

# MUNICIPAL SEWER & WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

November 2008

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GETTING A GRIP ON  
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WITH THE PUBLIC ONLINE  
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TECHNOLOGY TEST DRIVE:  
A HIGH-POWERED CUTTING TOOL  
PAGE 42

## LISTENING CLOSELY

Technology helps Birmingham  
locate leaks and reduce  
non-revenue water

PAGE 24

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*"My crews verify pipe condition without confined space entry. With QuickView, they accomplish more footage in a safer manner, without full-blown crawler inspection."*

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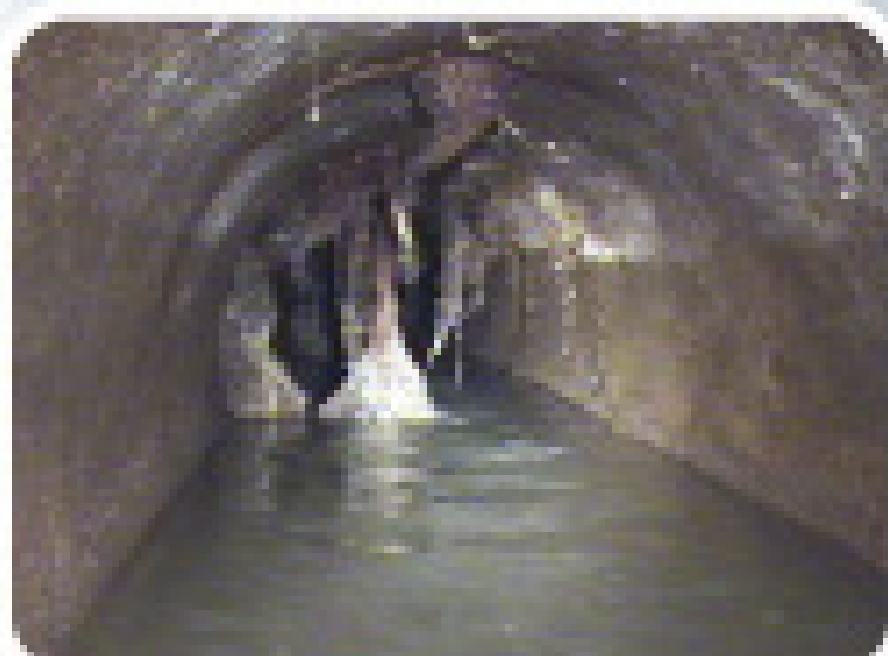
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Root Intrusion



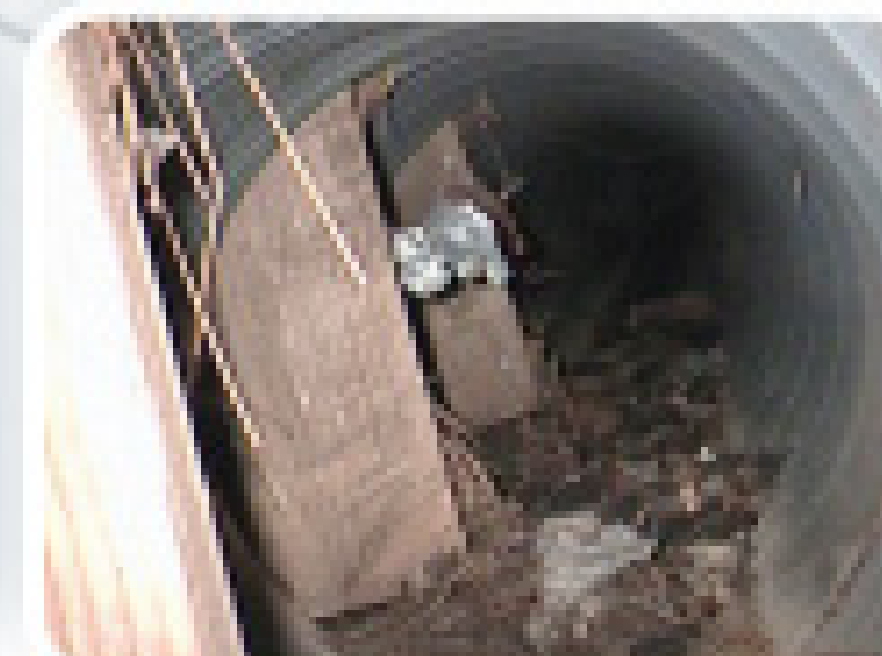
Severe Offsets



Gushing Infiltration



Fence Post Breach



Buildup



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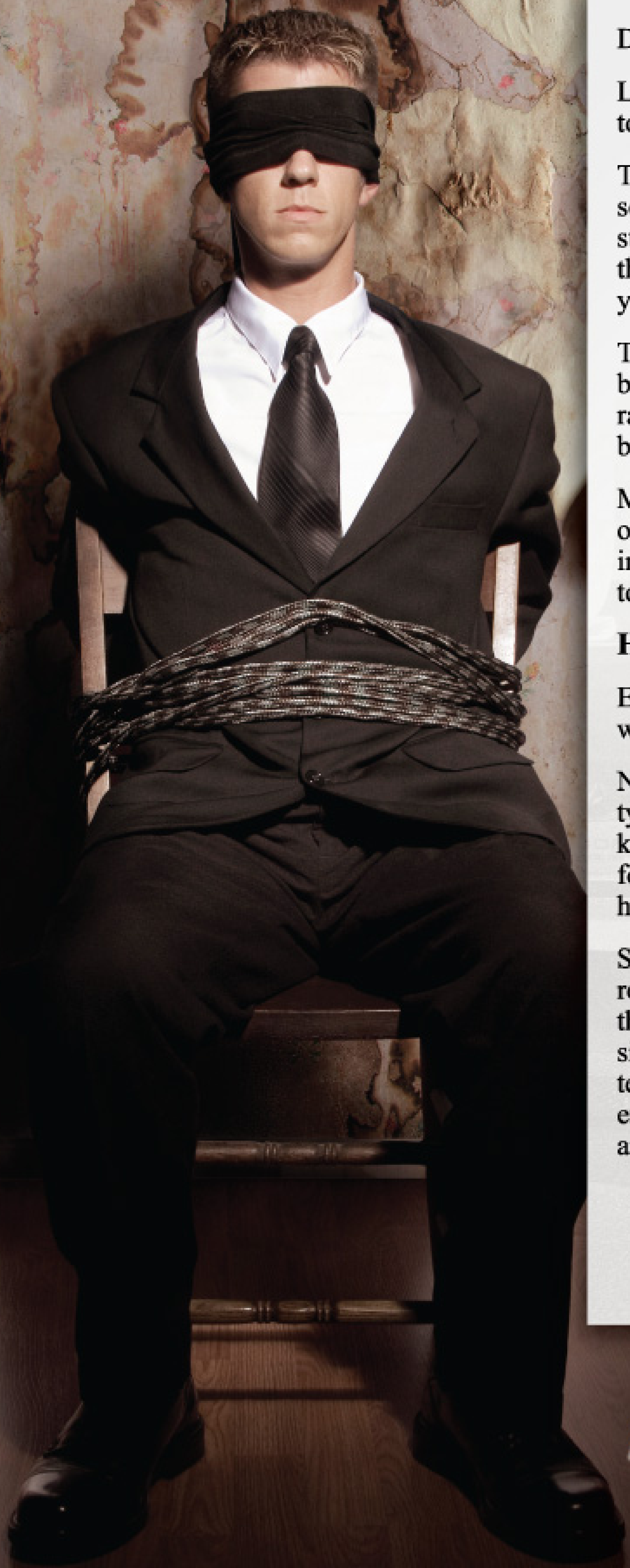
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Dear Engineers and Collection System Managers,

Lateral lining is the next challenge for municipalities in their drive to reduce I and I.

The problem is that **laterals come in all shapes, sizes and specs...** some with clean outs, some without...some with bends, some straight...some with live infiltration...the list is endless. Throw all these combinations and permutations together and you end up with over 1000 different possibilities.

The problem is further complicated because at the bid stage, information about every single lateral is rarely available and you and your contractor are bidding "blind" to some extent.

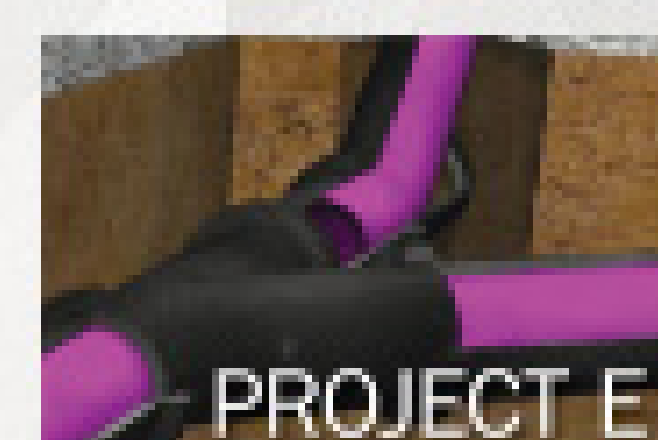
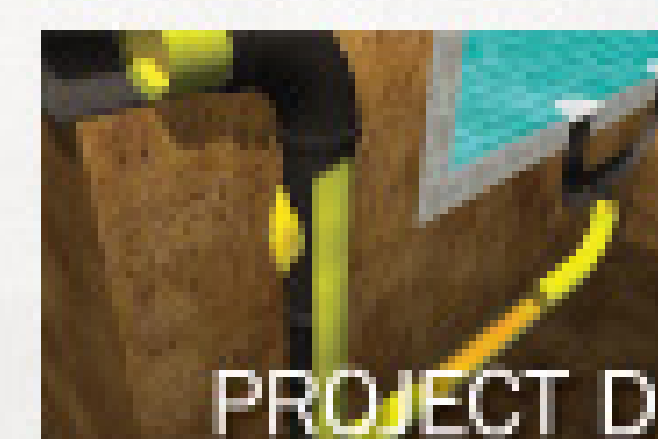
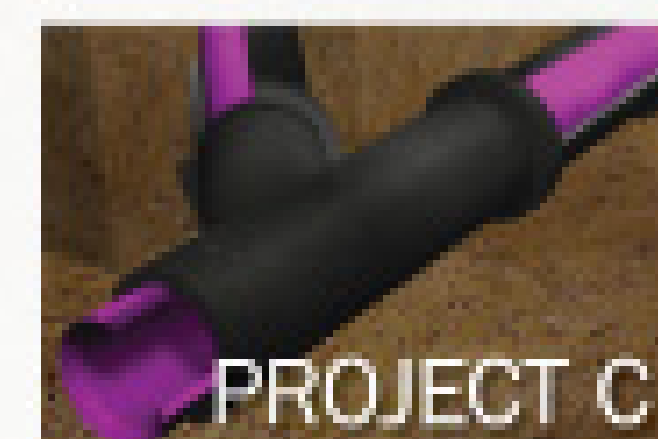
Mathematically it is virtually impossible for any one system to deal with all the variables, resulting in potentially specing a job that no one is able to complete.

## How do you get out of this bind?

Employ a contractor with sufficient "tools" to deal with just about any eventuality.

No different to a plumber with multiple wrench types, an Easy Liner Installer can bid with the knowledge that he has over 10 different processes for getting the job done. He might be blind but he is not bound by just one method.

So before you spec your next lining rehab project, release the ties that bind you and limit the unknowns that blind you. Call Easy Liner, the world's largest single resource of multiple lateral lining materials, technologies and 10 million feet of real world experience necessary to handle all the twists and turns that lateral lining can throw at you.



*L. Osi*

L. Osi, Founder  
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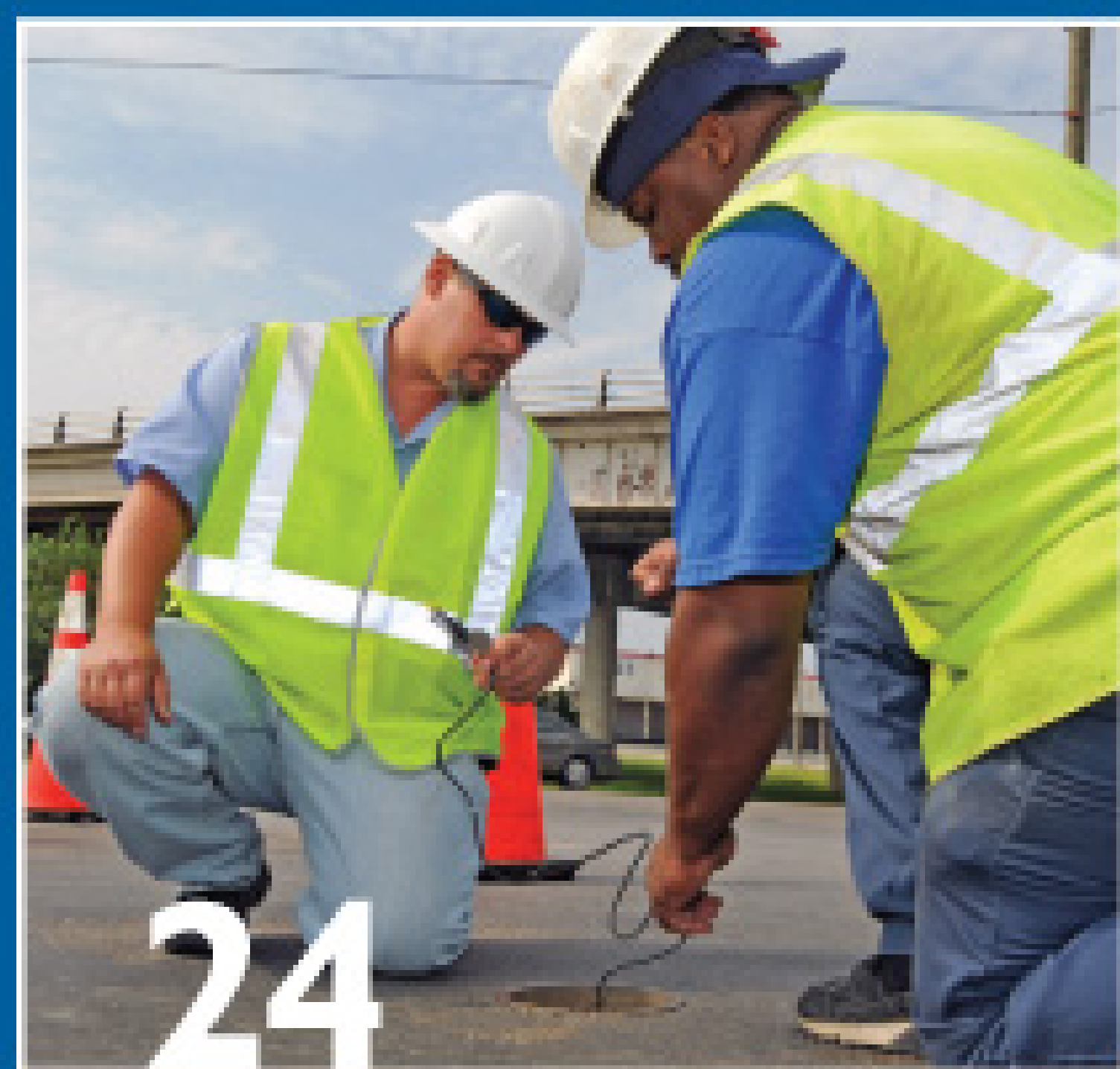
# INSIDE:

## LOCATION AND LEAK DETECTION



### COVER:

The Birmingham (Ala.) Water Works has used sophisticated technology to detect leaks and reduce non-revenue water in an area facing severe water shortages. Here, crew members Kenneth Gunn (left) and Jerome Little check the depth of a valve site where a Permalog leak detection device will be installed. (Photography by Hank Spencer)



## COMING IN DECEMBER 2008

### Special Issue: Field and Office Technology

- ◆ Water/Sewer: GIS Technology at Gainesville (Fla.) Regional Utilities
- ◆ Sewer: Cell phone-based data collection in Genoa Township, Mich.
- ◆ Storm: Green infrastructure in Cincinnati, Ohio
- ◆ Human Side: Training and retaining older workers

## FEATURES

### 16 SEWER: Learning by Doing

A step-by-step approach helps an Ohio community refine its sewer rehabilitation methods, reduce I&I substantially, and save money.

