-inch connections and 1 1/4-inch connections."

Mekjian says that the city is seeking support for proactive replacement of water mains as they approach the end of their optimal service life. The city currently budgets about $1 million per year for main replacement.

"We would like to develop a more robust asset management plan and double that," Mekjian says. "If we do that over the next 10 years, we'll take a real bite out of what we'd like to do."

The current water tower project had its genesis in a City Council meeting in 2011 in which the discussion centered on ways to control water rate increases. However, with DSWD offering a monopoly service, the only way to affect rates was at the wholesale consumer side.

"It wasn't just about water storage to reduce peak demand," says Karen Mondora, assistant to the director of Public Services at Farmington Hills. "The water tower would also give us the secondary benefits of additional supply and capacity during power outages and increase our ability to provide fire protection for the city. We advised City Council that by moving forward with the project they wouldn't have total control over rates, but that they would have some control over increases in rates."

Part of the master plan

The water tower concept was offered as part of the city's overall master plan. Farmington Hills wasn't the first DWSD customer to embark on a water storage plan, so the concept had a prior track record.

"Up until perhaps six years ago, DWSD was very reluctant to have people build storage tanks because they saw it as a potential threat to revenue," says Mekjian. "However, they did a good job of outreach to their wholesale customers. About six years ago we saw a paradigm shift in which they started to sign contracts in which storage was a component. They essentially asked these customers what their peak demand would be and said they needed to abide by these parameters."

After a series of public hearings, City Council approved the water tower plan. The construction was financed through a $16.9 million bond sale. The bond was issued by Oakland County, which has a slightly better bond rating than the city. The funds will be fully reimbursed by the city from water customer revenues.

Site selection is key

The grounds of the city's Division of Public Works complex was selected for the water tower site.

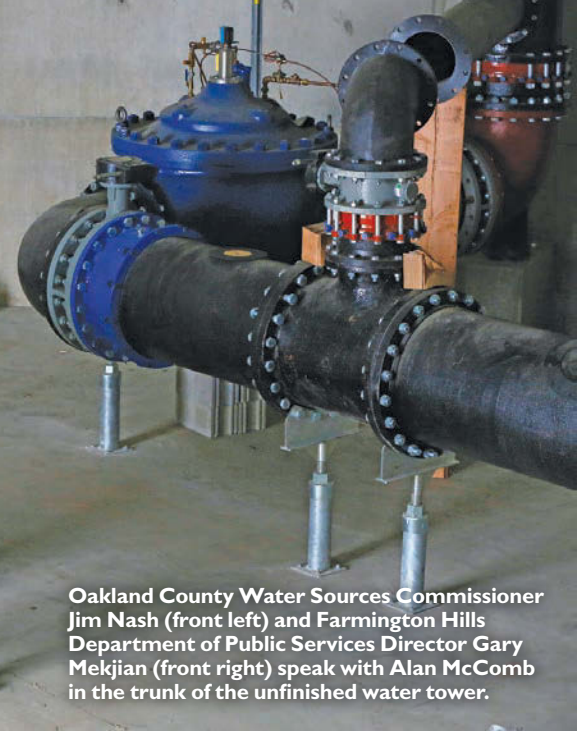
"Finding an ideal location for the tower was key," says Mondora. "We were fortunate that our headquarters are located in more of a commercial/industrial area of the community that isn't surrounded by any residential properties. It made the site selection process a lot less complicated."

The department achieved significant cost savings by building on city-owned land. The property was already serviced by existing water system pressure, ensuring that no additional pumping stations would be required to operate the tower.

The finished tower will stand 200 feet high and 60 feet in circumference around the concrete pedestal base. The steel tank on the top of the tower will measure 110 feet around.

"Bringing the tower online also required other system improvements, which are included in the budget," says Mondora. "We're adding 200 feet of 20-inch water main and 100 feet of 30-inch main. The second phase of the project also involved improvements to control valves at five locations, construction of two brand new ones, and flow control and metering at all those locations to tie it into our SCADA system."

The project was divided into several contracts to avoid overheating the local construction market and to ensure competitive bids from local contractors. One contractor



Oakland County Water Sources Commissioner Jim Nash (front left) and Farmington Hills Department of Public Services Director Gary Mekjian (front right) speak with Alan McComb in the trunk of the unfinished water tower.

Jason Graham of Trojan Development Co. in Oxford Charter Township, Mich., works on the installation of a water main on the grounds of the Department of Public Services in Farmington Hills.

built the tower and another installed the control valves while two others split the water main installation work.

Work on the foundation began in November 2012. By December 2013, sections of the domed steel tank were being lifted into place. The tower was scheduled to be finished and fully operational by the time this issue went to press.

New rates announced

Detroit announced its water rate hikes in January 2014. On July 1, Farmington Hills residential water rates will rise about 1.5 percent, as compared to neighboring Farmington's 4.2 percent. Mekjian attributes the smaller increase to the anticipated effect of the new tower on peak demand.

"For the new water rate to stick, we need to prove at that point that the system is doing what it's designed to do," says Mekjian. "A reasonable return on many infrastructure investments is 50-plus years. We believe this return on investment will be less than five years, even considering the fiscal uncertainty faced by Detroit. It's a good decision no matter how you look at it." ✦

WATCH THEM IN ACTION

To learn more about the Farmington Hills Department of Public Services and the water tower project, view the video at www.mswmag.com.

SIMPLICITY ON THE GO

GPS North America unveils new mobile data collection technology at the 2014 Expo

By Craig Mandli

PHOTO BY CRAIG MANDLI

Josh Blackmun of GPS North America explains the company's new Smart Forms paperless form program to an Expo attendee. The program eliminates paper forms from a utility or business's workflow through the use of smartphones and tablets.

With more municipalities looking to cut utility costs, the idea of eliminating costly and ineffective paperwork is certainly inviting. That's just what GPS North America was offering at the 2014 Pumper and Cleaner Environmental Expo International with Smart Forms – the ability to say goodbye to inefficient paper forms through a cost- and time-efficient mobile app.

"Having mobile workers drive back to the office and perform on-site data entry costs you time, money, and opens up the opportunity for error," says Todd Lewis of GPS North America. "What we've done is basically take any form or process in a business's or utility's workflow and create an app for it."

Smart Forms not only eliminates the paper, but adds GPS to pinpoint a location and barcode scanning for better inventory management. It also has the ability to take photos, audio and video and embed it right into the form. It streamlines the process of on-site field data collection and archiving, and integrates with other business applications, such as QuickBooks, Google and Excel. The dispatch feature allows the operator to send forms directly to a mobile worker and simultaneously track his whereabouts.

"The program simplifies the process in the field and the office, including billing, proof of service and time in the field," Lewis says. "Once the information is in the system, it's there to stay. You don't have to worry about losing a piece of paper."

"A vast majority of the businesses that attend the Expo, whether they are septic pumpers, system installers or public utilities, have a mobile workforce and equipment in the field. This idea appeals to every one of them."

– Todd Lewis

In addition to verifying data entry, Smart Forms can save a business or utility printing costs, decrease routing and calculation issues, and solve picture/video transfer and barcode scanning limitations. Smart Form users can save hours each month on customer invoice processing and duplicate data entry. Users can email receipts and invoices directly to customers, and the app eliminates the need for technicians to drive back to the office to pick up work orders. The program efficiently stores all business or utility forms on a single mobile device and integrates with most office systems such as QuickBooks. No network connection is required to operate Smart Form.

"This system is going to appeal to any utility or field service business with a mobile workforce that bills customers," says Lewis. "A utility can read water or sewer meters and automatically email a bill right to the customer. A portable restroom operator can track all his units, create a route for a driver, and bill his customers without any paper forms. When it comes to viable uses for this technology, your imagination is the limit."

The Smart Forms program is fully compatible with SignalTrack software from GPS North America. The digital forms can be distributed to smartphones or tablets, allowing a technician to capture signatures, images or video, scan barcodes, create a sketch or sketch on an image, make a voice recording, add a GPS location or date/time stamp, enter text or numeric data, and email completed forms as PDF files. Lewis says the response to the program at the 2014 Expo was at times overwhelming.

"We actually captured more than 80 hot leads on the first day of the Expo alone, which was way beyond what we were expecting," Lewis says. "When you think about it, that makes sense though. A vast majority of the businesses that attend the Expo, whether they are septic pumpers, system installers or public utilities, have a mobile workforce and equipment in the field. This idea appeals to every one of them."

As for next year's Expo, Lewis says the company is already planning to roll out new innovations that will further streamline and simplify workflow.

"We are working on a process that will work on one device," says Lewis. "It will combine GPS tracking, paperless forms and billing in one program, on one device in the truck. It's all about creating more efficiency." **215/497-0100; www.gpsnorthamerica.com.** ✦

JUMP-START YOUR DAY

Following these 7 tips will put you on the path to more productive, efficient workdays

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.

Think getting off to a good start doesn't matter? Tell that to a team that begins a season slowly and misses the playoffs by one game. Or a sprinter who stumbles out of the blocks and loses a race by a fraction of a second. Or on a more personal level, recall a time you overslept and got into work late. Odds are that set the tone for the day and things headed south from there.

It's difficult to overestimate the value of getting each day off on the right foot. With that in mind, here are seven things that employees – from line workers to managers to executives – should do every morning to maximize productivity and improve their focus.

1. Get up early. Even if you're not a "morning person," scientific studies show that it behooves you to become one. Early risers feel more in charge, are more proactive, earn better wages and – bonus points – sleep better at night, too.

If getting up early is just plain hard for you, ease into it by getting up a half hour early for a week and see how it goes. It can't hurt to give it a try. After all, everyone from Ben Franklin to the late Steve Jobs were habitual early risers and things worked out pretty well for them, right?

2. Eat a healthy breakfast. Your mom no doubt told you that breakfast is the most important meal of the day, yada yada yada. Truth is, studies show she was absolutely right. A healthy breakfast provides you with the energy you need after waking up early. Moreover, it staves off mid-morning hunger pangs that can send you to the nearest vending machine for an unhealthy, sugar-packed snack that in turn leads to a blood-sugar spike, followed by a steep energy crash that leaves you hungry again.

What makes for a healthy breakfast? According to the Mayo Clinic (www.mayoclinic.org), choose from among whole grains (such as whole-grain cereals, rolls and bagels), low-fat protein (like peanut butter, lean meat and hard-boiled eggs), low-fat dairy products (such as skim milk, yogurt and cheese) and fruits and vegetables (such as fruit-and-veggie smoothies or sugar-free 100 percent natural fruit juices). Together these food groups pack a powerful and energizing dose of fiber, protein, complex carbohydrates and yes, even a little fat, that leaves you feeling full and satisfied until lunch rolls along.

3. Be on time. Being fashionably late might work well for parties and other social gatherings, but it's bad karma when it comes to the workplace. It's not only unprofessional, but getting behind the eight ball time-wise can create a bad-vibe domino effect that totally derails the rest of your day. It also makes more punctual colleagues resentful of your lack of discipline.

4. Practice the 80/20 rule. According to this theorem, 20 percent of what you do every day produces 80 percent of your results. In short, over the course of a year, that means a lot of us waste a vast amount of time doing things that have a minimal or even no real bearing on achieving our daily or long-term goals.

The upshot: Analyze what you do in the morning and systematically eliminate the things that don't advance achievement of your daily goals. Maybe it's cutting out a morning bull session over coffee, or limiting the amount of emails you answer after you arrive at work. But whatever the case, figuring out the ultra-valuable 20 percent of activities that drive the majority of your results is time well-spent.

5. Tackle tougher tasks first. If you're following the good-night-of-sleep-and-eat-a-healthy-breakfast game plan, your brain should be freshest in the morning – and you should have more energy and enthusiasm, too. As such, it makes sense to knock out the most challenging tasks when all pistons are firing.

Besides, crossing off one or two major items on your to-do list is like losing five pounds after just one week of dieting: It gives you a sense of accomplishment (and relief!) that just might inspire you to greater heights throughout the day as you sail along, no longer mentally encumbered by the onus of the Big Job. Save the smaller busy-work tasks for later in the afternoon when you're less invigorated and perhaps not as focused.

6. Delegate one task. Handing off a project to a direct report is an easy way to whittle down your to-do list. Delegating not only frees you up to focus on other pressing matters, it also shows colleagues and/or reports that you trust them with more responsibility.

Of course, it's imperative that you only delegate things that people are qualified to carry out. You also need to set clear and specific goals and deadlines. But after that, let go and learn to trust your team. It'll pay dividends in ways you can't even anticipate.

7. Read something related to your industry. This one is a little tougher for employees out in the field. But here's a thought: Instead of sipping coffee during a break or shooting the breeze with colleagues, read an article in a trade magazine or a relevant industry blog. They can provide tips for improving your skills or offer insights into your profession that can help you advance your career – not to mention impress your boss at the next water-cooler encounter or business lunch.

BONUS TIP: Be forgiving. Every so often, you just might oversleep, miss breakfast, arrive late to work, practice the 80/20 rule in reverse, do the easier tasks early, refuse to delegate and read a comic book during a break. Don't sweat it. You're not a failure just because you didn't cross a bunch of items off a to-do list.