— Jim Force

### 20 Extend Your Hand

The people you meet at the Pumper & Cleaner Expo might help you solve a nagging problem or give you business ideas worth their weight in gold.

— Ted J. Rulseh

### 24 WATER: Listening Closely

Birmingham Water Works uses sophisticated technology to locate leaks and reduce nonrevenue water despite shortages of qualified people.

— Angus W. Stocking, L.S.

### 30 BETTER MOUSETRAPS: Revved Up

Custom-built standby generators enable a city in Washington to retrofit lift stations and build new ones to avoid environmental issues.

— Scottie Dayton

### 36 STORM: Plants Against Pollutants

An innovative wetland treatment system helps a growing Oregon city capture runoff from a commercial area and protect sensitive waters.

— Gary M. Stern

### 42 TECHNOLOGY TEST DRIVE: High-Powered Chewer-Upper

The Paikert cutting tool saves users money by ripping through tough clogs in pipes that otherwise would need to be dug up and replaced.

— Jim Force

### 48 Clamping Down

Cities look to security locking devices, stiffer penalties, different materials and stricter regulations on metal recyclers as ways to deter thefts of manhole covers.

— Gary M. Stern

### 54 The Dope on Diesel

Market conditions and other factors drive up the price of fuel for heavy trucks and equipment. Expect prices to remain high in the foreseeable future.

— Greg Northcutt

## COLUMNS

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On taxation editorials in this magazine, comments run about evenly split between pats on the back and kicks in the shins.

— Ted J. Rulseh

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Product Spotlight: Hydroexcavator helps users avoid overweight citations.

— Ken Wysocky

### 58 THE HUMAN SIDE: Making It Fun

The Portland Water Bureau uses entertainment as a tool to deliver vital information — and enhance public support for its initiatives.

— Ken Wysocky

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— Irvin Gemora

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NOVEMBER 2008

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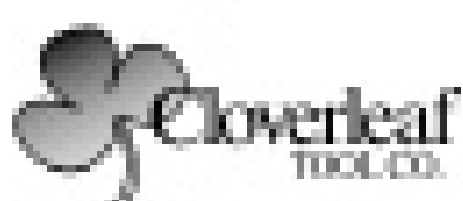
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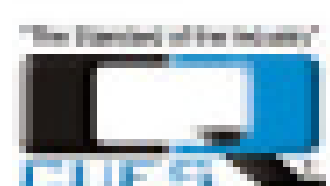
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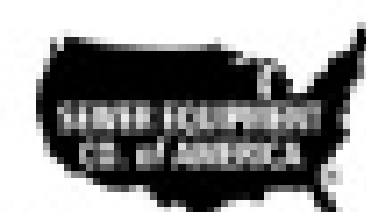
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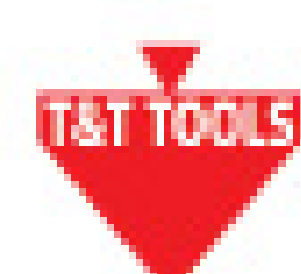


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## MUNICIPAL SEWER & WATER

FOR SANITARY, STORM AND  
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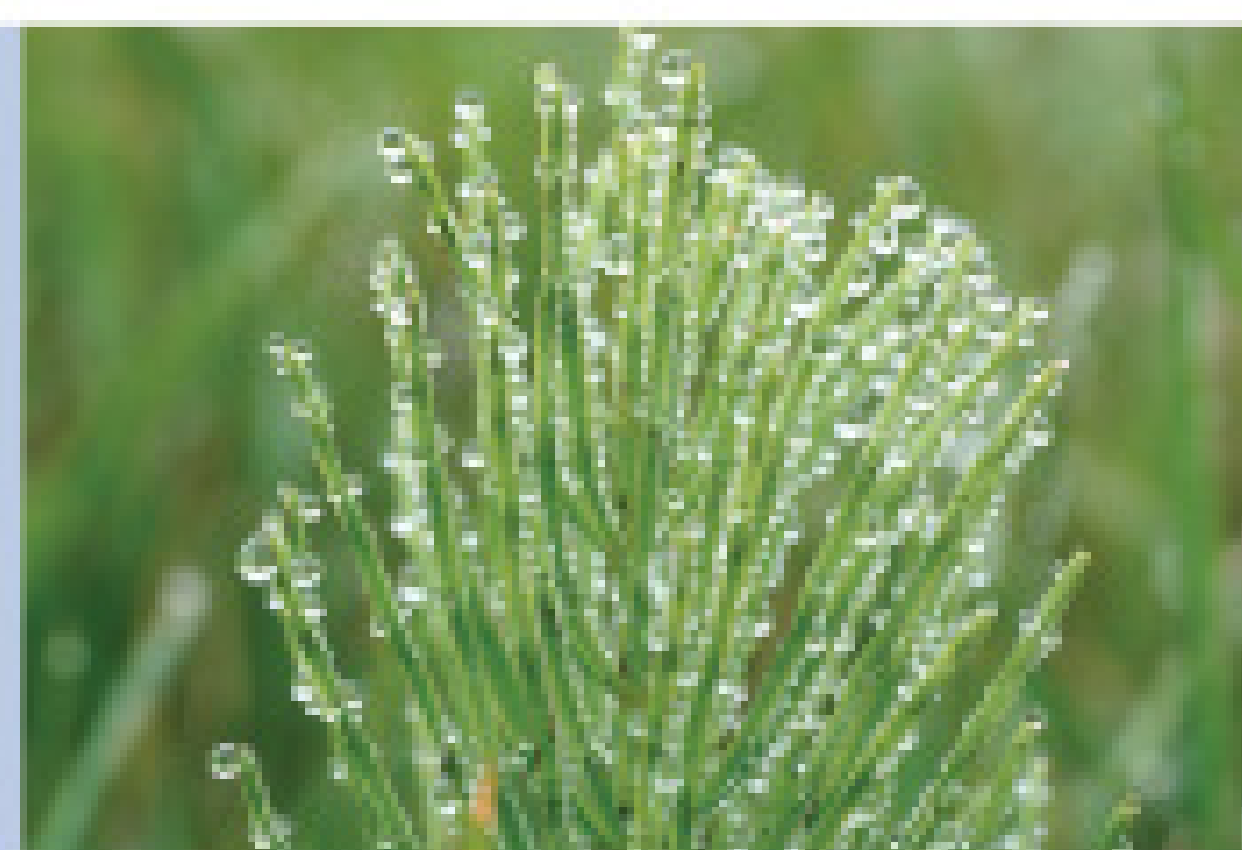
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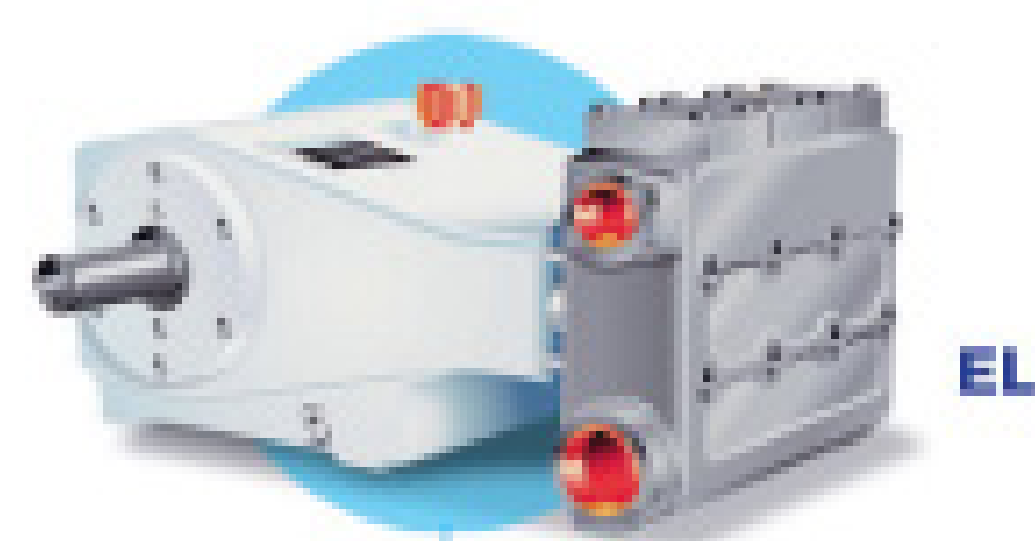


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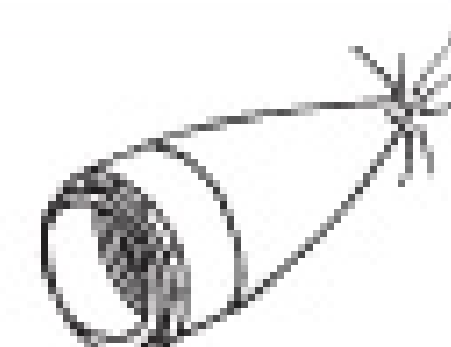
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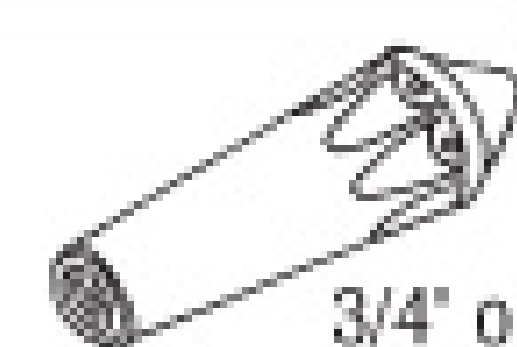


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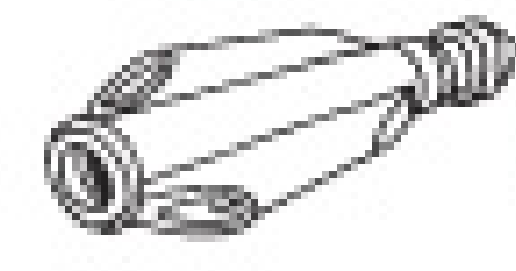
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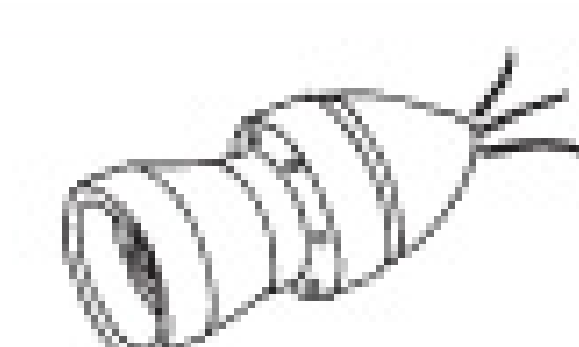
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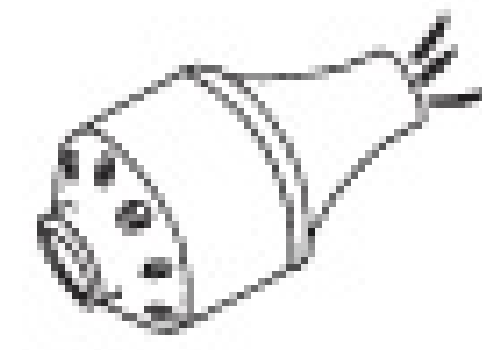
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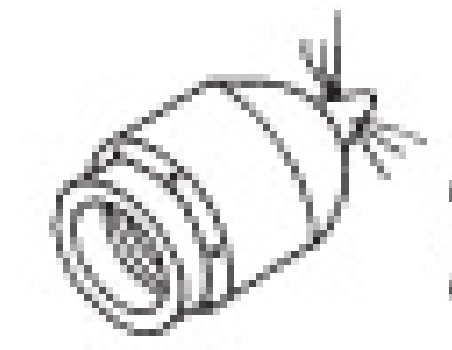


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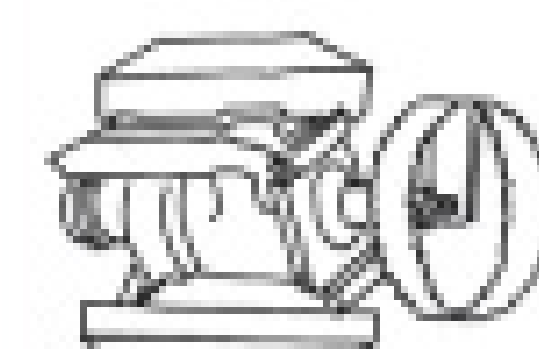


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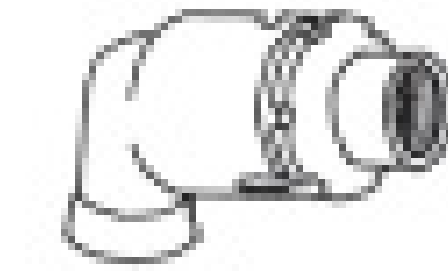
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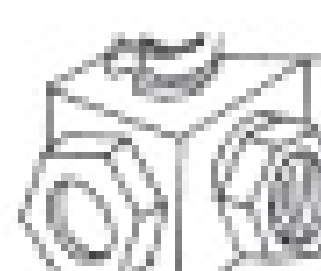
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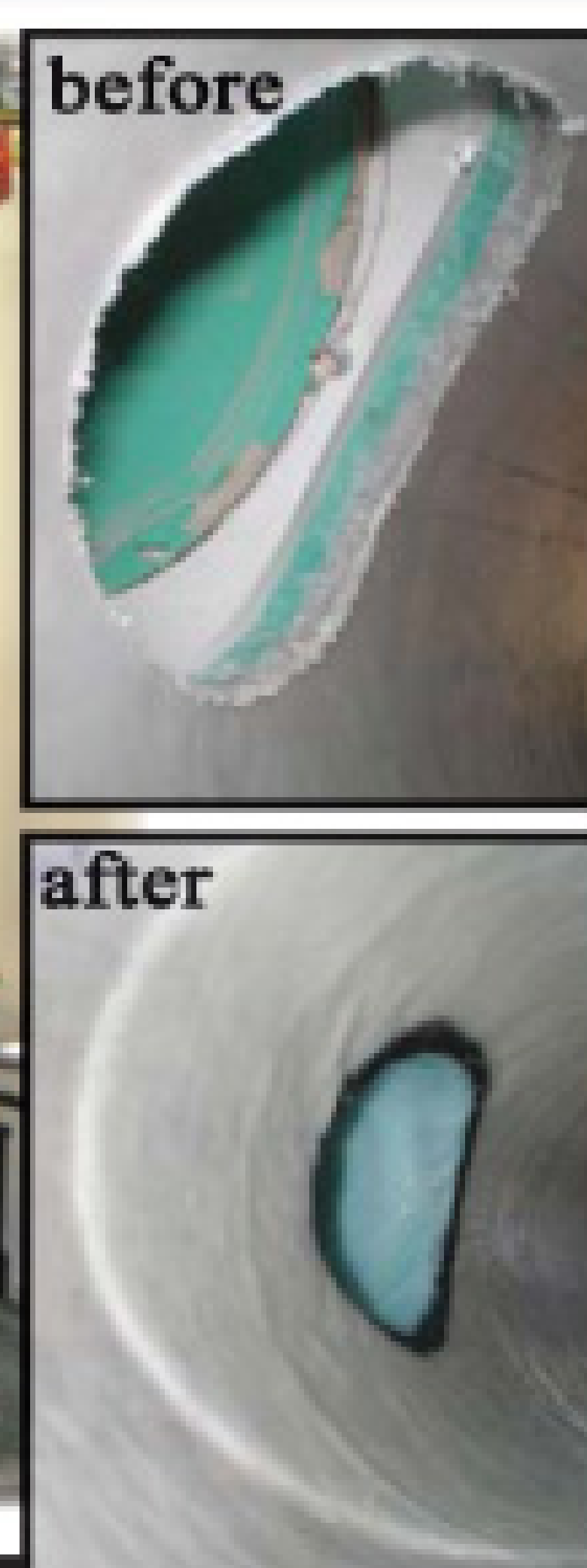


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5,975,878; 6,001,212; 6,029,726; 6,044,867; 6,068,725;  
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# FAN MAIL VS. HATE MAIL

On taxation editorials in this magazine, comments run about evenly split between pats on the back and kicks in the shins

**I**knew the exact day (July 2) when the July issue of this magazine began hitting readers' desks. That's because responses to my column headlined "Taxes Are Good" started hitting my e-mail inbox.

I've written several columns about taxation, and they are usually pretty tough on hard-line anti-taxers. The July column went a little further, stating without disclaimers or equivocation that, well, taxes are good — because of what they buy. So it wasn't surprising when the mail volume ran higher than for previous ones on the topic.

## Price of community

In the end, fan mail and hate mail ran about even. This time, probably because my words were less measured, the responses were, too. But something interesting happened in the exchanges I had with those who wrote — about which, more later.

Clearly, taxation is an issue that hits a nerve. Those who reacted favorably are largely employed in government or in water and sewer utilities that rely on taxes or user fees. Those who reacted negatively mostly work in the private sector. No surprise there.

One reader said, "I have worked for a water district for nine years now, and I am learning how much work and money it takes just for the ability to turn your faucet on and have clean water."

And another, a supervisor with a metropolitan water and sewer authority: "I have always been puzzled by the unquestioning anti-tax rhetoric that a certain segment of so-called leaders use to get the crowd riled up. No one takes note of the fundamental premise of human existence: That the survival of our species depends on living in some sort of community. Taxes are a way to pay for the benefits of mutual protection and shared privilege that are essential to us."

## Non compos mentis?

On the flip side: "I am going to assume this editorial was meant as a ruse to rile up your readers — I don't want to consider the other option of your being non compos mentis. ... If it only were that my tax money was being spent for infrastructure and security both socially and militarily — but such is not the case."

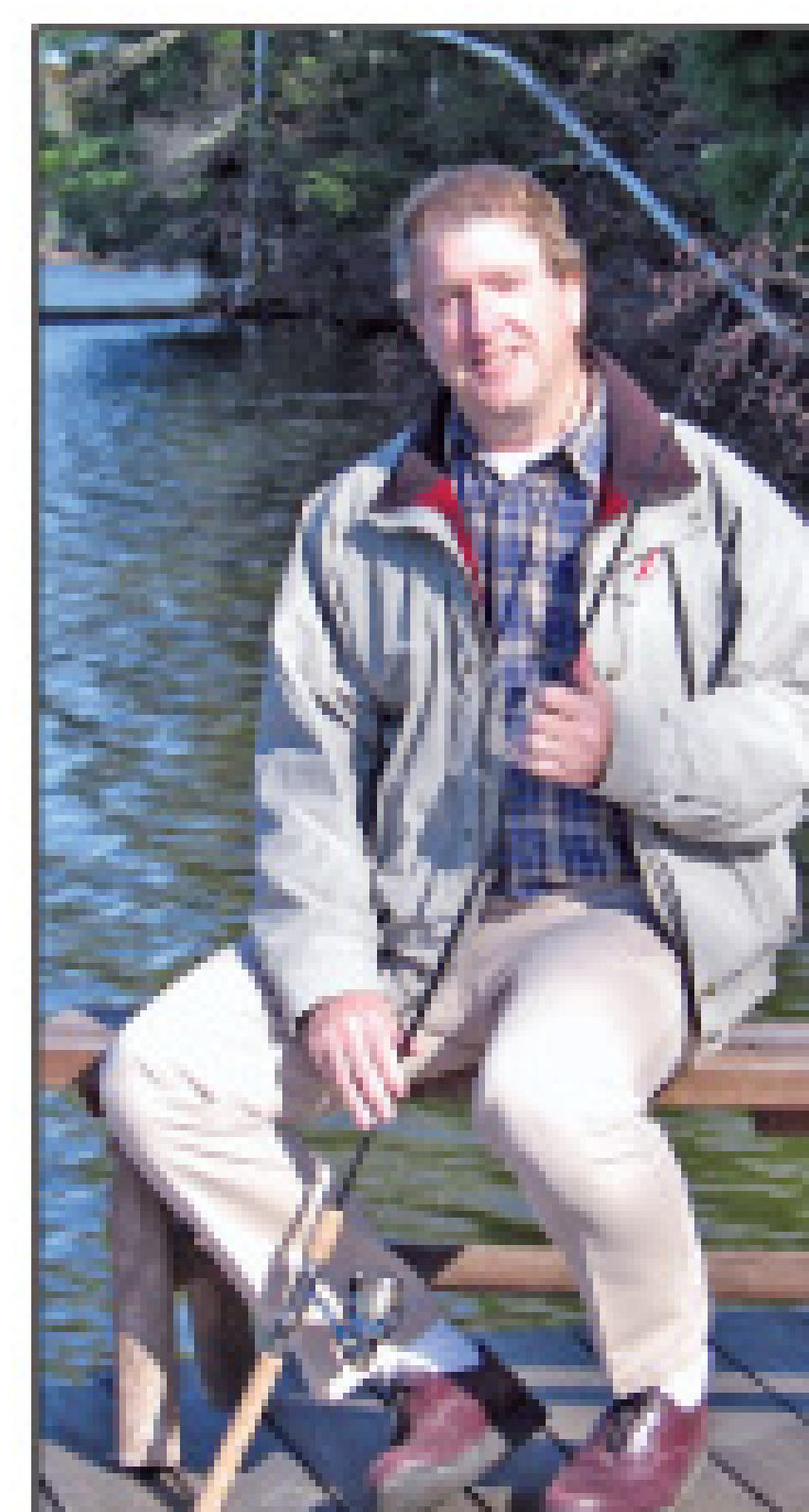
The writer, a plumbing business owner, went on to list several federal government appropriations from the current year with which he took issue, including \$1.6 million for the Shedd Aquarium in Chicago, and \$470,000 for a National Oceanic and Atmospheric Administration (NOAA) Maritime Museum in Mobile, Ala.

And this from another business owner hailing from what he called People's Socialist

## When I softened my position, those who had written to oppose me softened theirs — even those who had attacked me the hardest.

Democratic Republic of Michigan: "I have heard an estimate that it takes about three hours a day of paperwork for the average small businessperson, with the actual amount increasing about 25 percent per year. That's a tax on my time — I cannot ever go home at 5 p.m. and am happy if I do by 9 p.m. ... The whole concept of taxes and other business torture fees is that the government is smarter than me on how I spend my money. I don't think so."

Then this one: "You asked, 'Why is it OK for retailers, doctors, builders and restaurant owners to raise their prices when warranted, but not OK for the city and school district to charge more when their expenses go up?' The biggest difference is that the retailer and the doctor and the restaurant owner are in a competitive economy — they do not enjoy the monopoly



## FROM THE EDITOR

*Ted J. Rulseh*

power that cities and school districts do.

"I can't send my kids to a school somewhere else on the money I pay in school taxes. I can't get my water from some other company. ... I am forced, by law, to deal with the entities who, for good or bad, run my township or city or state."

## Backing off

I e-mailed back to thank the people who gave me pats on the back. I responded to those who kicked me in the shins by challenging some of their assumptions but also admitting that I didn't think government was perfect — that public officials had to be efficient and confine tax support to things that are truly important.

That's where it got interesting. When I softened my position, those who had written to oppose me softened theirs — even those who had attacked me the hardest. So it does appear there is common ground.

It seems that when both sides give a little, there is room for reasoned discussion. That discussion then might focus on exactly what level of taxation, and for what purposes, is acceptable. A hundred people probably have a hundred opinions on that, but where there is discussion, there is usually room for compromise.

Maybe it's possible for people from all perspectives to debate not whether we pay too much or pay too little, but whether what we get in services is worth what we pay in taxes and fees. That's a critical connection to make, and it's the basis for any productive discussion of taxes and spending.

It's also the connection I've been trying to establish in all the columns I've written on this topic. ♦