The bottom line: Life throws us curve balls every day. Unanticipated brushfires – from surprise meetings to busted water mains to broken vacuum truck pumps – disrupt even the most organized employee who comes to work with the best game plan ever. Don't beat yourself up. There's always tomorrow … as long as you get up early and get off to a good start. ✦

Workers from Kissick Construction prepare the ground for a section of HOBAS pipe at the Second Creek Interceptor project located at NW 108th Street and Green Hills Road in Kansas City, Mo. (Photography by Denny Medley)

FOCUS: SEWER

FROM BELOWGROUND UP

Kansas City is promoting economic growth by building a new sewer line through 13,000 acres of underdeveloped prime real estate

By Peter Kenter

The City of Kansas City, Mo., has long had its eye on developing the Northland, an area located north of the Missouri River. The city's ambitious First and Second Creek Sewer Expansion Project is a $45 million investment in an area that is expected to attract hundreds of businesses and more than 70,000 residents over the next three decades. It's only the first phase of a project that could ultimately see as much as $70 million invested in area wastewater infrastructure.

The plans for the sewer expansion were drawn up so long ago that Dwight D. Eisenhower was president. However, the story begins in 1946, when cities across Missouri engaged in a competition for territory in a wave of annexations. Missouri law gave preference to the first city to file an annexation claim, provided it offered clear plans to extend municipal services to the area in question.

In 1958, Kansas City Mayor H. Roe Bartle summed it up for the Kansas City Star: "We have to do our expanding while we can, not after it is too late."

The Kansas City Master Sewer Plan, developed in 1957 by engineering firm Black & Veatch, contemplated sewer connections to the area before it became part of the city. However, in 1962 the city annexed 122 square miles of unincorporated Platte and Clay counties — part of the Northland — and supported the claim with a more detailed plan for sewer and water service.

Sewers bring growth

The annex included both the First and Second Creek watersheds and the much smaller Little Shoal Creek Watershed. Now served by sanitary sewers, the Shoal Creek Valley area has recorded four of the five highest growth census tracts in the city in terms of population. The current project area in the First and Second Creek watersheds, on the other hand, was described in a recent City Council report as "a big underdeveloped doughnut hole" of about 13,000 acres and 1,000 residents in the middle of a booming Northland area, specifically because it lacks adequate sewers.

"The current project was discussed following the annexation," says Terry Leeds, the city's director of Water Services, the department responsible for water, wastewater and stormwater. "An alignment study was conducted and there were easements acquired in the 1960s to build the sewer line."

Although voters and City Council had approved plans and bonds for the construction, new sewers

(continued)

ADHERENCE. NOT ADHESION.

LMK's T-Liner® with Insignia™ compression sealing system meets the ASTM F2561-11 industry standard for renewing a sewer lateral connection.

Have you ever successfully glued anything to wet greasy plastic? Probably not. Though many municipal agencies have recognized the need to renew both the main and the lateral pipes in an effort to seal their collection system, some projects fall short of the objective because practical engineering principles are not followed. Make sure your lateral renovation project uses materials and methods that provide a permanent watertight seal. Adhere to ASTM F2561 "Standard Practice for Rehabilitation of a Sewer Service Lateral and its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner".

Why adhere to an ASTM standard? Don't be fooled by other companies' sales and marketing information regarding their non-shrink resin and bonding methods; instead use LMK's T-Liner technology and seal your collection system making it comparable to new pipe. Apply sound science and adhere to the ASTM F2561-11 standard to ensure that your client/city maximizes the long-term benefit of using a single-piece engineered lateral connection liner outfitted with engineered gasket seals.

And don't depend upon adhesion to eliminate the annular space between liner and host pipe...it won't work! Ground water is a persistent and constant force; combine that with lubricants and incompatible materials, and you have a design for failure! T-Liner's engineered CIPP connection for mains and laterals stops water dead in its tracks. Your specifications should require proven materials and methods that force the service life of the repair to meet the design life of the materials. Otherwise, rate payers will continue to pay for continued leakage, transportation and treatment.

LMK TECHNOLOGIES

To learn more about how to specify T-Liner® and Insignia™ gaskets visit
www.lmktechnologies.com or call 815-433-1275.

Kansas City Water Services Director Terry Leeds poses for a portrait at the utility's headquarters.

"We knew in 2002 that EPA enforcement was building up, so we were already laying the groundwork for plans to deal with combined sewer overflows. We began flow metering studies in 2004 and had already planned green infrastructure projects to stop surface water from entering the system."

– Terry Leeds

subsequently serviced only part of the area. The First and Second Creek watershed project was ultimately shelved until it was championed by several city councilors and approved for action in 2010.

"It's primarily rural farmland and single-family residential through that acreage," says Leeds. "The area is largely served by individual septic tanks."

The development is being divided into two distinct projects. The First Creek Interceptor will run 23,000 linear feet and will service more than 4,000 acres of land. It features polyvinyl chloride pipes 24 to 30 inches in diameter. It will run from two existing wastewater pump stations, North Bristol and South Bristol, north to the new First Creek Pump Station. The Second Creek interceptor will service almost 8,000 acres. It will use 29,500 feet of 24- to 48-inch pipe, with the 24-inch portion specified as ductile iron, due to the depth of the excavation.

Pumping stations retired

"We had some development in the top of the watershed where we built six temporary pumping stations that took wastewater from the area and pumped it to a force main that conveyed it to one of our treatment plants in the south," says Andy Shively, engineering officer with Kansas City Water Services. "Those pumps are nearing the end of their service life."

The undersized pumps can now be retired. A permanent pump in the First Creek watershed will convey flow to the Rocky Hill Wastewater Treatment Plant. An interim pump will be built in the Second Creek watershed and convey wastewater to the Todd Creek Wastewater Treatment Plant until the second phase of development is announced.

"All of the treatment plants receiving the wastewater were already designed with the capacity required to treat the anticipated volumes from the Northland," says Shively.

The Kissick Construction crew aligns a section of pipe deep in the Second Creek Interceptor trench.

Workers lower a section of pipe into place for the Second Creek Interceptor project.

Looking back at the original sewer master plan drafted in 1957 demonstrates just how much remains the same — and how much has changed.

"Comparing the two approaches, the new project resembles the original project plans somewhat," says Shively. "However, the creeks in the area of the proposed project had meandered, changing the landscape enough that we no longer had enough land to put in the sewer. Ultimately we altered the original alignment and acquired new easements. It was certainly interesting to see what 50 or 60 years can do to the topography. Construction challenges on the current design include setback ordinances, creek crossings and bank stabilization."

A plan for renewal

The Northland sewer expansion project in Kansas City is being undertaken while the city continues to refurbish its existing wastewater infrastructure. *(continued)*

PROFILE: Kansas City (Mo.) Water Services

YEAR UTILITY ESTABLISHED:
1895

CUSTOMERS SERVED:
650,000 customers

AREA SERVED:
318 square miles

INFRASTRUCTURE:
2,800 miles of water mains;
2,800 miles of sewer mains;
630 miles of storm sewer

DEPARTMENT STAFF:
850 employees

ANNUAL DEPARTMENT OPERATING BUDGET:
Water: $148 million;
Wastewater: $144 million;
Stormwater: $15 million

ASSOCIATIONS:
American Public Works Association, American Water Works Association

WEBSITE:
www.kcwaterservices.org

REDUCE COSTLY SSOs

Jerry Weimer and the crews in Cincinnati used to contract out their root control work. Then they found an easy-to-use, more affordable option: RootX. Today, they do all of their root control work with their existing equipment and crews, on their schedule.

Within a month after applying RootX, roots are dead and decaying — reducing costly SSOs and keeping your lines flowing for up to 36 months. Guaranteed.*

Ready to find out more? Email us at rootx@rootx.com, or give us a call at 1-800-844-4974.

*visit www.rootx.com/municipalities/guarantee for details.

ROOTX®

www.rootx.com

THE RIGHT SOLUTION. RIGHT NOW.

INFRASTRUCTURE RENEWAL ON TAP

Kansas City entered into a consent decree with the U.S. EPA in 2010, requiring it to spend an estimated $2.5 billion over a 25-year period on repairs, modifications and new construction to rebuild its sewer system.

While the city operates sewers that are largely separated, about 58 square miles of its oldest infrastructure still employs combined sewers that are contributing to overflows, particularly during heavy rains.

Within the consent decree, the city agreed to a sewer line renewal target of 1 percent annually. The city has also agreed to annual targets of 5 percent of the system for CCTV work and 10 percent for cleaning.

The city continues to improve its GIS mapping using ArcGIS software (Esri) as it creates a matrix to determine which sections of the system require top priority. The department handles the majority of its cleaning work with a fleet of jet/vac combo trucks from Vactor and GapVax, but also uses dedicated high-pressure jetting trucks and an easement machine from Sewer Equipment Co. of America. There are also CCTV trucks (Telespector) assigned to the inspection work, along with push cameras from Quickview (Envirosight) and CUES for lateral leads.

"We're just getting started on the sewer infrastructure renewal program," says Terry Leeds, the city's director of Water Services, the department responsible for water, wastewater and stormwater. "As these plans begin to show results shortly, it's clear we're going to be pumping less, treating less and making a huge difference regarding CSOs."

Gravel is brought in to backfill around the newly installed interceptor pipe.

The city entered a consent decree with the U.S. EPA in 2010, a year after adopting an Overflow Control Plan designed to fix major infrastructure problems to reduce CSOs, develop green infrastructure to improve on the results, then build only the new infrastructure required to meet the regulations.

"We knew in 2002 that EPA enforcement was building up, so we were already laying the groundwork for plans to deal with combined sewer overflows," says Leeds. "We began flow metering studies in 2004 and had already planned green infrastructure projects to stop surface water from entering the system.

"The large physical area of the city has a fairly small population of 460,000 people, so project affordability is critical. Plans for the area with combined sewers include increasing wet weather treatment capacity, rehabilitating neighborhood sewers and increasing in-line storage. Plans for separate sewers will include inflow and infiltration reduction, increased storage and additional wastewater treatment capacity.

The oldest sewer pipes in the system date back to the Civil War.

"Kansas City is a big railroad hub, and railroad companies don't like hills, so a lot of the sewers are rock walled with stone arches on top — former creek beds of waterways that were eliminated years ago," says Leeds. "We also have a lot of brick and masonry sewers."

The smallest pipes are 8 inches in diameter, and the largest are 20-by-20-foot concrete box sewers. "You could drive a bus through those," says Leeds.

For the most part, new sewers are constructed to coincide with new development. New installations generally employ PVC or ductile iron.

The city performs its own spot repairs for leaking joints and short line repairs but largely contracts out construction and repair work.

Public-private partnership

In the case of the new sewer work, Water Services planned the whole project in conjunction with three consulting firms. Lutjen Inc. designed the First Creek interceptor, Carollo Engineers designed the Second Creek interceptor and CH2M HILL designed the sewer pumping stations. Black & Veatch, author of the 1957 sewer master plan and still headquartered in Kansas City, was also awarded several design contracts for the new sewer.

The construction project is being staged and tendered in smaller packages to encourage competition among bidders.

"We received a lot of good bids, including many local contractors," says Shively.

Shively notes, however, that the public-private partnership behind the sewer project has been the key to making everything work. The project is funded primarily through sewer bonds, but also through a partnership between Kansas City, the KCI Corridor Tax Increment Financing Plan development commission, and local real estate development companies Hunt Midwest and MD Management, both landowners in the area.

"KCI TIF has been overseeing development in the area and entered into the agreement with the two developers," says Shively. "The city will own and operate the infrastructure."

Construction of the first phase of the project is set to conclude in the late summer of 2014.