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



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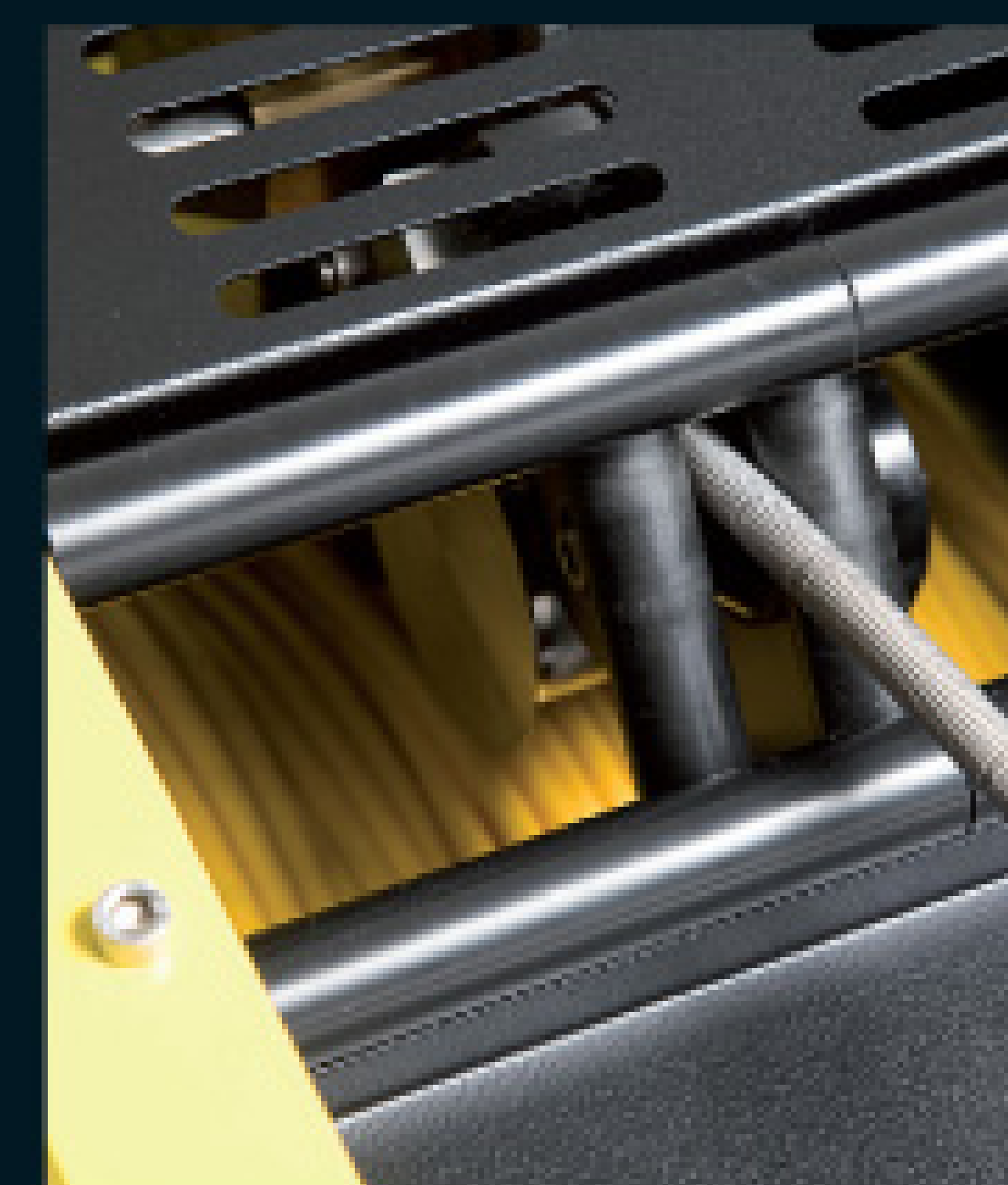
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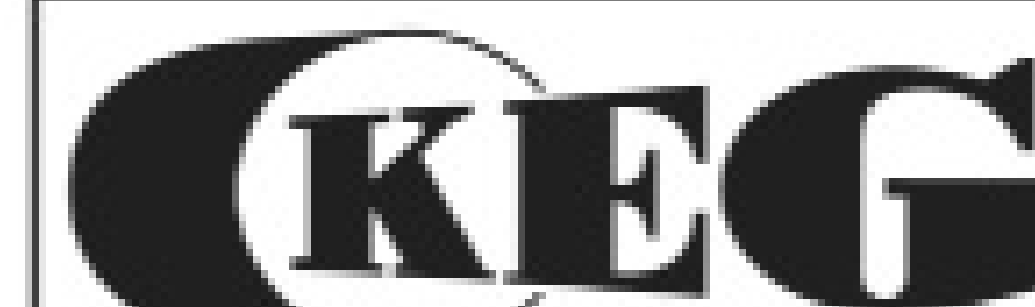
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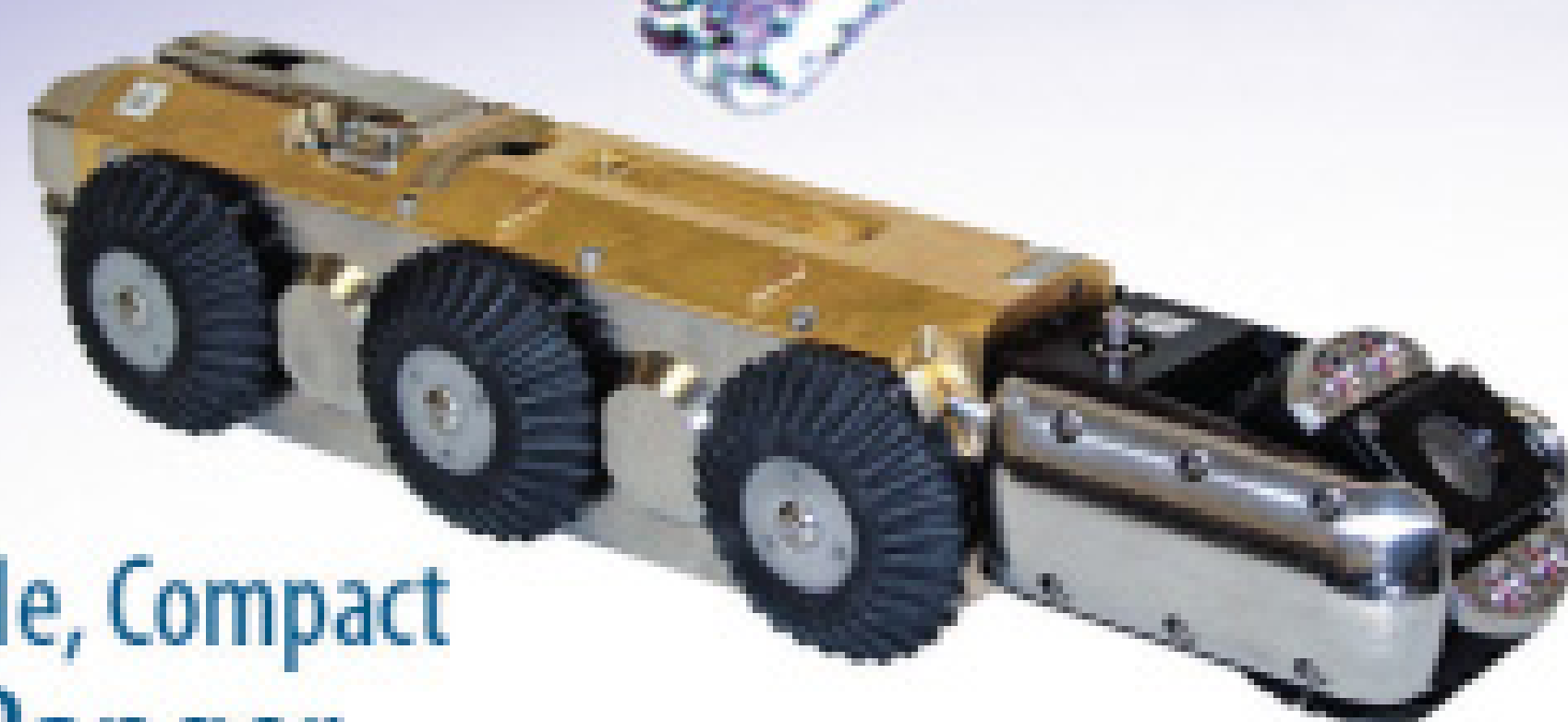
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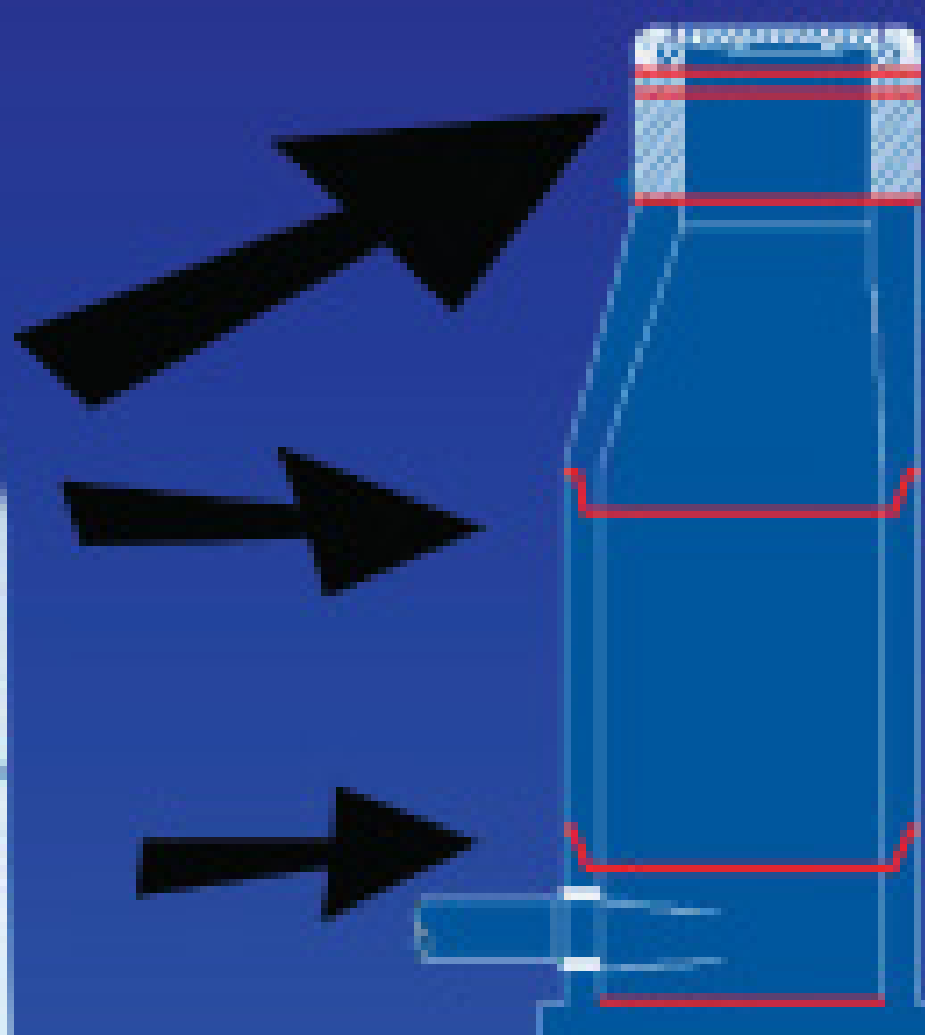
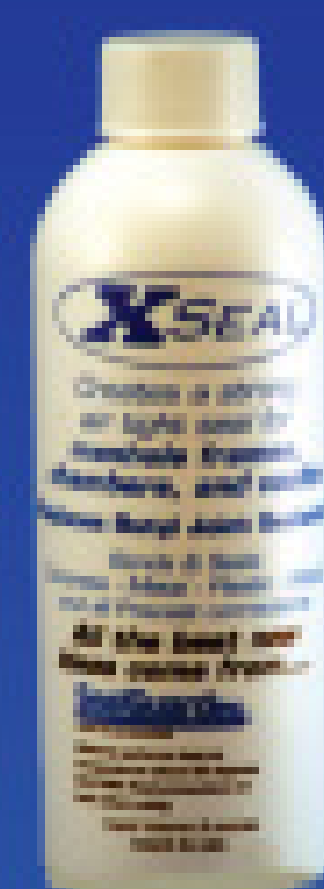
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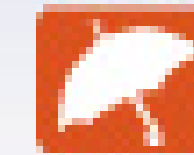
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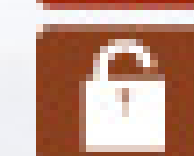
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Foreman Troy Muron and city engineer Bob Kelly inspect a finished pipe lining on a video camera monitor. The city's sewer rehabilitation program has helped drive down I&I. (Photography by Larry Bennet)

## FOCUS: SEWER

# LEARNING BY DOING

A step-by-step approach helps an Ohio community refine its sewer rehabilitation methods, reduce I&I substantially, and save money

By Jim Force

**L**eak detection and repair has truly been a live-and-learn experience in Westlake, Ohio.

Aided by a unique testing protocol that pinpoints problem areas, the city has used different products, contractors and installation methods to fix infiltration and inflow (I&I) problems over the last seven years.

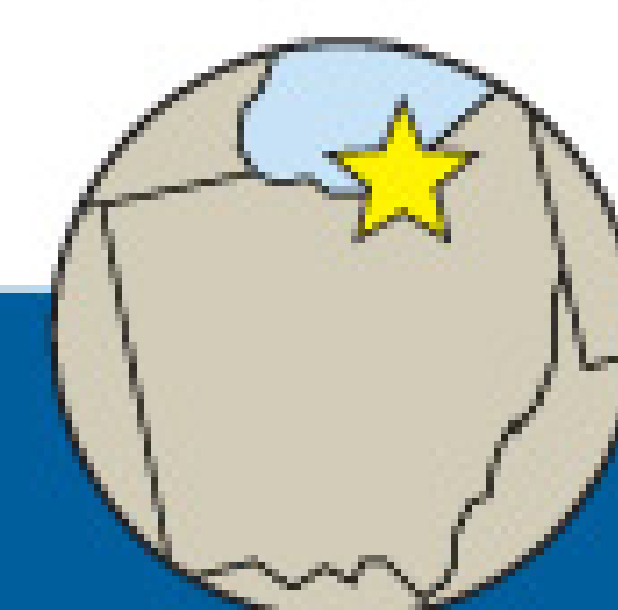
Each project provides valuable

lessons that are in turn applied to the next project, saving money and improving efficiency of the process. "Every time, we go back and see what we've learned," explains city engineer Bob Kelly. "Then we incorporate that into the next phase."

I&I issues began to overwhelm Westlake in the 1990s. "After a significant rainfall, we would get hundreds of calls reporting flooded

basements," Kelly says. "Some of the storm surges in the sanitary lines were 7 or 8 feet, higher than elevation of many of the basements."

In those days, I&I issues were addressed based on the number and source of emergency phone calls from homeowners. "Most of the problems were in the laterals from the sewer line to the house, so we started by digging a pit in the front yard, taking out and



**PROFILE:**  
City of  
Westlake, Ohio

**POPULATION:**  
34,000

**AREA:**  
15.97 square miles

**FOUNDED:**  
1811 as Dover Township;  
name changed to Westlake  
in 1940

**INFRASTRUCTURE:**  
125 miles of sanitary sewer;  
125 miles of storm sewer

**ANNUAL BUDGET:**  
\$500,000 to \$1 million  
(construction)

**WEB SITE:**  
[www.cityofwestlake.org](http://www.cityofwestlake.org)





Westlake crew members Joshua Muron, Bobby Vernatter, Neil Sobodinski and Troy Muron work on the wet-out assembly line on a CIPP lining project.



City engineer Bob Kelly examines a sample of CIPP lining. The city collects neighborhood data for about a year to develop the most cost-effective I&I solutions available.

replacing the cleanout, and TV-scanning the lines," says Kelly.

The city used grout to make the necessary repairs. Homeowners paid for their lateral repairs, while the city paid for any work on the sewer line. Results were good. In some cases, a 7-foot storm surge was reduced to a 7-inch storm surge, reports Kelly.

Still, the city sought a more efficient method for addressing

**"Every time, we go back and see what we've learned. Then we incorporate that into the next phase."**

**Bob Kelly**

stormwater intrusion, and in 2001 embarked on a pre-emptive I&I elimination program, working with its engineering partner URS Corp. of Cleveland. URS developed a unique method of dye testing so that leaks could be pinpointed from downspouts, foundations and cracked driveways (see sidebar). And instead of just responding to emergencies, the city began systematically going from one neighborhood to another, looking for leaks and repairing them.

Over time, as the city completed each project, Kelly's crew gained knowledge that was applied to the next project. In other words, as the art evolved, the city made the fixes better and more cost-effective. In his role, Kelly is assisted by an



During residential dye testing, dyed water is sent through downspouts and gutters to simulate rainfall.

Photo courtesy City of Westlake

## DYE TESTING PINPOINTS PROBLEMS

To pinpoint the sources of infiltration and inflow in Westlake, Ohio, URS Corp. developed a unique method of dye testing using water from fire hydrants.

A specially designed PVC manifold steps the water flow down from fire hose to garden hose volume, and can distribute the flow to several hoses at once. Different-colored dye solutions are then applied to downspouts, foundations, driveways and other potential sources of I&I.

CCTV units monitor the sewer lateral for traces of the dye, which can then be tied back to the source of the leakage. "We knock on doors and ask the homeowner to turn off the water for 15 to 20 minutes while we run the test," says Scott Belz, field manager of the water resources group of URS. "They've already been notified of the procedure by the city, so they're usually very cooperative."

The reports from the testing generated by URS serve to guide the city's rehabilitation efforts. "It's made the rehab effort more precise, more cost-effective," says Belz. "Based on the data, the city may be able to remedy the problem with spot repairs, rather than rehabbing an entire lateral or sewer line."

Says Westlake city engineer Bob Kelly: "The more data, the better. Testing pinpoints the source. We're really happy with the results."

engineering director as needed, a part-time engineer, a part-time engineering technician, and a two- or three-member service crew as needed.

### Salem-Radcliffe project

The city first employed its approach in the Salem-Radcliffe subdivision in 2001. United Survey Inc. (United Liner) of Cleveland lined sanitary laterals with the cured-in-place (CIP) method, using a felt liner with a polyester resin and steam curing.

"We excavated a pit in the yard and lined both ways — from the cleanout to the street as well as from the cleanout to the house," Kelly says. Downspout testing identified laterals needing work. The rehab team visually inspected manholes and used a sprayed-on product on those in need of sealing. After rehabilitation, the team monitored the flows. Kelly and staff reported these lessons learned in the Salem-Radcliffe project:

- The lining stopped short of the mainline and did not



## Flow Data Results for Sanitary Sewer Rehabilitation Projects

Westlake, Ohio

PROJECT		RAIN (IN.)	SEWER LEVEL (IN.)	SEWER VELOCITY (FPS)
Salem-Radcliffe				
Pre-rehabilitation				
	Average Dry Weather		1	
	April 8, 2000		50	
	Difference		49	
Post-rehabilitation				
	Average Dry Weather		2	1
	March 30, 2002		12	7
	Difference		10	6
Overall Reduction in Sewer Level			80%	
Berkeley Estates				
Pre-rehabilitation				
	Average Dry Weather		2.6	1.9
	May 10, 2003	0.77	24	4.6
	Difference		21.4	2.7
Post-rehabilitation				
	Average Dry Weather		2.6	1.7
	April 22, 2006	1.60	3.7	2.6
	Difference		1.1	0.9
Overall Reduction in Sewer Level			95%	

address the mainline/lateral interface.

- Groundwater migrated down the lateral to the path of least resistance or protection from the liner, entering at the mainline/lateral connection.
- Flow monitoring showed a significant reduction in I&I (see table above), and flooding complaints ceased.

In a second project in Berkeley Estates in 2004, United Survey lined laterals from the mainline sewer to the house using a CIP process consisting of felt liner, polyester resin and ambient curing. As before, the work was based on downspout testing results. The tests also indicated where the mainline needed to be grouted.

To counter leakage at the mainline-lateral interface, the contractor grouted the interface. In addition, manholes were sealed using a cementitious product. The project provided these lessons:

- Liner failures, possibly due to ambient curing or the resin introduction process, made it difficult to grout the mainline-lateral connection. Septic systems previously served the area, and there

were no records to show how those homes were tied into the mainlines when they were converted to sewer. "Sometimes, the contractor had to excavate two pits to expose both the storm and sanitary laterals, and this was not included in the original bid document," Kelly explains.

- The cementitious sealant was more cost-effective than the spray-on variety.
- I&I decreased substantially, and no flooding complaints have been received.

### Canterbury project

Most recently, Westlake completed the Canterbury area project in 2007 using AAA Pipe Cleaning Corp. of Cleveland. At first, the sanitary lateral lining system employed a CIP process identical to that of the Berkeley lining project. However, the resin was later changed to epoxy because of issues with getting the product through customs. Also the method of curing the CIP was changed to hot water. Downspout testing determined the laterals needing repair.

An excavated pit exposed both storm and sanitary laterals and



Crew members Neil Sobodinski, Joshua Muron and Bobby Vernatter help extract the calibration bladder assembly, which includes a recycle hose and extraction cord.

**"We spend one year testing and gathering data in a neighborhood, then devote the next year to the construction and repair. Data collection is critical, as it enables us to pinpoint problem areas and focus the repair work. We used to do about 75 homes for \$1 million, but now we're able to do 130 to 140 homes for \$1.3 to \$1.4 million every other year."**

**Bob Kelly**

provided access for lining the laterals and installing new cleanouts. Mainline areas identified in the testing were grouted. So were the mainline-lateral interfaces and laterals that showed signs of infiltration or staining. Manhole sealing used a cementitious product with a flexible urethane at the frame/wall interface.

In addition, the contractor vacuum-tested the manholes and performed flexural modulus and strength testing of the liner to ensure compliance with the specifications. Lessons learned this time included:

- Testing increased knowledge of strength flexibility of the liner product for meeting

the specifications.

- The improved methods for sampling and analysis produced more accurate results.
- Quality-control methods showed that samples taken at the edge of the pit were not consistent with results taken further inside the pipe that more closely represented in situ conditions.
- More information was needed from the I&I field-testing procedures that were used on this portion of the project. The additional information can identify blocked downspouts, failed connections or repairs that could limit the rehabilitation to spot repair. This would further reduce repair costs while significantly reducing I&I.

#### Highly cost-effective

Westlake's learn-by-doing approach has not only refined the I&I elimination process — it has proven highly cost-effective. "We spend one year testing and gathering data in a neighborhood," says

Kelly, "then devote the next year to the construction and repair. Data collection is critical, as it enables us to pinpoint problem areas and focus the repair work. We used to do about 75 homes for \$1 million, but now we're able to do 130 to 140 homes for \$1.3 million to \$1.4 million every other year."

The city has also changed the way it finances the projects. Originally, the city paid for the public section of the project, while the homeowner paid for the rehab work from the street to the property. Now, the city picks up the whole tab, and that has increased public support of the work and associated inconvenience.

"The city was picking up 80 to 90 percent of the cost anyway," says Kelly, "and running the lining in both directions didn't cost that much more, so we decided there would be no cost to the homeowner. That's also made it easier to get the homeowners to accept the project — 99 percent are in support of what we're doing." ♦



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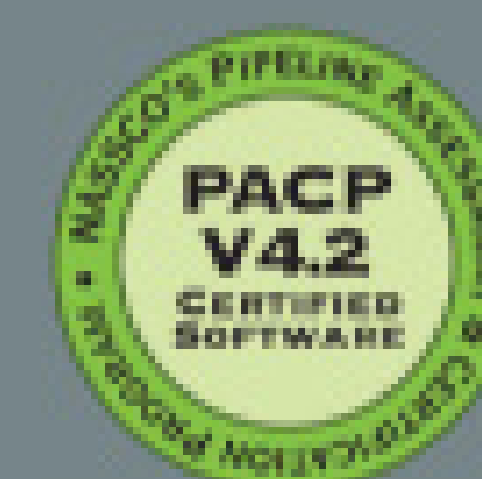


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# EXTEND YOUR HAND

The people you meet at the Pumper & Cleaner Expo might help you solve a nagging problem or give you business ideas worth their weight in gold

By *Ted J. Rulseh*

A friend of mine calls it the Three-Foot Rule. It means that when he's at a trade show, if you come within three feet of him, he's offering to shake your hand.

It's a good rule to observe at the 29th Annual Pumper & Cleaner Expo, Feb. 25-28 in Louisville, Ky. You don't go to the Expo (or any other trade show) just to take classes and kick tires. A big reason to go — maybe the biggest — is to meet people who can help your business and who may become your friends.

The most helpful person you meet at the Expo may not be an exhibitor or a seminar presenter. He or she may be another attendee you meet while standing in line, grabbing lunch at a food stand, or enjoying an evening meal at a downtown nightspot.

You'll have lots of chances to extend your hand at the Expo, which again includes more than 600,000 square feet of exhibit

space, a full education lineup, top-quality entertainment and tailor-made opportunities for networking.

## **All-day networking**

"The great thing about a trade show is that you get to meet people who are in your business, but are not your competitors," says Bob Kendall, owner of COLE Publishing. "You'll meet people from other states or even other countries who have the same challenges and the same problems as you do."

"The person standing next to you at an exhibitor's display may have the answer to a problem you've been struggling with for years. Or maybe an idea that you can put to work when you get back home and start earning more profit. You'll never know unless you introduce yourself."

Networking starts on the exhibit floor, where you can meet the people who design and build the equipment you use and the new technologies you're consider-

ing. A member of an exhibitor's team could become an informal advisor who helps your business for years.

On Education Day and at other

## **The places to be**

Besides on-the-fly networking, the Expo gives you venues made for bringing business people together.

---

**"The person standing next to you at an exhibitor's display may have the answer to a problem you've been struggling with for years. Or maybe an idea that you can put to work when you get back home and start earning more profit. You'll never know unless you introduce yourself."**

---

**Bob Kendall**

seminars, don't just walk out when the presentation is over. Stick around for the questions and answers. Then go talk one-on-one with the presenter.

All day, whatever you're doing, take every reasonable chance to say hello. Don't just hang out with your own team. Mingle. Shake hands. Sit down at a lunch table with someone you've never met. Start a conversation. See where it leads.

**COLE Pub.** This popular feature of the 2008 Expo is back, better than before. Here, in the open space outside the exhibit hall, you'll find a perfect place to share a snack and refreshments after show hours and before you head back to the hotel.

A bar will encircle the custom-built Whiskey Runner truck with its 2,000-gallon wooden bourbon barrel. Vendors will serve a variety



of finger food and appetizers. Seating will be set up in clusters. It's an inviting place to strike up a conversation.

**Industry Appreciation and Networking Party.** This Expo tradition opens after show hours on Thursday evening in the COLE Pub area. For two hours, you can enjoy beverages, light snacks and entertainment while meeting up with interesting people in our industry.

**Wine and Cheese Party and Fashion Show.** Designed for women, this first-time event will be held on Thursday afternoon in a meeting room on the upper floor of the convention center. It's a chance to share the special challenges of being a woman business owner or manager, or working in a business with a spouse.

**Hospitality events.** Many Expo exhibitors hold private hospitalities throughout the days of the show. Most are by invitation only — but if you're invited, by all means, go. You can bet that most

invited guests are leaders in their fields. Enjoy their company, find out what they can teach you, and share your secrets, too.

#### Remember the rule

The Expo is the largest annual show of its kind for environmental service professionals, and it only comes around once per year.

"Networking helps you make the most of the time and money you spend," Kendall observes. "In fact, just one good contact can return your investment many times over. Many regular Expo attendees know this from experience."

Look for details about the Expo in the special pages in this magazine. The early Expo registration fee of \$40 applies until Jan. 23. Registration at the door is \$60. To find out more, visit [www.pumpershow.com](http://www.pumpershow.com) or call 800/257-7222.

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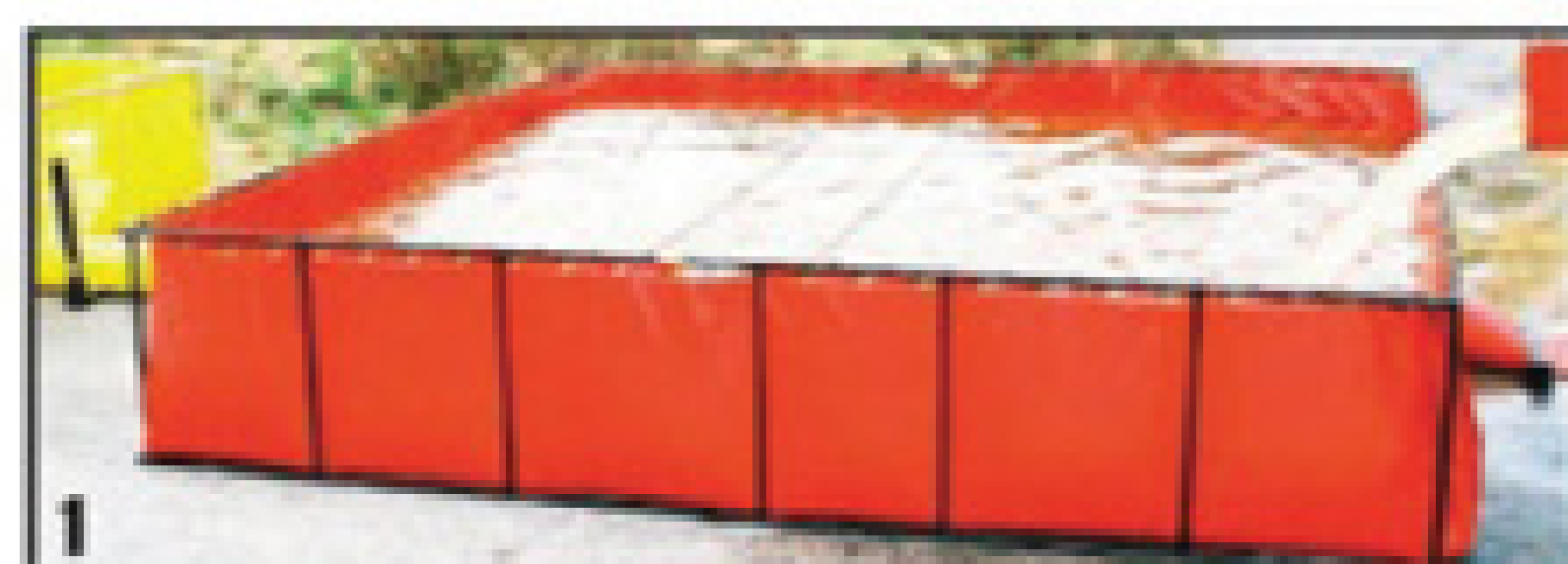
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New 2007 Volvo VHD 64F, VacAll 1215 Combination Sewer Cleaner, Available with Hydro-Excavation package, Hibon TS56 Blower 18 Hg, MSS 55 Water pump 80 gpm @ 2000 psi



New 2007 Volvo VHD 64F, VacAll 1215 Combination Sewer Cleaner, Available with Hydro-Excavation package, Hibon TS56 Blower 18 Hg, MSS 55 Water pump 80 gpm @ 2000 psi



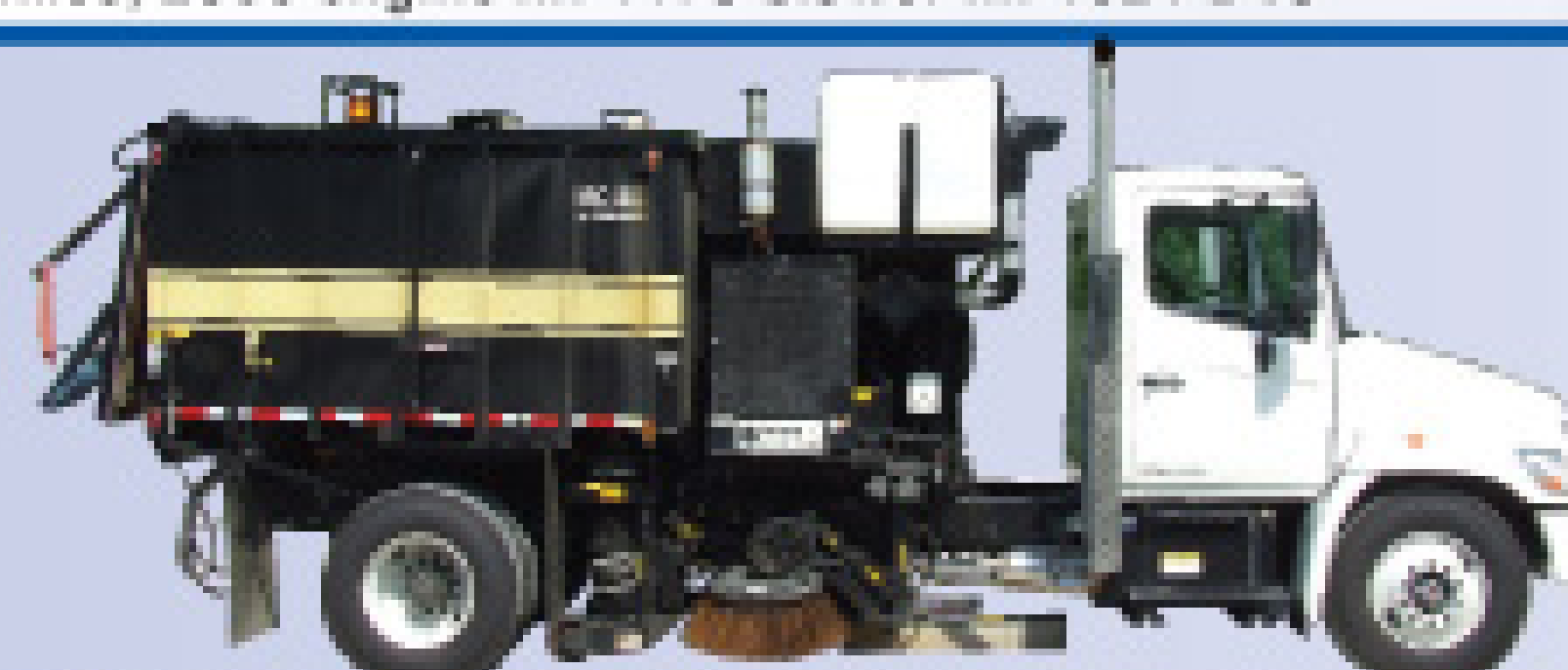
2005 International 7600, Vac-con 4716SMXD Hydro-Excavator, 16 cy Debris tank, 3000 psi @ 15 gpm cat 3560 73,370 miles, 2560 engine hr. 1175 blower hr. 1021 DVJ



2000 Sterling LT9513, Clean Earth wet- Dry Dresser Roots 1021 DVJ Blower, 16 cy Debris 181506 Miles, 1610 Blower hr.



2004 Sterling LT7501, Vac-Con V312LHAE Combo. FMC-Bear Water pump 80 gpm @ 2000 psi, 16 cy, 13330 miles, 2230 Engine hr., 555 Auxilliary eng. Hr.