"Working in the Northland, we encountered one or two people who were around in the early 1960s when this project was first conceived and who were happy to see it finally come to fruition," says Shively. "There's a great sense of optimism in the city about the development that will result from this sewer project." ✦

MUNICIPAL SEWER & WATER

PUMPS DIRECTORY

		CENTRIFUGAL	DEWATERING/BYPASS	EFFLUENT	GRINDER/SUMP	HIGH PRESSURE	METERING	PUMP CONTROLS	PUMP PARTS/COMPONENTS	PUMP REPAIR/SERVICE	SOLIDS/SLUDGE	STORMWATER	SUBMERSIBLE	TEST	VACUUM PRESSURE	VERTICAL/LIFT STATION	WASHDOWN	WATER	OTHER
 See ad page 43	**AMT Pump Company** 400 Spring St. Royersford, PA 19468 Phone: 610-948-3800 Fax: 610-948-5300 Email: sales@amtpump.com Website: www.amtpump.com	YES	YES	YES	YES	YES					YES	YES	YES				YES	YES	
	Cat Pumps 1681 94th Lane NE Minneapolis, MN 55449 Phone: 763-780-5440 Fax: 763-780-2958 Email: info@catpumps.com Website: www.catpumps.com					YES			YES								YES		
	**Flygt - a Xylem Brand** 14125 S Bridge Cir. Charlotte, NC 28273 Phone: 855-955-4261 Fax: 704-295-9080 Website: www.flygtus.com	YES		YES	YES			YES	YES			YES	YES			YES		YES	
 See ad page 11	**Gorman-Rupp Company** 600 S Airport Rd. Mansfield, OH 44903 Phone: 419-755-1011 Fax: 419-755-1404 Email: grsales@gormanrupp.com Website: www.GRpumps.com	YES	YES	YES		YES		YES	YES		YES	YES	YES			YES		YES	
 See ad page 19	**Pioneer Pump Inc.** 310 S Sequoia Prky. Canby, OR 97045 Phone: 503-266-4115 Email: marketing@pioneerpump.com Website: www.pioneerpump.com	YES	YES			YES					YES	YES					YES		Emergency Lift Station Backup
	**Smith & Loveless, Inc.** 14040 Santa Fe Trail Dr. Lenexa, KS 66215 Phone: 800-898-9122/913-888-5201 Fax: 913-888-2173 Email: answers@smithandloveless.com Website: www.smithandloveless.com	YES					YES	YES	YES	YES	YES				YES				
 See ad page 54	**VARCo** 7489 Mason King Ct. Manassas, VA 20109 Phone: 866-872-1224/703-334-5980 Fax: 703-334-5979 Email: ron@varcopumper.com Website: www.varcopumper.com													YES					
	**Water Cannon Inc.** 4044 W Lake Mary Blvd., Unit 104-424 Lake Mary, FL 32746-2012 Phone: 800-333-9274/321-800-5763 Fax: 888-928-9274 Email: sales@watercannon.com Website: www.watercannon.com					YES			YES								YES		Pressure Washer
	**Zoeller Company** 3649 Cane Run Rd. Louisville, KY 40211 Phone: 800-928-7867/502-778-2731 Fax: 502-774-3624 Website: www.zoeller.com	YES	YES	YES	YES					YES	YES	YES							

"Simply the best equipment we have ever purchased."

IBAK PANORAMO® SI

The PANORAMO® SI has revolutionized the way system owners inspect their buried structures. Manholes, duct boxes, storm drains, and any other underground chamber can be inspected quickly and safely with this system. Keep your employees safe, increase the productivity and accuracy of your crews and provide data that helps system owners make informed decisions!

Easy Data Collection - Amazing Results

Inspecting a manhole with PANORAMO® SI is as simple as 1-2-3. All you have to do is lower the unit into the manhole, turn it on, and pull it back up! No other system captures the quality or quantity of data that PANORAMO® SI does.

Types of Data

The PANORAMO® SI captures a complete 360° Perspective View of the manhole which you can view at any time, from any angle. The Unfolded View allows you to look at the entire manhole surface on one screen and the Geometric View allows you to measure features inside the manhole in three dimensional space. Simply export the Geometric View out to any CAD program to continue your analysis!

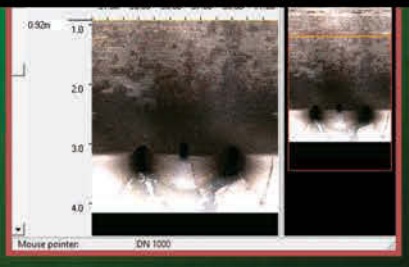
100% Coverage | More than 4 times faster!

Other manhole inspection methods are slow, clumsy, and unsafe compared to PANORAMO® SI. With its unique ability to capture every inch of the manhole from multiple angles - you will never miss an observation.

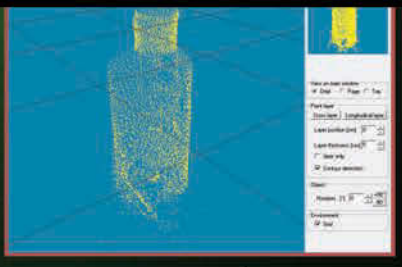
Quality makes the DIFFERENCE

360° Perspective

Unfolded View



Geometric View



"Quality Inspection Tools since 1957."

Mainline | Drainline | Lateral Launch | Laser Profilers | PANORAMO 360° Pipeline and Manhole

IBAK has been working for over 50 years to make your job safer and give you less headaches at the end of the day. Our pipeline inspection equipment is *not* the cheapest equipment you can buy, but we will guarantee it is the highest quality, most reliable investment you can make. We have the industry's largest research and development team with over 15% of IBAK devoted entirely to new product development. Adherence to core principles of quality and technological innovation have driven IBAK to remain the industry leader since we invented sewer cameras in 1957. Call us or visit **www.rapidview.com** to find a dealer near you!

RapidView IBAK North America

(800)-656-4225

www.rapidview.com

NASSCO (National Association of Sewer Service Companies) is located at 2470 Longstone Lane, Suite M, Marriottsville, MD 21104; 410/442-7473; www.nassco.org

PACP: BEYOND THE 48

Unique geographic concerns provide information and insight that helps NASSCO continually evolve and improve

By Ted DeBoda, P.E.

In 2013, NASSCO presented its inaugural Trainer of the Year award to Marilyn Shepard, owner of International Training and Rehab Technologies and a NASSCO Master Trainer.

Shepard was part of the original Pipeline Assessment Certification Program development team in 2000. She trains across the United States and is on the front line, serving as a valuable resource in identifying unique geographic concerns and other issues that affect proper application of PACP data in all 50 states and the rest of North America. In addition to training in the continental U.S., she also conducts PACP classes regularly in Hawaii and Alaska.

During Shepard's first PACP classes in Alaska in November 2012, she trained 35 people in two classes, including engineers, TV operators and supervisors from Anchorage Water and Wastewater Utility. While the students gained valuable knowledge, they also provided Marilyn with information and insight that helps NASSCO continually evolve and improve PACP data.

For example, temperatures drop very low in Alaska, and the resulting permafrost requires pipes to be installed very deep. Cold weather is also problematic because it leaves a small window of June, July and August to repair pipes. In the continental U.S., common pipe depths are 8, 10 or 15 feet. In Alaska, they start at 20 feet, making access considerably more challenging. Due to the significant consequence of failure, most pipes are coated with a specific inside liner to help them last as long as possible. This information is extremely useful to NASSCO as we consider adding a PACP code for "factory applied coating."

Shepard also trains trenchless professionals at least once each year in Hawaii, where Maui and the City and County of Honolulu are under consent decree. She reports they are doing remarkably well with compliance. In fact, they appear to be well ahead of schedule, partly because all of their contractors use PACP for data collection and their inspection and rehabilitation program is very aggressive. Gerry Muenchmeyer, NASSCO's technical director, has trained many of the inspectors in Hawaii through the Inspector Training Certification Program, which focuses on cured-in-place pipe. This training equips inspectors with the knowledge to ensure proper installation.

Shepard recently shared that the best part of her job is watching the progress of the application of PACP and how it ultimately helps the agency, utility and student. We are grateful to have her and so many other dedicated PACP and ITCP trainers helping NASSCO set industry standards for the assessment and rehabilitation of underground infrastructure, and to assure the continued acceptance and growth of trenchless technologies. To learn more about PACP or ITCP and request training in your area, please visit www.nassco.org. ✦

Ted DeBoda is executive director of NASSCO. He can be reached at director@nassco.org.

Get the EDge — Training and Continuing Education Courses

PACP TRAINING

June 2-4, 2014
Rockland, ME
Include Manholes and Laterals - A limited number of PACP Recertifications welcome!
Trainer: Laurie Perkins
For more information or to register contact Laurie Perkins at 603-606-4430 or laurie.perkins@wright-pierce.com

June 10-12, 2014
Ontario, CA
Includes Manholes and Laterals!
A limited number of PACP Re-Certification seats available.
For more information or to register contact Marilyn Shepard at 916-899-8961 or mshepard1@hotmail.com

June 10-12, 2014
Conyers, GA
Includes Manholes and Laterals!
For more information or to register contact John Jones at 404-431-5584 or plumblineconsultant@gmail.com

June 11-12, 2014
Mississauga, ON, Canada
PACP Only
Trainer: Rosa Hawkes
For more information or to register call 800-463-6727

June 13, 2014
Mississauga, ON, Canada
MACP/LACP Only
Trainer: Rosa Hawkes
For more information or to register call 800-463-6727

June 16-18, 2014
Marriottsville, MD
Includes Manholes and Laterals!
Trainer: Ted DeBoda
For more information or to register contact Dawn Jaworski at 410-442-7473 or dawn@nassco.org

June 17-19, 2014
Langley, BC
3rd day will be Manholes & Laterals or PACP Recertification, depending on interest
Trainer: Jason Roy
For more information or to register contact Irene Ayotte at 604-888-2223 or jroy@mar-tech.ca

July 14-16, 2014
Marriottsville, MD
Includes Manholes and Laterals!
Trainer: Ted DeBoda
For more information or to register contact Dawn Jaworski at 410-442-7473 or dawn@nassco.org

ITCP

June 2-3, 2014
Ft. Lauderdale, FL
Cured In Place Pipe
8:00 am – 5:00 pm Day 1
8:00 am – 1:00 pm Day 2
Trainer: Gerry Muenchmeyer
For more information contact Gerry Muenchmeyer at 252-626-9930 or gerry@muenchmeyerassoc.com

June 3-4, 2014
Ft. Lauderdale, FL
Manhole Rehabilitation
8:00 am – 5:00 Daily
Trainer: Tim Back
For more information contact Tim Back at 513-253-8461 or tback@cinci.rr.com

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

Jody Ballard, utility foreman, replaces the case of the automatic flushing device he made as it runs a cycle. (Photography by Keith Carson)

IT KEEPS GETTING BETTER

Palm Bay draws on employees' knowledge to enhance all aspects of utilities operation while taking good care of the environment

By Erik Gunn

Palm Bay, Fla., is an ecotourism destination in a delicate environment, and the community has made a major commitment to green principles. At the forefront of the effort is the award-winning Palm Bay Utilities Department. But it's not just about being eco-sensitive.

The utilities department has been on a crusade to show consistent, steady improvement in all aspects of its operations, says Utilities Director Dan Roberts. The campaign is carried out in all four divisions of the department: water distribution, wastewater collections and maintenance; business operations; engineering and plant operations; and Enterprise GIS, which provides geographic information services for all city departments and operations. Tending the utilities' impact on the environment is a part of that overall focus.

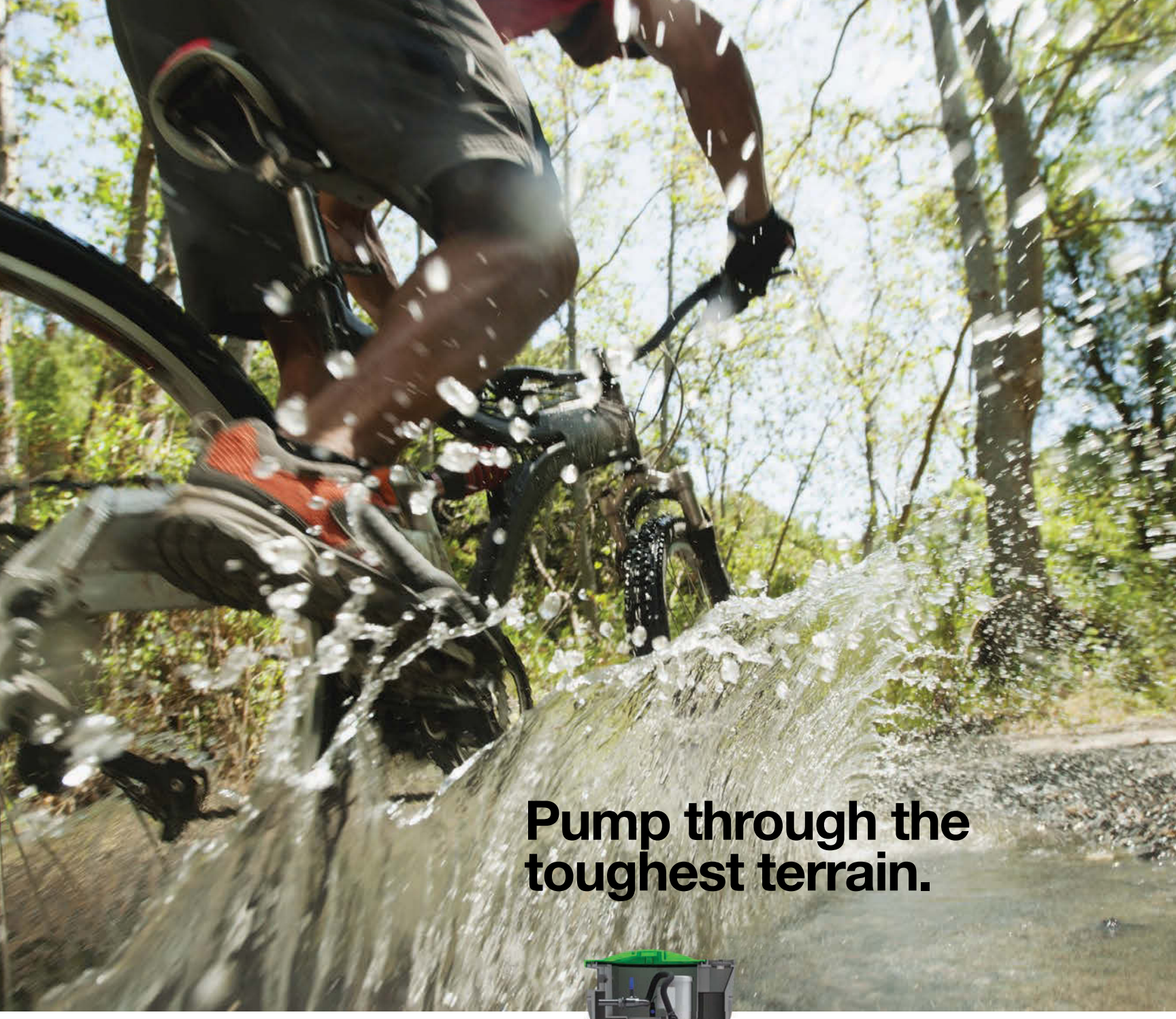
Last year, the Association of Metropolitan Water Agencies (AMWA) recognized the utilities department for the way it has carried out the goal of getting better, honoring Palm Bay with AMWA's platinum award. But that's no reason to be complacent, Roberts says: "We want a culture of continuous improvement."

Groundwater source

Palm Bay is mainly a residential city of 100,000 people that lies between the environmentally sensitive St. Johns River to the west and the Indian River Lagoon, an endangered estuary, to the east, near the Atlantic coast. For anglers, the area is known as one of the best sites for freshwater, as well as brackish, fishing in the country.

Although situated in the St. Johns River Drainage Basin – putting it under the jurisdiction of the St. Johns River Water Management District, one of five water management districts in Florida – Palm Bay doesn't draw its water from that source. Instead, it draws water from the

(continued)



Pump through the toughest terrain.

The revolutionary **InviziQ**™ Pressure Sewer System allows people to sewer in more areas than ever before. Our technology doesn't rely on gravity, it offers controlled removal of sewage in a more efficient footprint than conventional systems. It provides unlimited development possibilities. You don't need to worry about traditional geographical challenges, slope requirements, environmental concerns or difficult terrains. Choose your location, determine your sightline and build on your terms.

Learn more at **www.inviziq.com**

InviziQ *offers Dry Well design, the first and only PSS alternative delivering clean access to the system motor and other working parts of the unit.*

Mono

INVIZIQ™

Smart under pressure.

Mike Brinkley, Class A operator, tests water samples for their chlorine and pH levels at the Palm Bay Utilities Department.

surficial aquifer and from the deeper Floridian Aquifer. The Floridian Acquifer water is an alternative brackish groundwater source treated using reverse osmosis, Roberts says, and sanitized with chlorine.

The water comes from 40 active wells, all but five of which draw from surficial aquifers ranging from 80 to 140 feet underground. The other five are deep Floridian Aquifer wells that reach as deep as 850 feet down. The utility also maintains a 100 million gallon underground aquifer storage and recovery well; treated water is held there until it is needed for use, when it is drawn up and chlorinated before distribution.

Environmental consciousness

Between the local residents and ecotourism, the community has developed a strong environmental consciousness, Roberts says, and those values extend to the civic culture as well. Palm Bay adopted a master plan in 2010 geared to ensuring long-term environmental sustainability, and the utilities department has been a leader in that effort.

In 2008, the utilities department applied for certification of its environmental management system under ISO 14001:2004, a standard set forth by the International Organization for Standardization (ISO), headquartered in Geneva, Switzerland.

"We're the only water and wastewater utilities department in the state to have its entire organization certified in accordance with the ISO 14001:2004 environmental standard," Roberts says. "We wanted to be a world-class utility, and it is a world-class standard."

To show the agency met the standard, officials had to complete an application that included extensive documentation of the utilities department's standard operating procedures, work instructions, policies and the like. But it wasn't just an exercise in paperwork. The application process required measurement and objective evidence of improved performance in a number of aspects of the operation, including safety practices, employee morale, customer service, cost-saving strategies, ways of boosting revenue and more.

The backbone of the standard revolves around three principles: continuous improvement, pollution prevention and regulatory compliance. Rigorous, continuing self-assessment is a must. "Any improvement of a process has to be measured," Roberts points out.

High service water pumps move water to the distributor at the Palm Bay Utilities Department.

Engaging employees

For continuous improvement efforts to really work and last, the entire workforce has to be on board. Palm Bay utilities went about systematically engaging all employees to jump in with ideas and strategies.

Teams of workers address various problem areas. A suggestion program helps harvest ideas from throughout the operation. But Roberts says that a lot of process improvements are more basic and faster to implement than even the suggestion system or the team structure can keep up with.

Palm Bay's work on maintaining adequate levels of residual chlorine in its water system illustrates how the focus on process improvement works.

The residual chlorine was a problem that would crop up from time to time, particularly in lines that didn't get a steady flow of water because of their location.

The utilities department decided to target the problem head on.

"We needed to be very proactive about it," Roberts says. The first step was just to do more sampling. Then came a pilot program to start systematic unidirectional flushing of the lines.

The city's northwest section was the first to experience the new approach. The utilities notified customers in that quadrant that crews would be flushing hydrants, "so they would be aware of what was going on," explains Jody Ballard, a water distribution foreman.

Workers exercised the valves and documented their location to make sure the department's asset management software was up to date.

(continued)

PROFILE: Palm Bay (Fla.) Utilities Department, water services

POPULATION SERVED:
112,956 (per Florida Department of Environmental Protection calculations); 32,238 customer accounts

SERVICE AREA:
City of Palm Bay (100 square miles)

WATER VOLUME:
15.5 mgd capacity, including 1.5 mgd from Aquifer Storage Recovery Well; 6 mgd average daily flow

NUMBER OF EMPLOYEES:
138

INFRASTRUCTURE:
604 miles of water mains, 5,644 valves, 2,866 hydrants

ANNUAL REVENUE:
$13.6 million (water services, including reserve capacity charge for water, fire protection service, installation fees, etc.)

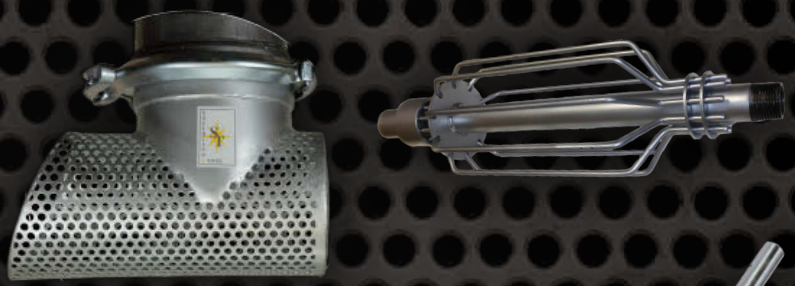
WEBSITE:
www.pbud.org

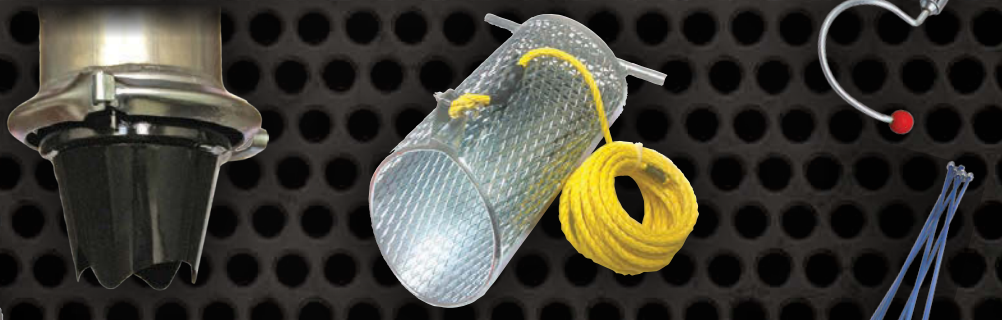
SOUTHLAND TOOL MFG. INC.

Building Innovative Tools for Municipalities

SOLUTIONS TO SEWER CLEANING THROUGH:

- CONCEPT
- DESIGN
- PRODUCTION





1430 N. Hundley Street • Anaheim, CA 92806 • ph. 714.632.8198 • fax. 714.632.8228 • www.SouthlandTool.com

The degasifier at the Palm Bay Utilities Department takes the odor out of the water. Below: Palm Bay Utilities Department Director Dan Roberts stands above the department's reverse osmosis membranes.

Hydrants were opened to flush out sediment that had settled in the pipe over the years. In the northwest section alone, crews went through some 500 sequences, cleaning out perhaps 100 miles of pipe by flushing water through it at 5.2 feet per second.

Water-quality software was used to help plan 40 separate zones in the pilot area and flush them in a prescribed order, Roberts says, "so you weren't pushing out debris through pipe you'd already cleaned out." Sampling before and after the flushing checked for residual chlorine, turbidity and total suspended solids.

Homemade solution

Palm Bay has about 30 flushing devices in place throughout its water system, says Bob Hinkel, distribution, collections and maintenance division manager. Supplied by a variety of manufacturers and vendors, they are operated by automatic timers and mainly serve dead ends in the line where the water is more likely to sit inert instead of moving through.

"We are always looking for areas where we may need to add additional ones," Hinkel says. Dead-end mains are flushed annually, but the systemwide flushing program identified areas where additional devices might be needed.

"We looked at the cost of buying these from the manufacturer, but it was kind of a challenge," Ballard says. Once again, the focus on process improvement and getting input from everyone came into play. Instead of buying ready-made units, workers were able to develop a simple homemade device built from standard plumbing and irrigation components at a fraction of the cost. Simple automation components activate the flushing device, allowing water to move throughout the system and maintain appropriate chlorine residuals.

Sticking with it

ISO certification must be renewed every three years, Roberts explains, so in 2011, Palm Bay went through the recertification process. Last year the utilities marked the fifth anniversary since its first certification in 2008. And this year, recertification will be required again.

It's been nice to get noticed, Roberts acknowledges, but in Palm Bay, there are a lot more concrete rewards for the improvement program: cost savings, improved safety in the work environment, higher morale, more effective operations and more environmentally sustainable practices day to day.

And as busy as everyone is just keeping up, they're also always looking to the future, he adds.

"If you're not anticipating, if you're not continuously trying to improve, you're going to lose effectiveness in everyday operations; the pace of change will make yesterday's improvement obsolete over time," Roberts says.

Based on Palm Bay's work over the last several years, the city doesn't seem at risk for that. ✦

CULTIVATING TOMORROW'S WORKFORCE

Across the board, employers, public and private, bemoan a shortage of workers with the skills they need. It's especially true in the skilled trades, where jobs are said to be increasingly difficult to fill.

The Palm Bay (Fla.) Utilities Department has taken an unusual step to try to help itself and other utilities when it comes to nurturing the people who will work for them in the future.

Palm Bay has partnered with the local school district of Brevard County to develop and support the Academy of Environmental Water Technology (AEWT) at a local high school.

"The AEWT program has a three- to four-year curriculum to introduce students to careers in the water industry," says Utilities Department Director Dan Roberts. "It is the only Academy of Environmental Water Technology in the state of Florida."

Students who take part and stick with the program have the opportunity to take a water or wastewater operator's exam in their senior year, earning a job credential along with their high school diploma. It also can open their eyes up to other job and career possibilities, such as becoming a civil engineer.

Palm Bay, the schools and other partners put the program in place working with the Florida Department of Education. Roberts also notes there's a social equity aspect to the program. It's open to any qualified Brevard County high school student, but it especially offers entrée into the workforce to students who might have more difficulty seizing those opportunities.

PUMPS, LIFT STATIONS AND CONVEYANCE

By Craig Mandli

It is essential for pumps, valves and electrical equipment in lift stations to run independently and efficiently. Here are several of the components that make up lift stations and piping systems and keep them operating, including pumps meters, valves, control panels and SCADA systems.