New 2008 Hino 338, VacAll / Clean Earth E10 Sweeper, All new except 2004 Cummins 6BT Auxilliary engine with 583 hours.

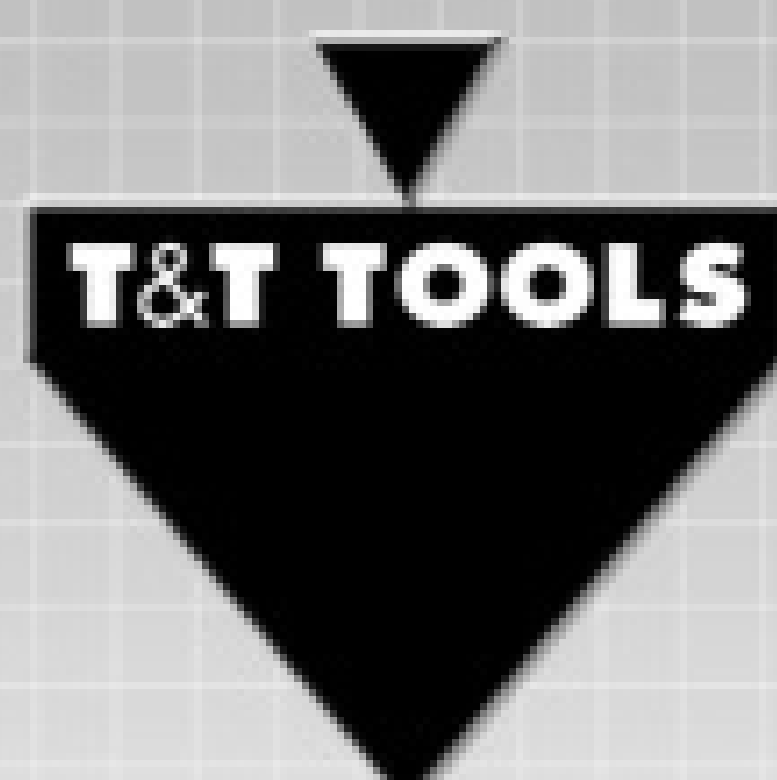


2004 Sterling LT7500, AquaTech B-10, Lateral hose reel, Cat C-7 engine, 3034 hours, 64456 miles, 1000 gal. water, 80 GPM @ 2000 PSI, Roots 824 Blower, 15" Hg 3300 CFM



Coming soon; new 2008 Sterling Acterra, Presvac DOT 407/412 dump type vacuum unit with choice of PV750 vacuum pump or VTB 820 blower.

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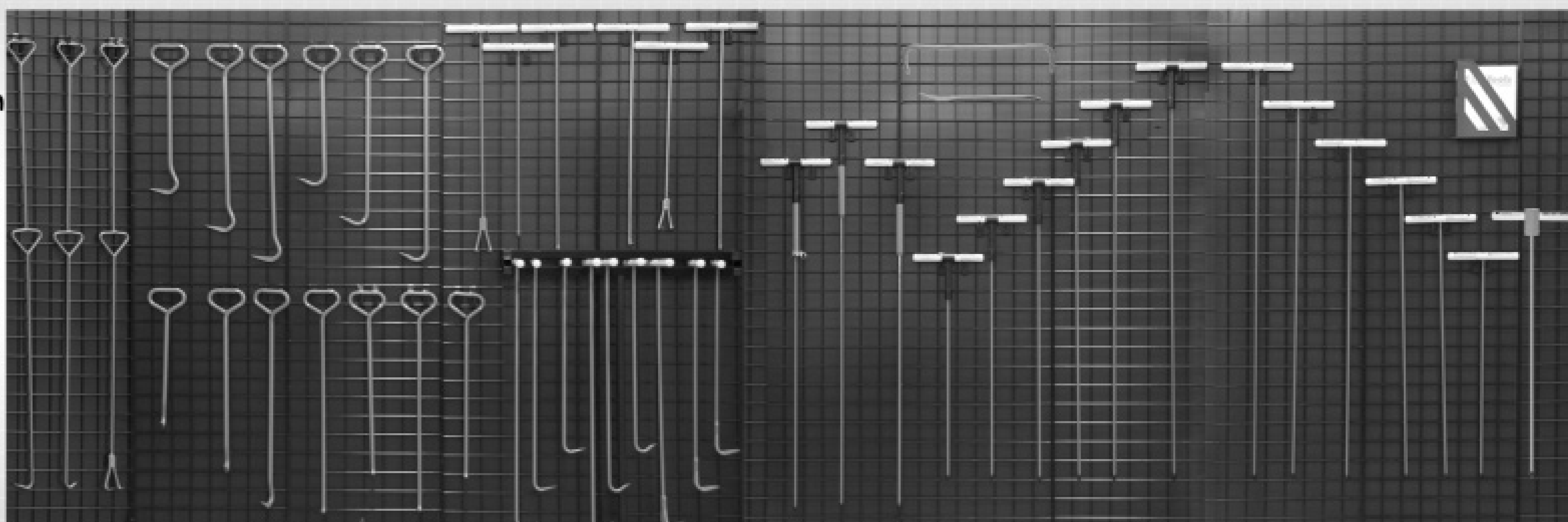
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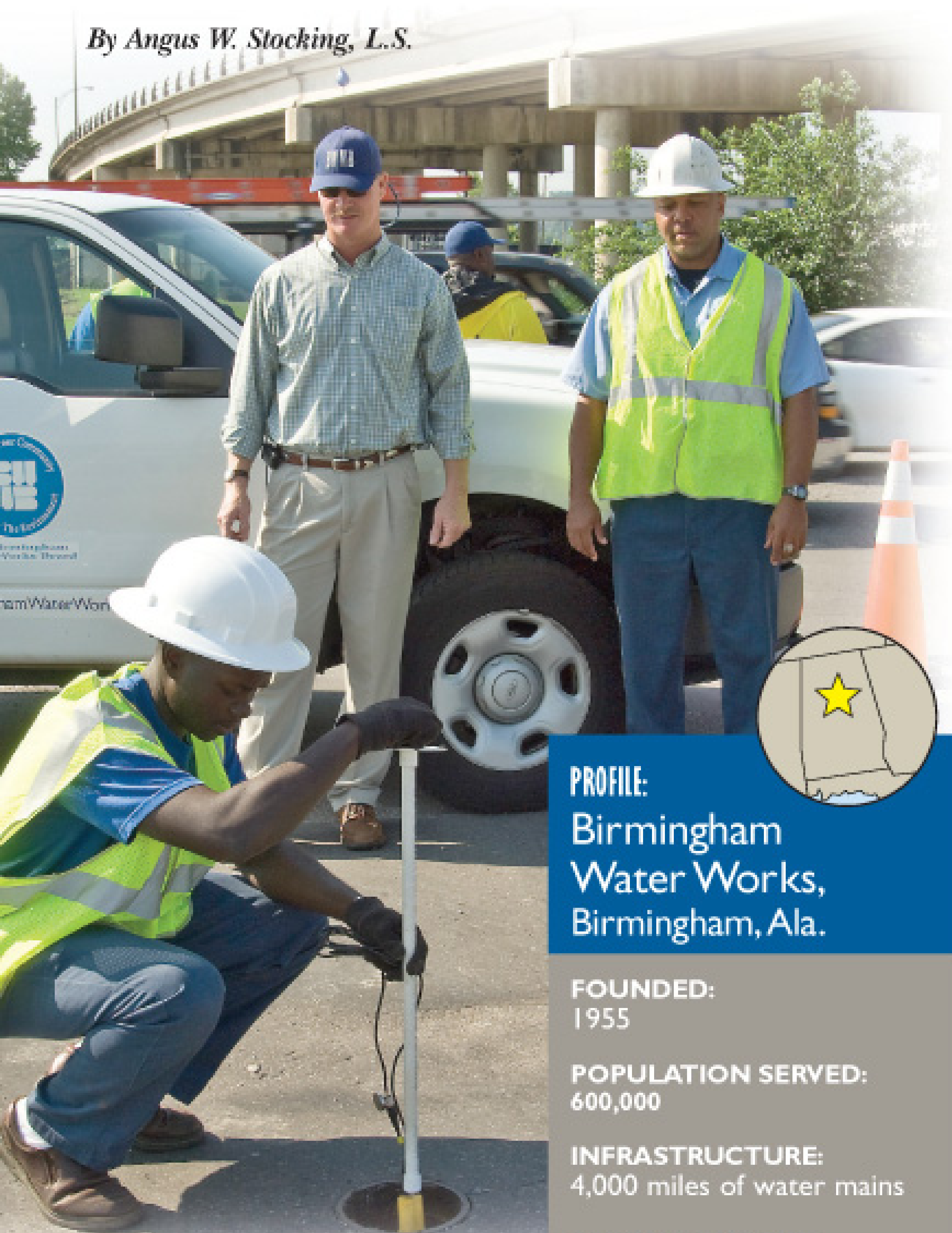
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# LISTENING CLOSELY

Birmingham Water Works uses sophisticated technology to locate leaks and reduce nonrevenue water despite shortages of qualified people

By Angus W. Stocking, L.S.



Water accountability technician I Willie Lee installs a Permalog unit as Geoff Goodwin (left), manager, Revenue Water Department, and Doney Childrey, water accountability technician I, look on. (Photography by Hank Spencer)

## PROFILE:

**Birmingham Water Works,**  
Birmingham, Ala.

**FOUNDED:**  
1955

**POPULATION SERVED:**  
600,000

**INFRASTRUCTURE:**  
4,000 miles of water mains

**ANNUAL BUDGET:**  
Capital \$65 million;  
operations \$120 million (2007)

**WEB SITE:**  
[www.birminghamwaterworks.com](http://www.birminghamwaterworks.com)

**B**irmingham Water Works (BWW) is a big water system in a drought-stricken region. Leaks are an obvious concern, and in 1999 the nonrevenue water percentage had crept up to an expensive and unacceptable 25 percent.

With 600,000 customers and more than 4,000 miles of mostly ductile iron line to maintain, and with limited manpower, the utility had limited options. "A manual leak survey of the entire system takes 30 months," says Revenue Water Department manager Geoff Goodwin.

"Since our main service area is also our oldest gradient, that section alone took 14 months to inspect. In 1999, with the high nonrevenue rate, we realized we had to rethink our approach and find a way to leverage technology."

BWW still has 10 employees who use listening devices to find leaks, but now technology enables the agency to inspect its main service area for leaks in just nine weeks. The agency relies on Permalog leak noise loggers from Datamatic Ltd. The devices, automated sensors installed at valves, are the most important component of a three-pronged approach to reduce nonrevenue water. The other two prongs are adding more district-metered areas and using a sophisticated pressure-management system.

The application of practical

technology has reduced nonrevenue water to a more reasonable 14 percent, without a staffing increase. Goodwin says reducing dependence on manpower is key. "A lot of people my age are seeing the available work force get smaller," he says. "Even compared to just 10 years ago, we're having a hard time finding people to fix leaks. We're turning to technology because we have to."

## Automated detection

Permalog loggers have several features that in Goodwin's view made

**"A lot of people my age are seeing the available work force get smaller. Even compared to just 10 years ago, we're having a hard time finding people to fix leaks. We're turning to technology because we have to."**

**Geoff Goodwin**

them just right for Birmingham. They're small. Being magnetic, they attach easily to valves. And they can cover up to a 1,000 feet of metallic line. They "wake up" at night, when ambient noise is low, and listen for acoustic signatures of leaks.

By applying algorithms, the



## NO STONE UNTURNED

As a utility in an area prone to drought, Birmingham Water Works is looking at every way possible to use water efficiently. The utility Web site has a leak-reporting system and clear instructions for Leak Detectives — homeowners who would like to know how to use their meters to detect leaks in their homes.

BWW is considering new metering — a \$50 million investment — to automate meter reading and to get better at distinguishing apparent loss from real loss. “Real loss is leakage,” says assistant general manager Sonny Jones. “Apparent loss is when the water is being used but is not showing up on meters.”

Every summer, the utility sponsors Young Water Ambassadors, an internship that exposes 100 high school juniors and seniors to the water works and its operations. BWW staff members hope the program will lead to some full-time employees down the road.

The program includes training, direct experience, lab work and field trips. H2O University is a similar program that provides curricula for prekindergarten through 12th grade.



**Birmingham Water Works has a community education program that asks private citizens to find and report leaks.**

sensors maintain a low rate of false positives. “We do get false hits,” says Goodwin. “The Permalog units are sensitive, and other sounds will set them off. Of course, we want them to be sensitive. Our crews are getting very good at using listening equipment to verify a leak before we dig.”

If a leak is detected, the sensors send low-frequency radio signals that can only be picked up by a nearby patroller unit. The limited

range allows the units to avoid FCC licensing, and they do not cause radio interference. “Basically, it’s a remote listening device,” says Goodwin. “It turns itself on at two o’clock in the morning, then cuts itself off and turns back on at three and at four o’clock. If it hears something all three times, it goes into leak mode, and when our crews drive by, the leak registers onscreen. In the office, that gets transferred to our leak survey crews.”

Birmingham did a pilot study with 250 of the devices, and liked the results. “The driving force for us was speed of survey,” says assistant general manager Sonny Jones. “Before the sensors, we could have leaks running for as long as two years, and that adds up to a lot of water.”

After the pilot study, BWW ordered more units and now has about 3,200 installed. The staff estimates that 20,000 sensors will cover the entire system. Between 2004 and 2007, the sensors turned up 700 “non-show” leaks — those not visible from the surface.

Since much of the system lies in areas with acid runoff from surface coal mining, the utility must be eternally vigilant, but the sensors have helped BWW gain the upper hand.

Automated sensing is also safer. Since water lines are typically under roadways, manual leak detection is relatively risky, Goodwin observes. “With the sensors, the first pass is in a vehicle, and that reduces crew time in streets from several hours a day to a few minutes.”

### District metering

The second prong in leak



**Above, Doney Childrey paints a valve lid. At left, crew members Kenneth Gunn (left), Donald Jones (center) and Willie Lee adjust a Permalog unit and its antenna before installation.**

detection involves breaking the system down into a larger number of district metered areas (DMAs). Goodwin projects up to 200 DMAs eventually. The concept goes back at least to 90 A.D., when Sextus Julius Frontinus, water commissioner in Rome, used crude devices to measure leakage in his system.

In modern practice, a DMA is simply a discrete area of a distribution system in which flow in and out is measured automatically. Goodwin defines one advantage of DMAs: “We can measure night flows, which are less variable than daytime flows, and check them against the customer base,” he says. “If there are increases, or unusually high base rates, that’s our signal to look closer at that section of the system.”

A DMA flow rate can be compared to its own flow history, and to the flow rates of other DMAs in the system. Managers look for evidence of background leakage — the aggregation of loss from small, undetectable leaks. They also examine burst leakage — loss of water from sudden holes and fractures.

John Morrison, a widely published expert in the field, observes, “The role of DMA management is





The Permalog is a small listening device that attaches magnetically to metal pipes to detect underground leaks.

to divide the distribution network into manageable areas or sectors into which the flow can be measured to determine whether bursts are present. The duration of water being lost is kept to a minimum by

analyzing the flow data so that the leakage practitioner is aware as early as possible that bursts have occurred."