Enclosures

Tension fabric building

Tension fabric buildings from **Legacy Building Solutions** combine rigid frame engineering with tension fabric, incorporating structural steel beams instead of open web trusses, providing flexibility for a variety of building applications, including wastewater treatment plants, lift stations, public works facilities and general storage. The solid structural steel beams are not vulnerable to unseen corrosion, and have multiple coating options, including hot dip galvanizing, red oxide primer and powder-coat paint. Buildings can be customized beyond the confines of standard sizes to the exact width, length and height required. They have high-quality polyethylene fabric roofs that eliminate corrosion concerns. A wide variety of PVC fabrics are also available. The durable fabric allows natural light to permeate the structure, while insulation can be added to meet energy codes when required. **877/259-1528; www.legacybuildingsolutions.com.**

Insulated enclosure

DuraFiber strong, lightweight, super-insulated fiberglass enclosures from **Orenco Systems** can house process and control equipment, chemicals, generators and workers. Standard sizes are 8 feet tall; 4, 6 and 8 feet wide; and up to 22 feet long. They come with foam-core fiberglass walls 2 to 4 inches thick; single piece, closed-molded construction; weatherproof, watertight, seamless structure; inside surfaces protected with polyester gelcoat; outside surfaces protected with high-performance polyurethane; insulation value up to R24; chemicals and corrosion resistance; an internal pocket attachment system; lifting brackets for moving/setting; internal/external lighting; a roof structure rated up to 100 pounds per square foot; and a wind rating to 130 mph. Options include skid-proof fiberglass floors, roll-up doors, windows, HVAC, load centers, ventilation fans, multiple color schemes and insulated lift station controls. **800/348-9843; www.orenco.com.**

Pumps

Bypass pump

The **Yakka150i** bypass/dewatering pump from **AllightPrimax** has replaceable wear plates and impellers made of stainless steel. It operates quietly, emitting only 65 dBA at 23 feet. The body is impact resistant and requires minimal maintenance. The strong tubular frame design provides side and end protection. Lockable gull-wing doors are wrapped over the body for security and easy access. All controls are inside the lockable module. **877/477-4629; www.allightprimax.com.**

Replacement grinder pump

The **Upgrade** progressive cavity replacement grinder pump from **Environment One Corporation** is designed to fit virtually any other grinder pump wetwell. It is designed to replace the troublesome components of a centrifugal pump, including slide rails, pump/motor, float switches, piping and motor control devices. All solids are ground into fine particles, allowing them to pass easily through the pump, check valve and small-diameter pipelines. It is designed not to jam and for minimum wear to the grinding mechanism. It comes with a self-contained level control system, eliminating float switches, is automatically activated and runs for very short periods. The 1 1/4-inch slide face discharge connection is adaptable to any existing discharge piping. The internal check valve assembly is custom designed for non-clog, trouble-free operation. Units are available with a number of discharge hose lengths to accommodate a wide range of existing tank depths. **518/579-3068; www.eone.com.**

Submersible turbine pump

STS Series submersible turbine pumps from **Franklin Electric** offer premium ductile iron bowls, discharges, motor brackets, investment cast 304SS impellers, lengthened bronze discharge bearing, bronze motor bracket bearing, and other custom options to meet the job's requirements. It can be used for irrigation, industrial, commercial or municipal submersible water pumping applications. **800/269-0063; www.franklinwater.com.**

Buildup-preventing grinder pump

The **IGA** 1 1/2-inch grinder pump from **Goulds Water Technology – a xylem brand,** is ideal for high head and pressure sewage systems in municipal, commercial or industrial applications. The cutter system reduces sewage to fine slurry, preventing buildup. The float leakage sensor (FLS), a small internal float switch, is used to detect the presence of water in the stator chamber. When this is activated, a monitoring relay will signal an alarm, and if desired, stop the pump. The impeller and casing are made of cast iron and designed for high efficiency. The pumps are painted with a two-coat system to ensure superior surface protection. **866/325-4210; www.goulds.com.**

Sewage pump

S Pumps from **Grundfos Pumps** can be used for transferring unscreened raw sewage or water, pumping water containing sludge or pumping industrial effluent. They feature a SmartTrim impeller clearance adjustment system and SmartSeal for leakage prevention. The SmartTrim system makes it

easy to adjust the factory-set impeller clearance to maintain efficiency. The SmartSeal auto-coupling gasket provides a leak-proof connection between the pump and the base unit of the auto-coupling system. The shaft seal is capable of rotating in either direction. When installed with separate pipework, sludge sedimentation can be avoided by back-flushing at regular intervals. **800/921-7867; www.grundfos.us.**

Pressure sewer system

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

Single-stage centrifugal pump

The **CRP** overhung single-stage centrifugal pump from **Ruhrpumpen** is ideally suited for the chemical and petrochemical market, and can also be utilized in tank farms, HVAC, power plants and lift stations. It is available in 33 hydraulic combinations capable of reaching every operating condition required, and conforms to the standard DIN EN ISO 2858, with standardized operating points and dimensions. Known as "Chemienormpumps," they offer advantages regarding service, supply of spare parts and maintenance. **918/627-8400; www.ruhrpumpen.com.**

Submersible sewage pump

ABS submersible sewage pumps from **Sulzer Pumps /ABS USA** use premium-efficiency IE3 motors for low operating cost and reduced carbon footprint. Long-term reliability limits the risk of overflows. A Contrablock Plus impeller provides quality rag handling. **800/525-7790; www.sulzer.com.**

Self-priming centrifugal pump

The **Series 2100** trash- and solids-handling self-priming pump from **Vertiflo Pump Co.** has easy access to the impeller and case to remove debris. It has an oversized, tapered bore and a self-flushing seal chamber, and optional external flush resulting in extended seal life. It has a back pullout design with external impeller adjustment, plus a replaceable case wearplate, allowing for continuous high-efficiency performance. It has capacities to 2,100 gpm, heads to 130 feet TDH and is available in 3-, 4-, 6- and 8-inch sizes. It is capable of handling solids with up to 3-inch-diameter spheres. **513/530-0888; www.vertiflopump.com.**

Pump-disconnect system

The **Z-Rail** pump-disconnect system for threaded discharge submersible pumps from **Zoeller Company** is engineered to perform in high-head and/or high-pressure systems. The ductile iron unit will support a 300-pound pump. Its epoxy powder-coat finish withstands harsh conditions, and the unit's grooved, machined fit provides superior sealing. **800/928-7867; www.zoellerengprod.com.**

Meters

Stainless steel ultrasonic meter

The stainless steel **E-Series** ultrasonic water meter from **Badger Meter** uses solid-state technology in a compact, encapsulated, weatherproof and UV-resistant housing. It has an easy-to-read nine-digit LCD display and presents consumption, rate of flow, reverse flow indication and alarms. Available with a high-resolution encoder protocol, it sends status indicators as part of an extended meter-reading message. It has extended low-flow accuracy to within 3 percent. The corrosion resistant meter complies with lead-free regulations. **800/876-3837; www.badgermeter.com.**

Flow monitor

The wireless, low-power, multi-sensor open-channel **FlowSiren** flow monitor with vision sensor from **BlueSiren** lets operators measure and view flow conditions using contact and noncontact sensors. It operates for over two years using a single power pack. With IP68 connectors, it is fully submersible and completely encapsulated using impact-proof plastics. Data is automatically uploaded to a server or a hosting platform powered by Earth Monitoring DataBase. Two-way communication allows operators to program sensor alarms, wireless upload frequency and sample rates remotely from a website or tablet. **321/242-0300; www.blue-siren.com.**

Vortex-shedding insertion flowmeter

The **X144 e-FlowMeter** vortex-shedding insertion flowmeter from **CLA-VAL** can be retrofitted into a CLA-VAL Control Valve to capture flow data without installing an inline meter. The X145 e-Display works in tandem with the flowmeter to provide local display of flow rate, pressure and valve position. The e-Display is SCADA compatible, has customizable units and is simple to program. Both the flowmeter and the e-Display can be operated using the X143IP power generator, which uses the hydraulic energy in distribution system piping to generate up to 14 watts of power without tying into the power grid. **800/942-6326; www.cla-val.com.**

Level sensor

The **FLO-DAR** sensor from **Hach Flow Meter Products & Services** uses advanced digital Doppler radar technology to measure velocity and ultrasonic pulse echo to determine level. It eliminates sensor fouling and missed flow data, ensuring accurate data under challenging flow conditions, including high solids content, high temperature, and shallow, greasy or caustic flows. It can be combined with the FLO-STATION flowmeter to create a convenient monitoring solution. **800/368-2723; www.hachflow.com.**

Magmeter

The **WATERFLUX** magmeter from **KROHNE** measures precisely, has no moving parts and is maintenance-free during its service life. Its rectangular sensor conditions the flow, eliminating the need for any upstream and downstream piping, while improving low-flow performance. The durable RILSAN-lined measuring tube is available in 1- to 12-inch sizes, and the available battery-powered converter features a 15-year battery life. It is an ideal replacement for aging mechanical meters where power is not available. **800/356-9464; www.us.krohne.com.**

Web-based cellular remote monitoring system

The **Pump Watch** remote monitoring system from **PRIMEX Controls** allows for management of municipal lift stations and wastewater collection systems remotely via a secure cellular network from a Web browser on a PC, tablet or smartphone. The system visually tracks system performance through data logging and critical information trending. Alarms are monitored and service personnel notified via email or text messaging. Users can monitor data and trending 24/7 from the website. Models are available for new or existing pump stations. **888/342-5753; www.primexcontrols.com.**

Ultrasonic water meter

The **280W-D** ultrasonic water meter from **Spire Metering Technology** has no moving parts, a waterproof design and high-quality bronze construction. It enables proactive monitoring of drinking water with the ability to detect leaks as low as a few drops per second. Its large dynamic range and low-flow performance make it accurate for residential water metering. It complies with AWWA C700 and C750 standards and can be used to retrofit mechanical water meters. **888/738-0188; www.spiremt.com.**

Wireless lift station monitor

Wireless lift station monitors from **Telog Instruments** collect information on station operation and provides a combination of real-time alarm notification via SMS text or email, time-stamp event data, trend data, station flow history, pump cycle data, pumping rate history, pump energy efficiency history and site diagnostics. Information is shared with interested parties via Web server access, email and/or SMS message alarms, daily/weekly/monthly reports, and data sharing with third party applications (modeling, SCADA, etc.). Data is automatically collected from lift stations using RTUs then transferred to a central server via a choice of communication technologies including cellular, landline telephone, radio or Ethernet. Data may be transmitted on a user-defined schedule and/or immediately on detection of a station alarm. **585/742-3000; www.telog.com.**

Valves/Piping Accessories

Plug valve

Eccentric Plug Valves from **DeZURIK Water Controls** handle clean and dirty liquids, gases, sludge and slurries. They feature raised, welded nickel seats that provide protection against corrosion that can cause plug face damage and leakage. The rectangular port design has wide tolerance seating geometry for lasting shut-off. An adjustable packing gland allows packing to be inspected, replaced or adjusted under pressure without actuator removal or valve disassembly. They have corrosion-resistant bearings, grit excluders, and a choice of resilient plug facings for dead-tight shut-off. Options include 100 percent port area, rubber lining and glass lining. **320/259-2000; www.dezurik.com.**

Double-containment vinyl piping system

The **Double-See** pressure-rated double containment vinyl piping system from **GF Piping Systems** offers an easy installation method, a closure coupling design that allows conformance to the ASME B31.3 test inspection requirements, and 3-D thermal expansion compensation. Both primary and secondary pipes are cut to the same length, and can be joined simultaneously, saving time and preventing potential mistakes caused by staggered pipe-cut measurement errors. It offers assembled and tested fittings and a pipe cut-length guidance system that simplifies installation. The system has pipe, fittings, leak detection and access tees, closure couplings and termination fittings. It is available in PVC and CPVC; either material may be primary or secondary, with clear PVC an option for the containment pipe. System size options range from 1/2- by 2-inch to 6- by 10-inch. **800/854-4090; www.gfpiping.com.**

Wafer check valve

WCV Series wafer check valves from **Hayward Flow Control** have all thermoplastic molded construction, including angle seat and disc design for high flows. The valves fit ANSI 150 and PN10 flanges and are available in PVC and CPVC in 2- to 8-inch diameters with a maximum pressure rating of 150 psi non-shock at 70 degrees F. **888/429-4635; www.haywardflowcontrol.com.**

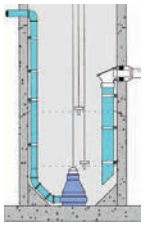
Air valve

AirPro Max air valves from **Henry Pratt Company** have a body shape that fits a smaller valve vault. Their float/linkage design is suitable for higher pressures. The design keeps seat leakage and float mechanism failures from occurring, and has close-tolerance machined parts, stainless trim, and standard hoods or threaded caps. They are provided with a large orifice to break vacuum or a small orifice for air release under pressure. Both types can be combined with both features to allow maximum pumping efficiency, and protection from pipeline damage due to vacuum-induced collapse or surge-induced breaks. Options are available for applications requiring valves up to a 20-inch capacity. **877/436-7977; www.henrypratt.com.**

Inline check valve

The **CheckMate** inline check valve from **RedValve Co. / Tideflex Technologies** eliminates backflow from oceans, rivers and interceptors in outfalls, stormwater, CSO and SSO applications. The valve opens to near full pipe diameter, maximizing flow capacity of the outfall. The valve's elastomer construction provides maintenance-free performance. **412/279-0044; www.tideflex.com.**

Lift station inside drops



Using controlled inside drops from **RELINER/Duran** in lift stations can extend pump life by preventing aerated influent from being directly drawn into the pumps, causing cavitation. The drop pipe should always be extended below the low limit level and cut to follow the slope of the base fillet. If there is no fillet, cut the pipe at 45 degrees and in all cases maintain a distance from the floor or fillet of one pipe diameter. This will create a diffuser by directing the flow back against the structure, de-aerating the influent. Under no circumstance should the incoming flow be directed towards the pumps. It is easy to maintain, as there is nothing to collect rags and debris and can be cleaned from above. **800/508-6001; www.reliner.com.**