The comparisons can be used to schedule leak detection and system maintenance, and often provide good evidence to support line replacement or upgrading. The data also logically enhances a geographic information system, which BWW expects to deploy in the next two years.

#### Pressure management

Pressure is another critical issue. Birmingham is in the eastern United States' Piedmont, a hilly foothill region. "We're in 19 different gradients," says Goodwin. "We have to pump up and down. It's a challenge. The system has four plants drawing from three sources. Gravity and pumping combine to process 95 mgd.

"If you've got a hole in the pipe, higher pressure will make it leak more," Goodwin says. "So we're looking at flow-modulation pressure-control valves that respond to demand. As demand goes up,

more pressure is allowed, but as demand goes down, in the middle of the night for example, pressure is decreased, so that you might only have 30 psi."

Pressure management addresses maximum pressure and also surges. It has been shown that systems with intermittent supply can suffer up to 20 times the annual number of leaks compared to areas of steady pressure.

**"If you've got a hole in the pipe, higher pressure will make it leak more. So we're looking at flow-modulation pressure-control valves that respond to demand. As demand goes up, more pressure is allowed, but as demand goes down, in the middle of the night for example, pressure is decreased, so that you might only have 30 psi."**

Geoff Goodwin

Lowering pressure as needed, while avoiding surge-related leakage, can be tricky. This is a new and promising area of nonrevenue water management for BWW. The initiative ties in logically with the DMA initiative, because DMAs help to identify where pressure management will do the most good. DMAs also serve as discrete regions where management can be applied.

"We've demonstrated a valve," says Goodwin, "and we'll be doing a pilot study." Applied skillfully, pressure management can have a tremendous cost-benefit ratio.

Water Cup Championship tapping contest in Birmingham, England.

Birmingham Water Works has been in existence since 1955. Most of the lines date to the 1920s, and a few go back to 1899. The difficult terrain, drought, the size and age of the system, and the size of the population all create challenges. Coping with these challenges with limited manpower is a tall order, but BWW is rising to the occasion by using appropriate technology and making the best use of employees' time. ■

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BWW is a proud agency. The city's water quality has been ranked in the top five nationally. The agency also has earned the Platinum Award for Sustained

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The pre-engineered lift station at Hunter Ridge in Camas, Wash., includes a standby power system from Cummins Power Generation. The wet well and other components are located under ground-level access doors (center).

# REVVED UP

Custom-built standby generators enable a city in Washington to retrofit lift stations and build new ones to avoid environmental issues

By *Scottie Dayton*

## BETTER MOUSETRAPS

### PRODUCT:

Standby power generators

### APPLICATION:

Provide power during electrical outages

### BENEFITS:

Fast installation; reliable, common components

### USER:

Sewer Department, City of Camas, Wash.

### MANUFACTURER:

Cummins Power Generation, Minneapolis, Minn.

### CONTACT:

763/574-5942; [www.cumminspower.com](http://www.cumminspower.com)

The City of Camas, Wash., couldn't afford the environmental risk of sewage backing up during an electric power outage.

"We had nine older lift stations, all designed differently, making them time-consuming to maintain and repair," says Jim Dickinson, wastewater operations supervisor for the city. Camas is located on the north bank of the Columbia River next to Portland, Ore., and Vancouver, Wash. "Since 2003, we've been retrofitting those stations, while installing pre-engineered lift stations in new subdivisions and developments."

Looking for consistency of design and equipment, Camas engineers selected Romtec Utilities in Roseburg, Ore., to fabricate the lift stations. Romtec, in turn, chose Cummins Power Generation in Minneapolis, Minn., to custom-build standby electric power systems. The combination enables Camas to keep pumping, even when utility power is unavailable.

### All-in-one reliability

Pre-engineered lift stations include a wet well, two or three submersible pumps, piping, liquid-level sensors, underground valve vault, electric pump controls, standby power generator, automatic transfer switch, and communication equipment. Installation takes one week.

"Our systems pump lots of water against friction losses, dynamic head and other factors, requiring a sharp analysis to specify the proper size generator," says Mark Sheldon, Romtec vice president for marketing and sales. "For example,



the Hunter Ridge lift station has twin pump motors requiring 39.6 kW for starting and 22.5 kW for running. If necessary, the pumps must run simultaneously."

Besides pump horsepower and voltage, other critical performance parameters include starting current, motor efficiency rating and required auxiliary loads, such as generator set controls, lights, heaters and odor control. Ambient temperature range and elevation also enter into the equation, as do anticipated population growth and pollution-control requirements.

### Sizing the generators

Jim Stalnaker, sales manager with Cummins Northwest LLC, Portland, Ore., uses those parameters to determine the engine, alternator and excitation system for each lift station. "Some generator sets must be oversized to handle a motor's higher starting current," he says. "However, we can sometimes avoid oversizing by

specifying variable-frequency drives or solid-state starters to reduce the inrush of current during starting."

The 20- to 200-kW diesel-powered standby generator sets are permanently installed or on

**"Besides arriving in sound-attenuated enclosures, the generator sets have to fit in small spaces, sometimes just 1,000 square feet. We installed diesel-powered units where possible, as their efficiency reduces footprint and fuel storage requirements."**

**Jim Dickinson**

portable trailer-mounted units. Pump size, 11 to 35 hp, determines the power output specification.

The lift stations include Cummins OTEC open-transition transfer switches, which provide safe "break-before-make" power transfer from the grid to the generator and back again for testing and power outages. A programmable gap of several seconds between power sources allows the back-electromotive force (EMF) generated by the pump motors to dissipate, protecting the

alternator. The time gap also enables the generator set to attain operating speed and stabilize its output voltage.

"Besides arriving in sound-attenuated enclosures, the generator sets have to fit in small spaces, sometimes just 1,000 square feet," says Dickinson. "We installed diesel units where possible, as their efficiency reduces footprint and fuel storage requirements."

Cummins trained the Camas wastewater staff to maintain the lift stations. "We found them reliable and easy to service, which helped reduce the time spent in the field," says Dickinson. Camas has 20 lift stations. Seven are pre-engineered units. ♦

### MORE INFO:

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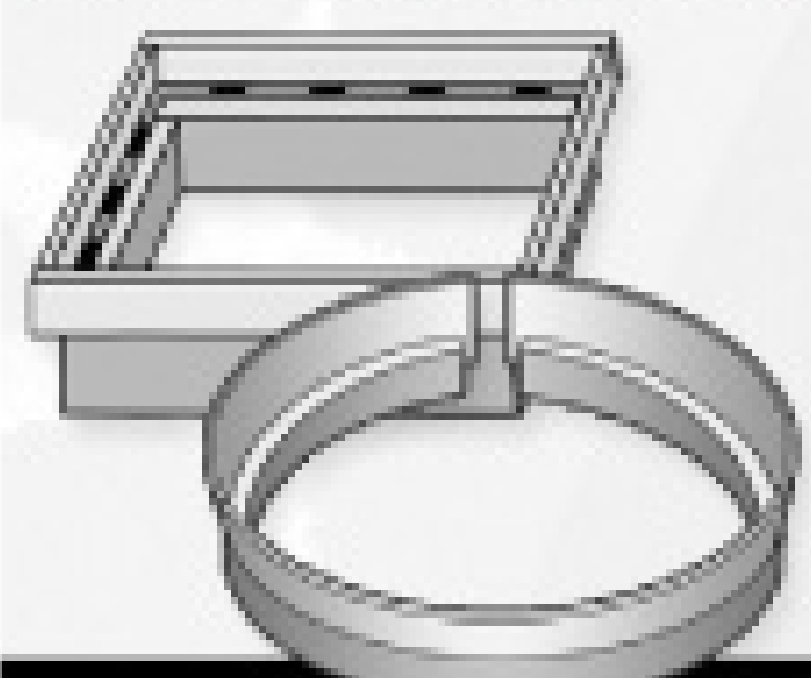
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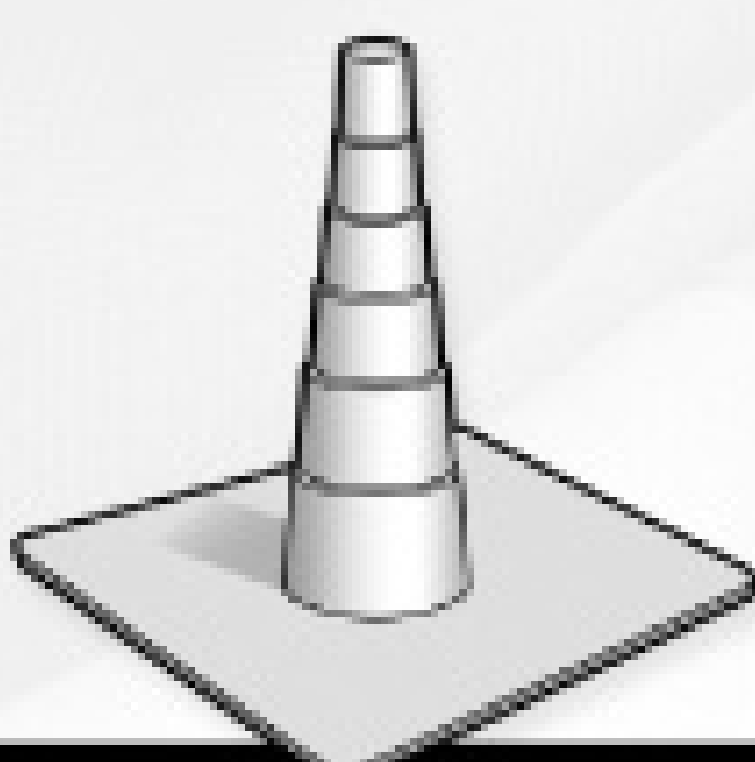
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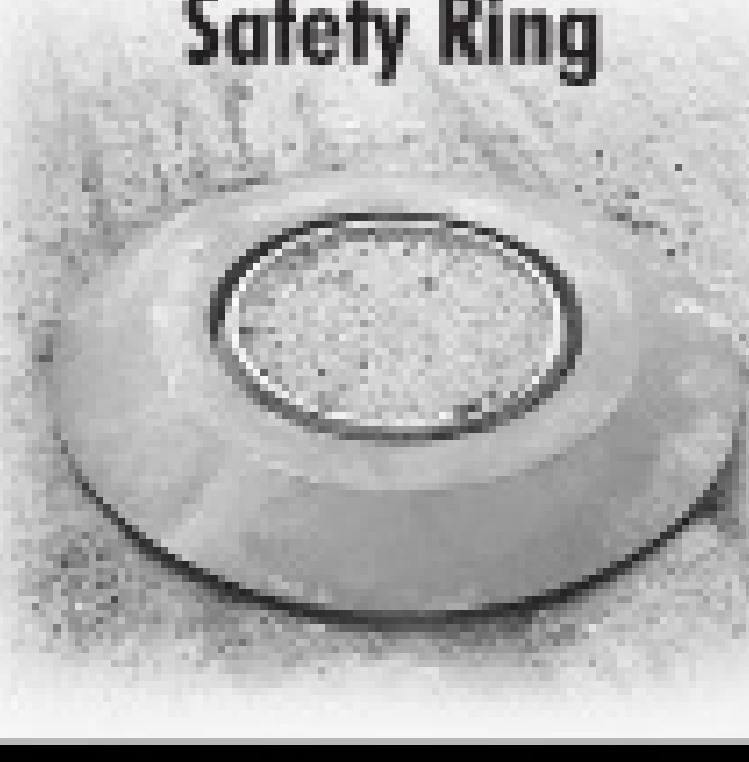
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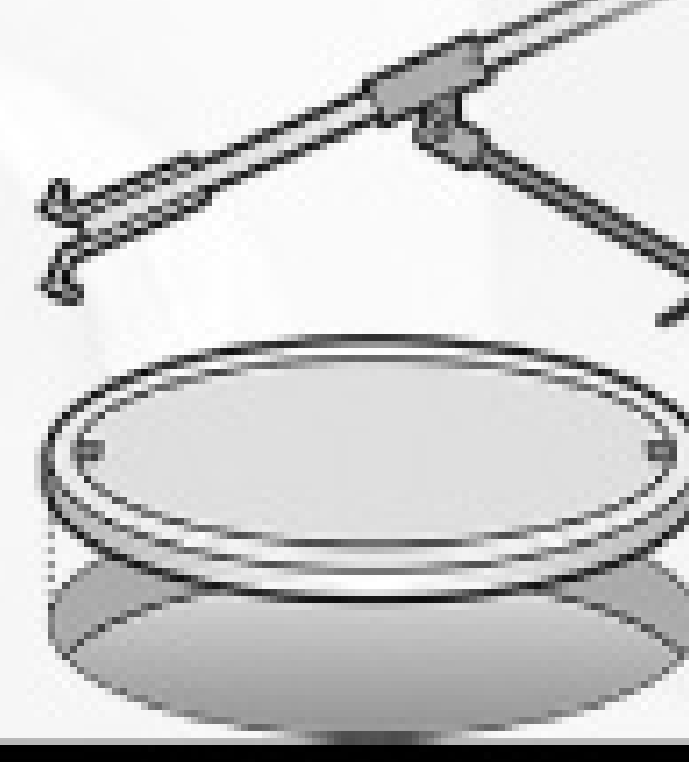
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## Manhole Tools