Flange accessory pack

Flange Paks from **SIGMA Corporation** include every item required for joint connections in one box. The pack contains gaskets, nuts and bolts fabricated in a variety of materials. Gaskets come in red rubber, synthetic rubber, non-asbestos fiber, oval-ringed and full-faced. Nuts and bolts are offered in carbon steel with plain finish, stainless steel or zinc plated. **800/999-2550; www.sigmaco.com.**

Valve position indicator

Valve Position Indicators from **Trumbull Industries** show the position of a valve when they are attached to the valve stem or actuator. Operators will not over-open or over-close the valve, which could cause costly damage, because the valve's position is always visible. They are made of noncorrosive Dupont Delrin polymer, with double O-ring seals that keep out water and dirt, and are available in six models – a choice of 57, 275 and 870 valve turns, in both open-left and open-right options. They are available with a debris shield to keep dirt out of the valve box. **800/677-1799; www.trumbull-mfg.com.**

Cleaning nozzle

The **Alphajet** cleaning nozzle from **USB – Sewer Equipment Corporation** cleans grease, sludge and crusts from lift stations and manholes prior to rehabilitations. It is actuated by water coming from the pressurized hose of the jetter truck. Four driving nozzles cause 360-degree controlled rotation in a horizontal plane, which eliminates the need to cover the manhole. The horizontal rotation only allows for observation of the cleaning progress. The body requires no lubrication or replacement of internal mechanical parts within the first 12 months of operation. Driving nozzles can be extended to accommodate various sizes of manholes/lift stations. **866/408-2814; www.usbsec.com.**

Butterfly valve

American-BFV butterfly valves from **Val-Matic Valve & Mfg. Corp.** are offered in 150B and 250B AWWA Classes, with flanged end connections in 3- to 144-inch sizes and 4- to 48-inch mechanical joint end connections. They comply with AWWA C504 and C516, certified NSF/ANSI 61 for drinking water and NSF/ANSI 372 Certified Lead-Free. They have epoxy interiors, continuous uninterrupted seating, and a Tri-Loc seat-retention system that allows for field adjustment/replacement without the need for special tools or epoxies. The disc is constructed of ductile iron for improved headloss characteristics and added strength. They have self-adjusting/wear-resistant V-type packing shaft seals and stainless steel tangential taper pins to provide strength and rigidity. **630/941-7600; www.valmatic.com.**

Control Panels

Pump station manager

The **MultiSmart** intelligent pump station manager from **Flygt – a Xylem Brand,** combines PLCs, RTUs and pump controllers into one comprehensive package, integrating numerous control panel components. It includes preprogrammed logic specifically designed to significantly reduce operating costs. Its out-of-the-box functionality is designed for fast and easy deployment. **704/409-9700; www.flygtus.com.**

Lift station control

Integrinex lift station controls from **Gorman-Rupp Company** are available in four models. They include Basic, an affordable plug-and-play unit designed for accurate start/stop operation in a duplex alternation pump system; Standard, which has duplex and triplex alternation, level sensors, pump delay and alarms; Advanced, which includes Soft Starters and VFDs to manage electric inrush, hydraulic shock and matching starting and stopping torque-based management and monitoring; and Remote View, which has all the functionality of the advanced system, with the convenience of remote tablet-based management and monitoring. **419/755-1011; www.grpumps.com.**

Versatile control panel

Control panels from **Quanics** are available from simple indoor high water alarms up to complex multi-pump custom controllers. Standard controls include simplex- and duplex-demand or timed-dose versions. Each is configured to accept either 115-volt or 230-volt pumps. All are built in NEMA 4X rated enclosures and carry both UL and CSA listings. The standard drip irrigation controller includes connections for external solenoid valves to allow for automation in the drip management system. Custom panels can include

any and all accessories required for the particular application, including remote telemetry, counters, multi-pump alternation, heaters and logic controllers. **877/782-6427; www.quanics.net.**

SCADA Systems/Accessories

Wireless monitoring system

The **Guardian 2000** wireless monitor from **FLO-CORP** transmits data using cell towers or satellites. The battery-powered system can be used to report combined sewer overflows measured by the Ranger 1000 ultrasonic level transmitter, providing constant access to data. The wireless monitor also can report tank level, product temperature, exact tank truck locations, flow into the tank during pickups, and flow out during deliveries. It also can monitor frac fluid to ensure against overflow. **877/356-5463; www.flowlineoptions.com.**

Communication module

The **100W+** water communication module from **Itron** has compact design, long battery life and technology designed to adapt and grow with a utility's business. It helps utilities streamline operations and maximize resources, and includes Standard Consumption Message (SCM+) with more information than previous generation messages. It has capabilities in security and fixed network performance. **866/374-8766; www.itron.com.**

Managed SCADA system

The managed SCADA system from **Mission Communications** is a complete monitoring and controls system that allows municipalities to better manage, operate and maintain collection and distribution systems. Real-time alarms are delivered by any combination of voice phone calls, text messages, emails, faxes and pagers, and each alarm is logged on the Web portal. Because the system is Web-based, enhancements and new features are immediately available at no extra cost. Compare pump station flow with local rainfall, analyze pump run times for anomalies or track site access with reports tailored to the water and wastewater industry. Reports assist with preventing noncompliant events from occurring. The Web portal can be accessed anytime, anywhere from any Web-enabled device. **877/993-1911; www.123mc.com.**

SCADA-friendly analyzer

Signal output analyzers from **SWAN Analytical USA** are designed for integration with SCADA systems. Signal options include two analog outputs plus a third channel for an analog output or one of several types of commonly used serial bus communications. Upgrades can be retrofitted in the field. **847/229-1290; www.swan-analytical-usa.com.** ✦

HALLIDAY PRODUCTS

MORE SECURE...

RETRO-GRATE™ THE CUSTOM MADE FALL-THRU PROTECTION SYSTEM

Retro-Grate,™ the custom made fall-thru protection system designed to fit most openings, regardless of the cover manufacturer. Easily installed, Retro-Grate™ changes a potentially hazardous access cover opening into a safer and more secure surrounding.

Each and every time an access cover is opened, the possibility of a fall-thru accident exists. Retro-Grate™ by Halliday Products reduces the hazard, by covering the opening with a safety orange powder coated grating panel that hinges up and out of the way. Once the work is complete, simply release the latch and lower Retro-Grate™ back into position. The next operator to open the access cover is protected. With Retro-Grate,™ custom installation is no problem! The design allows for minor maintenance and adjustments beneath the cover without exposing operators to an uncovered opening. Retro-Grate™ provides additional security against unauthorized entry with the use of an owner supplied padlock. Just like any access cover, Retro-Grate™ only works in a closed position. Be more secure, with Retro-Grate™ by Halliday Products, a proven industry leader you've trusted for over 40 years.

RETRO GRATE™
FALL-THRU PROTECTION SYSTEM

1-800-298-1027

MADE IN THE USA

407-298-4470 · Sales@HallidayProducts.com

Scan to try our NEW DIGITAL CATALOG!
www.HallidayProducts.com

Management system solves pump run-time issues

Problem:

The city of Winter Park, Fla., was experiencing excessive pump run times and unacceptable pressures because of multiple lift stations pumping into a single force main.

Solution:

The city implemented **Symphony - Harmonious Pump and Flow Management** from **Data Flow Systems.** It coordinates systemwide operation of lift stations to reduce force main pressures and equalize flow. It corrects the random operation of stations and synchronizes pumping on a minute-by-minute basis.

RESULT:

The city saw diminished pump run times, lower maintenance and energy costs, fewer service calls and longer pump life. The system also resolved daily peak flow and pressure spikes. Research continues to improve the pumping algorithm. Initially, the system reduced average run-time reductions by 24 percent and energy costs by 39 percent. Recent run times are reduced 34 percent and energy costs 42 percent. **321/259-5009; www.dataflowsys.com.**

Digesters eliminate grease and rag mats in pump stations

Problem:

The 3- to 12-foot-diameter pump stations along a 14-mile force main in Meridian, Miss., frequently had heavy grease and rag mats 2 to 3 feet thick, with hydrogen sulfide readings of over 900 ppm. The Meridian Sewer District sought a fix.

Solution:

At the advice of consultant Jim White, Hugh Smith, director of the Meridian Sewer District, installed 2 to 4 hp **Little John Digesters** from **DO2E Waste Water Treatment** in each pump station.

RESULT:

The grease and rag mats were completely eliminated within 24 hours, and hydrogen sulfide readings were reduced to less than 5 ppm after four weeks. There has been no reformation of grease, rags or hydrogen sulfide in the 11 months since the project was initiated. **251/626-6550; www.do2e.com.**

Level controller provides solution for pump station call-outs

Problem:

Not long after startup in the two new lift stations, Rick McKinnon, public works supervisor for the Town of Eckville, Alberta, quickly became aware of problems as he began receiving call-outs from high-level alarms. They investigated and experimented with baffles and stilling wells, attempting to reduce the periodic buildup of foam and grease that likely was causing the ultrasonic sensor to lose echo loss in the pump stations.

Solution:

Carbon Controls recommended the **Greyline Instruments PSL 5.0 Pump Station Level Controller.** It was designed to operate both with a noncontacting ultrasonic sensor plus a generic 4-20 mA level signal from an alternate sensor. The transition from primary to secondary level signal is seamless and transfer to the secondary signal is displayed to the operator with usage hours logged for troubleshooting. Using the run-time reporting function, McKinnon can plan pump maintenance and spot pump problems before failures occur.

RESULT:

The municipality eliminated call-outs. Having an alternate monitoring method that is not defeated by foam or grease allows a second opinion in the case of a temporary loss of sonar signal without tripping the high-level alarms. **888/473-9546; www.greyline.com.**

New SCADA system solves outdated software issues

Problem:

The city of Wolfforth, Texas, needed to retrofit its existing SCADA system for its water system because the original one was no longer stable or reliable as a result of municipal growth. The city often had to pay overtime hours to operators who manually operated equipment when the automation system required changes or servicing.

Solution:

Lubbock Electric Company was chosen to install the new SCADA system, and the company chose **InduSoft Web Studio** because it was affordable and very flexible, with over 240 native drivers. The new PC-based SCADA software was configured to provide real-time data access with user-friendly advanced graphic displays for the City's water/wastewater system. Operators can configure their wells to start/stop at various levels. The SCADA system also provides extensive alarming features with alarm conditions that include door open, unauthorized intruder, pump start/stop failure, incorrect valve position, power failure, PLC failure and communication error.

(continued)

RESULT:

Since the retrofit, the city has been pleased with the results, as the new automation system has been reliable. The system improved uptime as well as overall system performance, and has provided a superior return on investment. **877/463-8763; www.indusoft.com.**

Chemical blocks used to clean FOG from lift stations

Problem:

A water/sewer district in South Carolina was losing prime in one of its main lift stations due to the excessive buildup of fats, oils and grease. Each morning the lead operator would go down to the lift station, backflow the pump to flush it out and re-prime it to get the pump cycling again. It turned out a nearby residential neighborhood was causing most of the problem. The neighborhood sewage drained into a smaller lift station that pumped to the larger one, where the pump was losing prime.

Solution:

Martech Research recommended treating the smaller lift station with two medium-sized **FOG Blocks** per week, while a single large block was added once a week to the larger main lift station.

RESULT:

Within a few days, the larger lift station was flowing freely with no further assistance. The grease cap had broken down and no longer was a problem to pump. After two weeks, the operator was able to pump the lift station to its lowest level to remove silt, sand and other settled materials from the system. The district still uses FOG Blocks to keep things flowing smoothly. **803/428-2000; www.martechresearch.com.**

Pumping station provides aesthetic and biological benefit

Problem:

With the regulatory agency demand for constant pumping of return-to-source river water over a 24/7 basis, reliability on pump performance became the primary consideration for equipment selection at a private landscaping project near De Pere, Wis. Water taken from the Fox River is pumped through a decorative fountain and then returns to the river, at which point it's considered a tributary. Aeration of the water brought about by the cascading design intrigued the agency and allowed the project to proceed.

Solution:

To meet these criteria, Sustainable Treatment Processes, August Winter and Sons and project manager Apple Valley Landscaping selected **Pioneer Pump** 4-inch self-priming units. The base-mounted duplex pumping station provided financial control over the operation and guaranteed pumping. Using one pump allowed for the featured waterfall effect, and with the second added, a grand waterfall.

RESULT:

These conditions met the expectations of everyone involved, and the return stream to the river may induce trout and salmon to return to the fishery. Current plays a significant role in attracting these aquatic species to spawning areas, which is why a no-flow condition cannot be tolerated. With the station provided, one pump is available at all times to ensure ongoing flow. **503/266-4115; www.pioneerpump.com.**

Portable flowmeter enables city to track multiple valves

Problem:

A city in Colorado needed to determine the flow through each of their three separate valve chambers to determine whether the water load was shared equally among the valves. By measuring the flow rates, the operator is able to use the data to determine whether they need to adjust the pressure set points on any of the pressure reducing valves in each vault. As there was no power source and limited space in the station, the city specifically wanted a portable flowmeter that could be shared between three valves in the three separate chambers.

Solution:

Pipestone Equipment's Dave Buchwald suggested **Singer Valve's SPI-MV,** as the single point insertion probe can be inserted into a valve to measure flow and then be moved to a different valve. The insertion probe extends into the flow stream in one of the valve inlet connections and protrudes into the valve, equivalent to 1/8 of the valve diameter size. As a single piece design, the bullet nose profile has no moving parts to get clogged, and contains nothing to wear or break.

RESULT:

As the SPI-MV is accurate to 2 percent of reading throughout the specified velocity range, the city is now able to monitor the flow rates of their valves and compare loads to ensure equal flow. **888/764-7858; www.singervalve.com.**

Resort town wipes out pump clog problems

Problem:

Consumer flushables were causing regular pump clogs in the year-round resort community of Big Bear City, Calif. "Nine times out of 10 when we pulled a pump it would be clogged with rags, just clogged full of them," says Andy Keller, Sewer Department foreman, who estimated that the most problematic of the seven underground pump stations he operates was clogging as many as three to four times a week. Also contributing to the problem was the fluctuating population, which was known to quadruple on many weekends. Pump clogs would often come one right after another, and because many were on the weekends, overtime hours were paid to service workers.

(continued)

Solution:

After consultation with a representative from manufacturer **Smith & Loveless,** the city purchased **X-PELLER** impellers for three problematic stations. The mono-port design helps to counterbalance hydraulic forces and create a balanced, single flow path that passes 3-inch solids and problem flushables.

RESULT:

Pump clogs have been virtually eliminated, according to Keller. Operation costs are down overall. Maintenance workers are freed up to work on other equipment, and they are safer day-in day-out with no more trips to the confined space of an underground station. **800/898-9122; www.smithandloveless.com.**

Permanent backup lift station pumps create cost savings, control flooding

Problem:

The Mill Creek Pump Station is a recent effort by the City of Mt. Vernon, Ind., to limit combined sewer overflows into the Ohio River. The design conditions were 7,000 gpm at 78 feet TDH as specified by the Indiana Department of Environmental Management as part of a Long Term Control Plan implementation program. The job requires pumps that will operate in a temperature range of -40 to 125 degrees F. Communication between the pump station and the storage basin is critical to avoid flooding the storage basin.

Solution:

Thompson Pump & Manufacturing installed four sound-attenuated 18-inch pumps equipped with an Oil-less Vacuum Technology priming system for quicker priming times and designed to operate in sync with one another to coordinate a lead-lag effect, assuring that no one pump operates more frequently than the others. Each is sound attenuated to reduce operating noise levels below the EPA standard of 76 dBA at 7 meters, and is equipped with the Arctic Knight cold-weather package to allow it to continue operating in extreme temperatures. Transducers at the discharge site allow communication between the pumps and the storage basin to prevent overflow.

RESULT:

The pump performance has exceeded expectations. A notable cost savings was created as a result of utilizing diesel-driven pumps. **386/767-7310; www.thompsonpump.com.**

Prerotation pumping system attacks lift station clogs

Problem:

The Allen Road Lift Station in Bakersfield, Calif., faced two problems: pumps that clogged and dirty wet wells full of floating and settled solids that caused an unpleasant odor. The temporary solution for clogged pumps required maintenance personnel to travel to the lift station to manually clean out the pumps. Hiring a vacuum truck on a regular basis was the sole solution for removal of the problematic floating and settled solids.

Solution:

The city selected a **WEMCO-Hidrostal Prerotation pumping system,** manufactured by **Weir Specialty Pumps.** It incorporates a prerotation basin designed to skim floatables from the top of the wet well and scour settled solids each time the pump runs through a pumping cycle. Simultaneously, it diminishes the problem of clogging pumps with the use of a single vane impeller. The system is designed to handle municipal sewage without clogging.

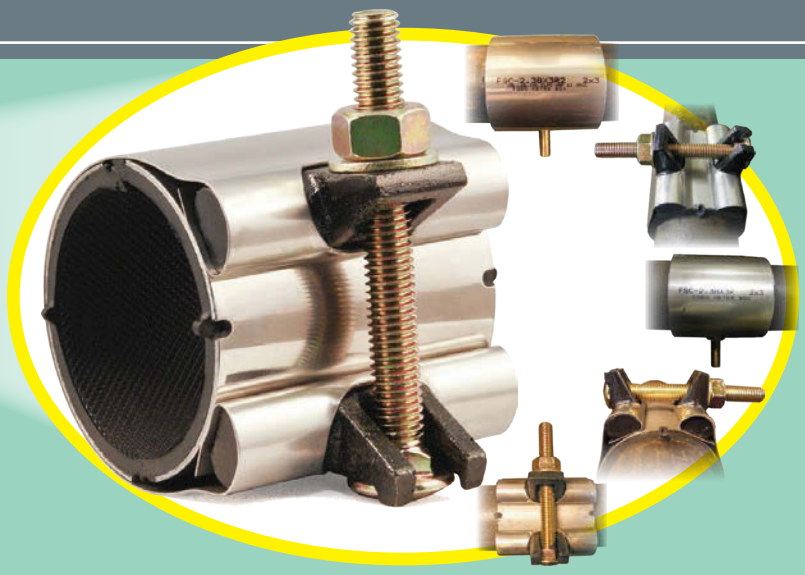
RESULT:

The systems were installed in 2007, and have not experienced a single clogged pump to date. Additionally, floating and settled solids have been eliminated and the regular vacuum truck visits have been reduced by more than 75 percent. **801/359-8731; www.weirsp.com.** ✦

Product Spotlight

Dual-Armor Wrap Clamp takes guesswork out of pipe repairs

By Ed Wodalski



The FSC-R2 Dual-Armor Wrap Clamp with EPDM gasket from Ford Meter Box Company provides full wraparound coverage for maximum protection against leaks in pipes. The stainless steel body and epoxy e-coated ductile iron lugs (stainless available) are corrosion resistant, while location indicators simplify "blind" installation.

"One of the challenges with armored gaskets is that the dual armors cover almost 360 degrees of the gasket," says Todd A. Hodson, marketing manager for Ford Meter Box Company. The rigid nature of the stainless-covered rubber gasket can make it difficult to open.

"What we did to overcome the stiffness was place a relief groove at one side between the armors that enables you to open the gasket one-handed," he says. "That's important when a repair clamp is being installed and you have water spraying." The groove also makes it easier to position the gasket over the leak until it can be securely clamped.

Location indicators aid in positioning the gasket in the clamp, ensuring a proper fit each time. "You want to make sure the armor is centered across the gap of the clamp," Hodson says. "What we did to facilitate this is place notches on the side. There's both a notch in the stainless armor and a rubber knob that protrudes out [of the gasket]. So if you're trying to assemble this while your hands are under water you can feel that the stainless armor on the gasket is centered on the clamp."

Designed for the repair of a pinhole leak or small crack in copper or steel pipes, clamps are available in 3-inch (1 bolt) and 6-inch (2 bolt) widths for pipes from 1/2 to 2 inches in diameter.

Gasket thickness varies by type and size. For steel pipes, gasket thickness is 0.17 inches for 1/2 through 1 1/2-inch pipes and 0.21 inches for 2-inch pipes. Copper pipe gaskets range from 0.146 to 0.315 inches thick. The 3-inch wide clamps weigh from 0.75 to 1.5 pounds, while the 6-inch clamp weighs from 1.5 to 3 pounds. **260/563-3171; www.fordmeterbox.com.**

Allen-Bradley Micro820 PLC

The Allen-Bradley Micro820 programmable logic controller from Rockwell Automation features embedded Ethernet and serial ports and microSD slot. Connected Components Workbench software simplifies the configuration, design and maintenance of the controller. **414/382-2000; www.rockwellautomation.com/industries/water.**

HammerHead wet-out table

The pneumatically controlled wet-out table from HammerHead Trenchless Equipment features a powered conveyor system, enabling rollers to be raised or lowered to a preset gap, while variable-speed controls, forward and reverse operation offer ease of installation. The table is designed for 2- to 12-inch diameter liners. A roller bed attachment is available. **800/331-6653; www.hammerheadtrenchless.com.**

Hi-Vac O'Brien 7000-T hydrojetter

The O'Brien 7000-T hydrojetter from Hi-Vac Corp. is designed for truck-mounted applications. Features include flow ranges of 18 to 65 gpm, 2,000 to 4,000 psi, 700-gallon polyethylene water tanks, triplex pump and hydraulic driven reel with variable-speed control. The hydrojetter is powered by a water-cooled diesel engine with 17-gallon fuel tank. **800/752-2400; www.obrienmfg.com.**

LMK self-driven pipe renovation system

The Schwalm robotic pipe renovation system from LMK Technologies, compatible with sewer pipeline inspection camera systems, can cut, grind and chisel the full circumference of 5.5- to 24-inch diameter pipe. It can remotely disconnect lining equipment, enabling the robot to install another liner while the first liner is curing. Equipped with an interchangeable digital zoom camera, the robot can reach 12 inches into a service connection to remove resin slugs, as well as cut and drive through a failed CIPP installation. It also can reinstate service connections post CIPP. **888/433-1275; www.lmktechnologies.com.**

PRIMEX Web-based remote monitoring system

The Pump Watch remote monitoring system from PRIMEX Controls enables lift stations and wastewater collection systems to be managed remotely on a PC, tablet or smartphone via a secure cellular network. Alarms are monitored and service personnel notified by email or text messaging. Data and trending can be monitored 24/7 from the website. **800/746-6287; www.primexcontrols.com.**

Vanair rotary screw air compressor

The Viper diesel rotary screw air compressor (80 cfm at 100 psi) from Vanair Manufacturing is designed to operate 90-pound jackhammers, as well as 1 1/2-inch impact wrenches and piercing tools. Features include automatic variable throttle control to minimize fuel consumption, 48 cfm at idle, auto engine-off and restart based on air demand, Tier 4 certified Kubota engine and access to air power and restart based on air demand. **800/526-8817; www.vanair.com.**

Reelcraft stainless steel hose reel

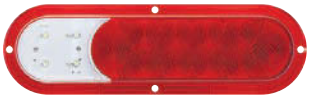
The hand-crank HS37000 L hose reel from Reelcraft holds 100 feet of 1-inch hose. Made of corrosion-resistant 304L grade stainless steel, the reel, rated at 500 psi, features a stainless steel brake, welded drum and vibration-proof fasteners. Two motor-drive models are available (12-volt DC explosion proof, 115-volt AC). **800/444-3134; www.reelcraft.com.**

Coxreels full-flow fluid path

Model 1175 and 1185 Series reels from Coxreels have a swept outlet riser for maximum full-flow fluid path. Other features include one-piece, all-welded A-frame base designed to handle 1- and 1 1/2-inch I.D. hose. **800/269-7335; www.coxreels.com.**

Optronics combo lamp

The 9-inch, half-inch thick STL68 Combo Lamp from Optronics International is a combination LED stop, tail, turn and backup light that mounts to the vehicle surface. **800/364-5483; www.optronics.com.**



McElroy shelter and pipe-handling system

The QuickCamp shelter and pipe-handling system from McElroy Manufacturing enables operators to butt fuse polyethylene pipe from 8-inch IPS to 36-inch O.D. day or night within a lighted, insulated and climate-controlled enclosure. A single operator can load and align pipe by remote control from inside the shelter with the MegaMc PolyHorse. The 21-foot-8-inch by 24-foot-7-inch shelter houses a hydraulically-powered 1236/900 or 824/630 fusion carriage with room for an office, breakroom or storage for extra gear. It also includes electrical outlets and can be set up by two people. **918/836-8611; www.mcelroy.com/fusion.**

Endress+Hauser FMR5X level transmitters

The Micropilot FMR5X series of free space radar level transmitters from Endress+Hauser features software with multi-echo tracking algorithms and functions to suppress echoes for 0.078 inch accuracy. Designed for the level measurement of liquids and bulk solids, liquids can be measured in metal or plastic tanks, stilling wells, bypass chambers or other vessels up to 131 feet high with standard units or 197 feet with the enhanced dynamics option. **888/363-7377; www.us.endress.com.**

Nu Flow pipe coating system

The Nu Line 1 Shot pressurized pipe-coating system from Nu Flow Technologies is designed for small diameter pipe applications. The system includes heater, after cooler, sand blaster, dust collector, moisture and oil separator. The 106 cfm unit is cart mounted with four swivel-locking casters for easy transportation. **800/834-9597; www.nuflowtech.com.** ✦

INDUSTRY NEWS

JUNE 2014

Oracle, RedZone form partnership

Oracle and RedZone Robotics partnered to assist owners in managing their water and wastewater assets and execute repair, replacement and rehabilitation projects through formation of the companies' YES (Your Entire System) program.

Franklin Control moves into larger facility

Franklin Control Systems, a wholly owned subsidiary of Franklin Electric, moved into a new 60,000-square-foot engineering and production facility in Hillsboro, Ore. The building will enable the company to consolidate inventory and reconfigure its production area.

Dewberry adds environmental scientists

Dewberry hired Matthew P. Miller as an environmental scientist and Amin Davis as a senior environmental scientist. Miller, working out of the firm's Orlando, Fla., office, will be responsible for wetland and threatened/endangered species surveying and permitting, water resource coordination and other public projects. Davis, working out of the Fairfax, Va., office, will be responsible for conducting technical assessments of natural resources, coordinating environmental permitting activities and supporting proposal preparations.

Global Pump names business development director

Global Pump, a Mersino Company, named Victor Krotikov business development director for the European Union/Commonwealth of Independent States.

Victor Krotikov

InduSoft receives mobile apps award

InduSoft received the 2014 Engineers' Choice award from Control Engineering in the Software – Mobile Apps for Controls, Automation, Instrumentation category for its Enhanced Studio Mobile Access software.

Oldcastle's Storm Capture available with Chamber Wizard

Through a cooperative marketing agreement, Oldcastle Precast's Storm Capture system is available for modeling with HydroCAD's Chamber Wizard, starting with HydroCAD 10.0 build 11. The design tool can be used for simple and complex stormwater projects. ✦

WORTH NOTING

PEOPLE/AWARDS

The **Southwestern NC Resource Conservation and Development Council** was awarded $30,000 from the Pigeon River Fund of the Community Foundation of Western North Carolina to complete a stormwater assessment and retrofit plan for the Maggie Valley commercial area to improve the water quality of Campbell and Jonathan creeks.

Northbrook's $5 million stormwater update was named a 2013 Project of the Year by the Suburban Branch of the American Public Works Association's Chicago Metro Chapter.

The **American Public Works Association** announced that the following public works agencies received 2014 National Excellence in Snow and Ice Control Awards:

- City of Bettendorf (Iowa) Public Works Department
- City of Bloomington (Minn.) Department of Public Works
- City of Council Bluffs (Iowa) Public Works Operations Department

The **Lake County (Ill.) Stormwater Management Commission** announced the recipients of its 2013 Annual Stormwater Awards. They include:

- Community of the Year: Tower Lakes Improvement Association
- Best Management Practice Project of the Year: Sheridan Road Crossing Wetland Detention Facility, City of North Chicago
- Stormwater Manager of the Year: Dave Brown, village engineer, Village of Vernon Hills

LEARNING OPPORTUNITIES

American Water Works Association

The AWWA is offering a Summer Workshop July 23-25 in Denver, Colo. Visit www.awwa.org.

American Society of Civil Engineers

The ASCE is offering the following courses:

- June 12-13 – Financial Management for the Professional Engineer, San Antonio
- June 19-20 – Leadership Development for the Engineer, Kansas City, Kan.
- July 24-25 – Pumping Systems Design for Civil Engineers, Greenwood Village, Colo.
- July 25 – Preparing and Implementing Construction Site Stormwater Pollution Prevent Plans, online
- Aug. 20 – Stream Restoration Bioengineered Retaining Walls for Riverbank Stabilization, online

Visit www.asce.org.

Wisconsin

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

- June 2-3 – Advance Modeling Using HEC-RAS
- June 4-6 – Unsteady Flow Modeling Using HEC-RAS
- Oct. 20-21 – Using WinSLAMM v. 10.0.1: Meeting Urban Stormwater Management Goals

Visit http://epdweb.engr.wisc.edu.

The Wisconsin Department of Natural Resources is offering the following courses:

- Sept. 17 – Permit-Required Confined-Space Entry, Plover
- Dec. 9 – General Safety, Plover

Visit http://dnr.wi.gov. ✦

CALENDAR

June 8-12
American Water Works Association Annual Conference & Exposition (ACE) 2014, Boston, Mass. Visit www.awwa.org.

June 18-21
American Society of Agricultural and Biological Engineers-Florida Section Annual Conference, Waldorf Astoria Naples, Naples, Fla. Visit www.asabe.org.

June 30-July 2
American Water Resources Association Summer Specialty Conference, John Ascuaga's Nugget Casino Resort, Reno, Nev. Call 540/687-8390 or visit www.awra.org.

July 13-16
American Society of Agricultural and Biological Engineers Annual International Meeting, Montreal, Quebec. Visit www.asabe.org.

Aug. 3-7
StormCon, Oregon Convention Center, Portland, Ore. Visit www.stormcon.com.

Oct. 6-8
National Rural Water Association WaterPro Conference, Sheraton Seattle, Seattle, Wash. Visit www.waterproconference.org.

Nov. 3-6
American Water Resources Association Annual Conference, Sheraton Premier Hotel, Tysons Corner, Va. Call 540/687-8390 or visit www.awra.org.

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

Extra! Extra!

Want More Stories?

Get extra news,

extra information,

extra features with

Online Exclusives

Exclusive online content for
Municipal Sewer & Water

www.mswmag.com/online_exclusives

classifieds

see photos in color at www.mswmag.com

JET VACS

Reconditioned 1992 Vac-Con: 12-cubic-yard tank. Mounted on 1992 International 2554 with newly rebuilt DT 466 - fewer than 100 hours on diesel. 12-foot extendable boom. Bean 35gpm pump and hose reel. Vacuum fan, three-stage with John Deere 4-cylinder diesel. Field ready. FOB Belgrade, Montana. $58,000. Call 406-581-8476. (M06)

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, click on the Now Hiring link in the left hand column. Send resumes to Lthomas@gapvax.com or 575 Central Avenue, Johnstown, PA 15902. (CPMGBM)

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. (CMPBM)

TV INSPECTION

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

Brand new Cyclops electronic camera systems mounted in good running used vans. Top-of-the-line system mounted in 2005 F250 with 1,000' of cable, $61,200. Next, a basic system mounted in 2003 F250 with 1,000' cable, $49,000. Last but not least, standard system mounted in 2001 F150 with 600' cable, $51,200. Need a portable? We can help there too! Just give us a call @ 830-249-9756 and talk to the guys that build 'em or visit us online: cyclopstv.com (C06)

VAR CO
LIQUID WASTE HOSE & ACCESSORIES

SHOW SPECIALS 2014
CRAZY LOW PRICES!

HURRY – PRICES GOOD THROUGH MAY 15, 2014

Call for our FREE Catalog! 866-872-1224

Actual Colors May Not Match Photo

5 COLORS-SAME LOW PRICE!

Green & Black, Yellow & Black, Red & Black, Blue & Black , Black & Black

DUTY-FLEX™ EPDM HOSE

NEW!

Designed by Pumpers for Pumpers

3" X 20'	3" X 25'	3" X 30'	3" X 33'	BULK 100'
~~$87.00~~	~~$99.00~~	~~$115.00~~	~~$125.00~~	~~$3.00 ft~~
$72.75	$86.95	$112.95	$115.95	$2.65ft

Actual Colors May Not Match Photo

Green & Black, Yellow & Black, Red & Black, Blue & Black

ADD 5% FOR RED AND BLUE

EPDM SUCTION BULK 100 FT ROLLS

2"	3"	4"	6"
~~$2.19~~	~~$3.69~~	~~$6.59~~	~~$11.35~~
$1.69 ft	$2.89 ft	$4.95 ft	$10.95 ft

EPDM SUCTION COUPLED MXF QUICK CONNECT

3" X 20'	3" X 25'	3" X 30'	3" X 33'
~~$87.00~~	~~$99.00~~	~~$115.00~~	~~$125.00~~
$82.50	$98.95	$124.50	$126.50

HOSE HEADQUARTERS

WE CAN CRIMP ANY HOSE UP TO 10" DIA.

PORTABLE TOILET HOSE

TIGER TAIL

ADD $9.95 FOR FITTINGS

2" X 25'	2" X 30'	2" X 35'	2" X 40'
~~$99.75~~	~~$113.00~~	~~$129.75~~	~~$145.50~~
$78.45	$94.07	$109.73	$125.44

THE FIRST HOSE FLEXIBLE ENOUGH FOR PORTA-BLE TOILETS & FULLY WARRANTED FOR GREASE!

PORTA-GREASE OIL RESISTANT HEAVY DUTY CORRUGATED PVC SUCTION HOSE

2" X 25'	2" X 30'	2" X 35'	2" X 40'
~~$106.45~~	~~$125.75~~	~~$145.05~~	~~$164.35~~
$90.00	$108.00	$126.00	$144.00

WE HAVE LEVERS & METAL GOODS IN STOCK!

BRASS LEVER VALVES

SHOW PRICE ON RIV ONLY - MZ AVAILABLE

CRAZY PRICE

3"	4"	6"
$85.00	$119.00	$230.00

BRASS LEVER VALVE COMBO

SHOW PRICE ON RIV ONLY - MZ AVAILABLE

Includes Brass Lever Valve, Type "F" Male Adapter by Male Thread and Dust Cap.

CRAZY PRICE

3"	4"	6"
$95.00	$133.00	$270.00

SINGLE UNION POLY VALVES

CRAZY PRICE

1½"	2"
$16.50	$21.50

BRASS BALL VALVES

SHOW PRICE ON RIV ONLY - MZ AVAILABLE

CRAZY PRICE

2"	3"	4"
$25.00	$80.00	$125.00

6 BOLT FULL PORT POLY BALL VALVES

CRAZY PRICE

2"	3"	4"
$29.00	$70.00	$148.00

STEEL MANWAYS

20" 6 Nut Lid

$160.00

PUMP PRICES SO LOW...WE'VE RAISED EYEBROWS!

FOR 1,500 – 3,000 GAL TANK

DRIP OR AUTO LUBE — 195 CFM

MEC5000 VACUUM PUMP

• 3" Connections

	SHOW PRICE
Drip Lube	$1,550.00
Auto Lube	$1,650.00
Muffler Pack	$2,575.00
Max Pack	$2,995.00

FOR 1,500 – 5,000+ GAL TANK

DRIP OR AUTO LUBE — 250 CFM

MEC6500 VACUUM PUMP

• 3" Connections

	SHOW PRICE
Drip Lube	$1,675.00
Auto Lube	$1,775.00
Muffler Pack	$2,725.00
Max Pack	$2,925.00

FOR 1,500 – 5,000+ GAL TANK

DRIP OR AUTO LUBE — 285 CFM

MEC8000 VACUUM PUMP

• 3" Connections

	SHOW PRICE
Drip Lube	$1,820.00
Auto Lube	$1,920.00
Muffler Pack	$2,850.00
Max Pack	$3,275.00

FOR 2,500 – 6,000+ GAL TANK

AUTO LUBE — 320 CFM

MEC9000 VACUUM PUMP

• 3" Connections

	SHOW PRICE
Auto Lube	$2,495.00
Muffler Pack	$3,450.00
Max Pack	$4,050.00

FOR 2,500 – 6,000+ GAL TANK

AUTO LUBE — 394 CFM

MEC11000 VACUUM PUMP

• 3" Connections

	SHOW PRICE
Auto Lube	$2,595.00
Muffler Pack	$3,550.00
Max Pack	$4,150.00

310 CFM

AUTO LUBE

PATRIOT 300 VACUUM PUMP

	SHOW PRICE
Auto Lube	$2,495.00
Muffler Pack	$3,450.00
Max Pack	$4.050.00

RUBBER PROTECTION SLEEVES FOR PUMP COUPLINGS

CRAZY PRICE

#6J	$14.00
#7J	$18.00
#8J	$23.00
#9J	$27.00
#10J	$39.00

COMPLETE WING NUT KIT

Wing Nut w/ Washer, Eye Bolt, Clevis & Roll Pins

CRAZY PRICE $9.25

WAS ~~$24.50~~

CALL TO ORDER TOLL FREE 866-872-1224 • www.varcopumper.com

SOURCE KEY 6M14

www.gapvax.com

GapVax®

Twenty Five Years of Manufacturing Excellence

25

MANUFACTURING

CUSTOM BUILT

INDUSTRIAL VACUUM TRUCKS,

HYDRO EXCAVATORS,

COMBINATION JETVACS,

SKID-MOUNTED VACUUM UNITS

AND MUCH MORE!

888-442-7829

THE PERFECT FIT PARTSEXPRESS OFFERS ALL OF THE PARTS & ACCESSORIES TO FIT YOUR NEEDS!

VAC-CON

EXPERTISE. TECHNOLOGY. RESPONSIBILITY.

Who's in Charge of Evolution?

The Vac-Con Combination Machine has evolved from many years of experience … the customer's experience! If you want to know what works … or not, ask the guy who spends his days at the end of a vacuum hose trying to do a good job.

Contact us Today!
888.491.5762 or
go to **www.vac-con.com**

We will listen because you make the evolution for better machines.

Scan the QR code to view a combination machine product demonstration.

A HOLDEN INDUSTRIES Company

GSA U.S. General Services Administration

HGACBuy THE SMART PURCHASING SOLUTION

NJPA National Joint Powers Alliance®

969 Hall Park Road • Green Cove Springs, FL 32043 • Tel: 904.284.4200 • Fax: 904.284.3305 • vns@vac-con.com
Vac-Con is a subsidiary of Holden Industries, Inc., a 100% employee-owned company