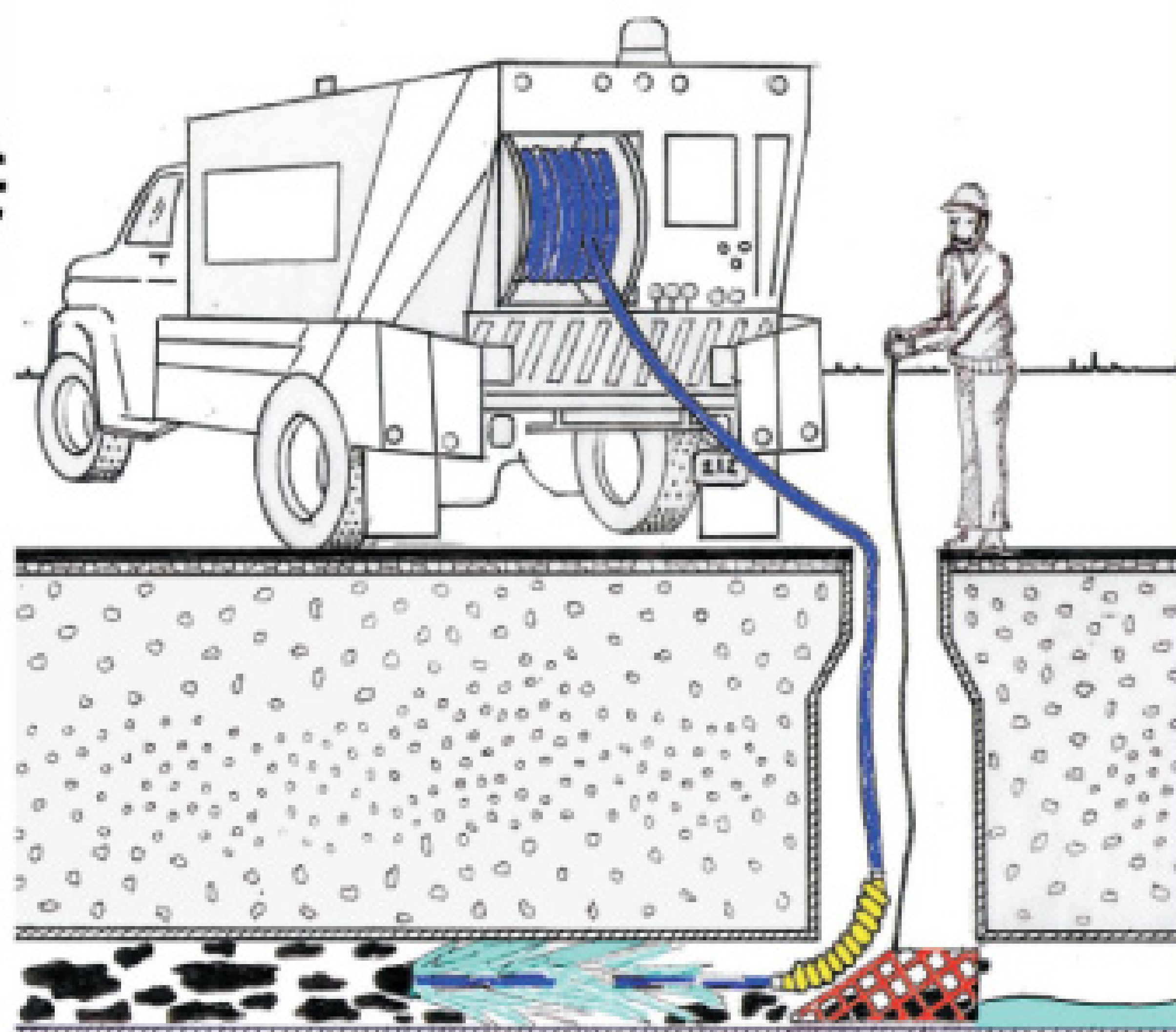
### Debris Catchers

**MDC-6/24** Use Debris Catchers with Jet instead of Combo in sizes 6" to 24". Ideal where small amounts of debris are expected. Standard model comes with 20' of Poly Rope or use Fiberglass poles as below.



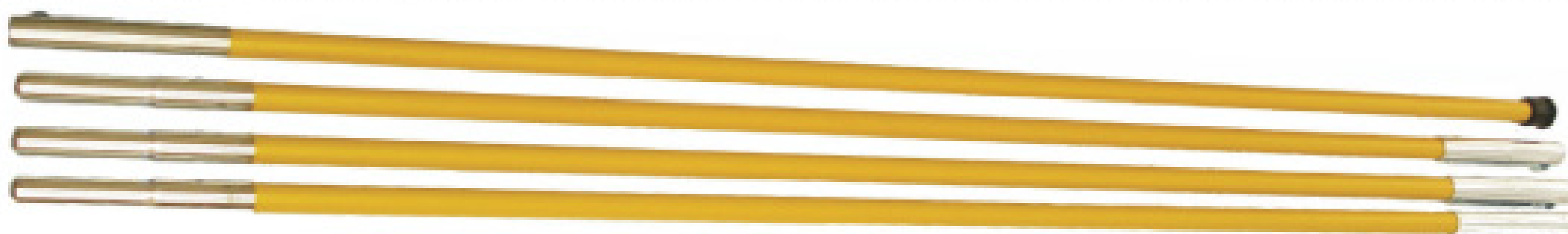
### Grit Catchers

**MDC-6/24CW** Same but with solid half moon bottom, sides and back to stop finer grit and black sand from Flowing thru. Fills with material faster.

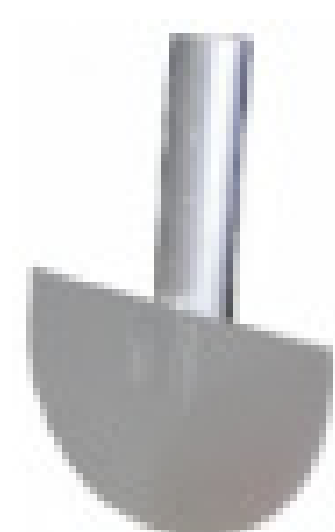


### MPAF-24 Quick Connect Fiberglass Poles

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Debris Catchers and Grit Catchers both can be used with any length of Fiberglass Poles. Provides for positive action of positioning, raising and/or lowering these catchers in manholes.



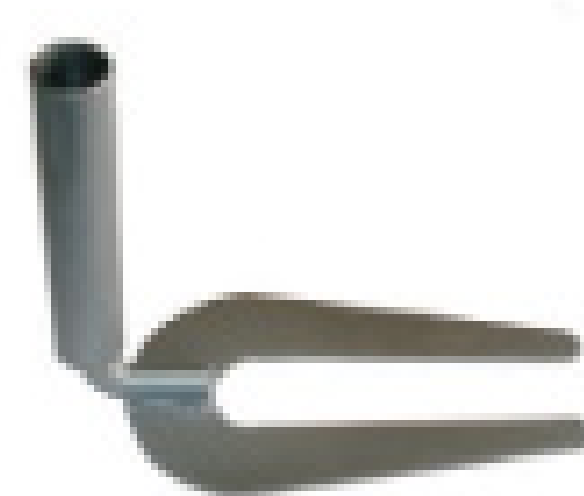
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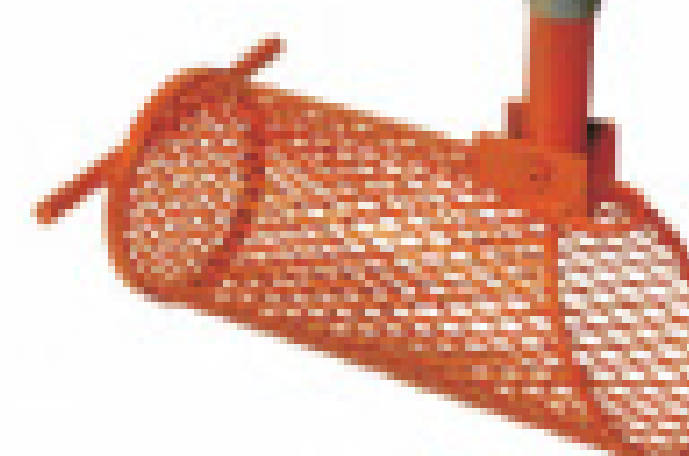
**Horse-Shoe Grabber.**  
Great guiding hose in and out Of sewer lines.



### MDS-6-8-10

**Debris Scoopers**  
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Debris Catcher



Grit Catcher



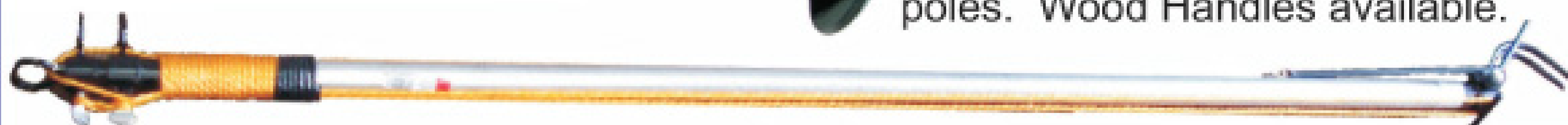
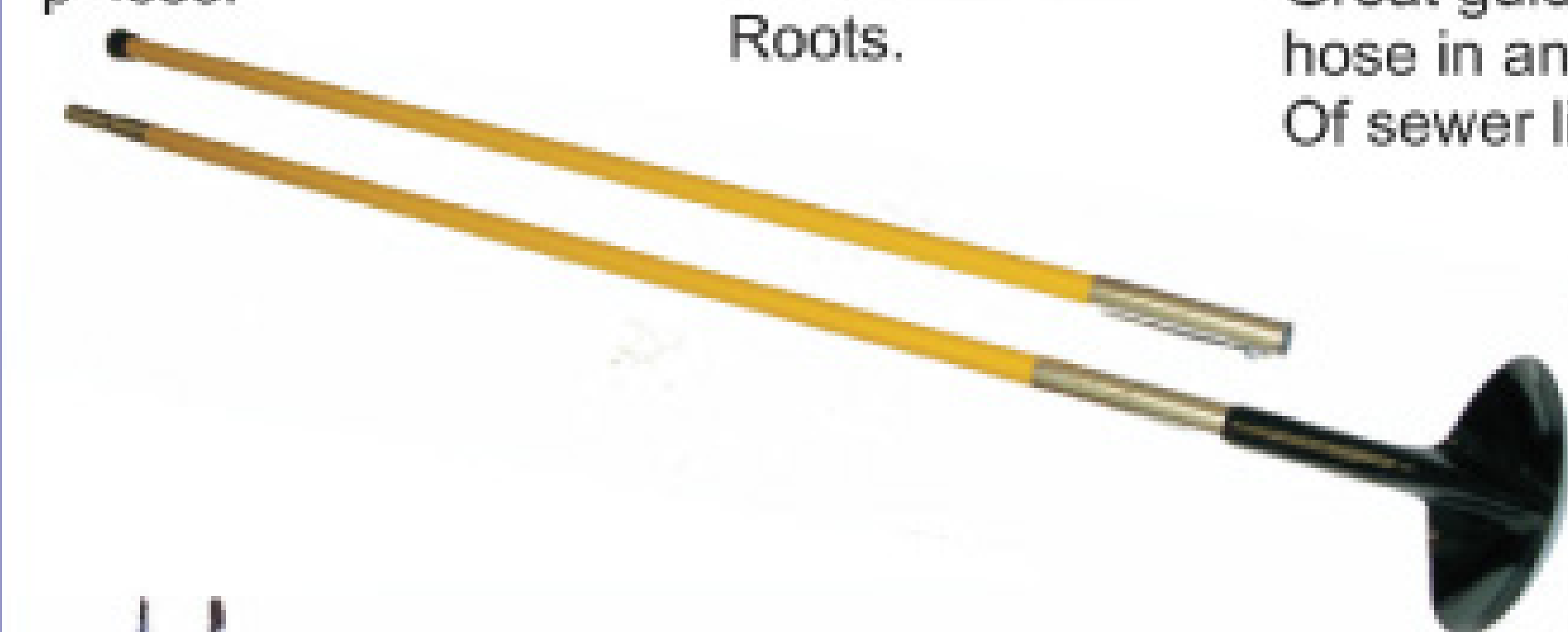
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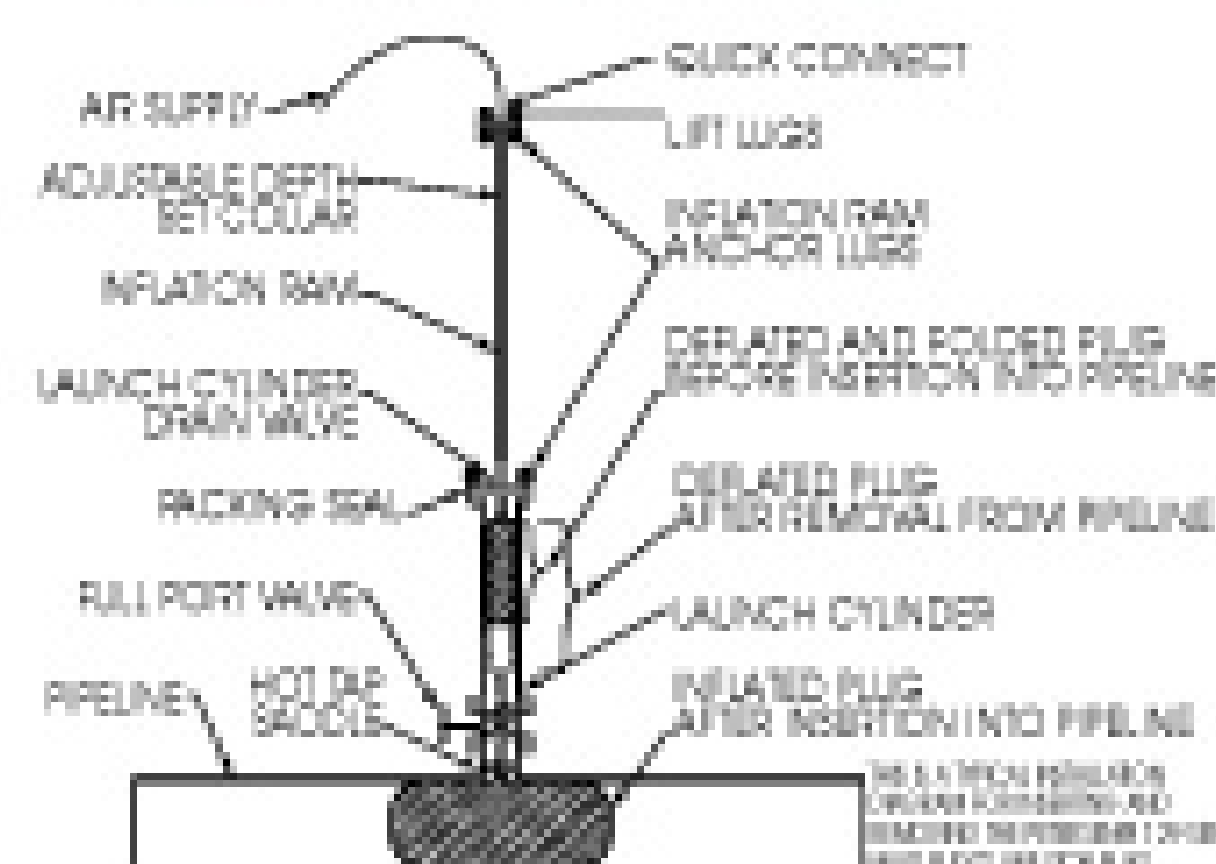
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Two Gresham workers examine a storm sewer system catch basin. The city has a progressive storm-water management program that includes an innovative wetland treatment system.

## FOCUS: STORM

# PLANTS AGAINST POLLUTANTS

An innovative wetland treatment system helps a growing Oregon city capture runoff from a commercial area and protect sensitive waters

By Gary M. Stern

**F**or more than a decade, the Watershed Management Division of the City of Gresham, Ore., looked for ways to deal with runoff from an 800-acre industrial and commercial site.

This untreated water flowed from parking lots and streets directly into the Columbia Slough. The slough consists of 60 miles of waterways, wetlands and slow-moving channels. It feeds the Columbia River, and provides salmon-rearing habitat and a favorite place for canoers and kayakers.

The ultimate solution was to build an engineered wetland. Several factors converged to make the Columbia Slough Regional Stormwater Treatment Facility happen. They included a donation of valuable acreage by a major corporation, an innovative design to capture and clean the water, and an open, community-based planning process.

Construction began in June 2006 and ended on time and on budget in July 2007. Stormwater utility fees covered the project cost of \$2.9 million. Steve Fancher,

division manager, says the project demonstrated that building wetlands can be a viable way to solve water-treatment problems naturally.

"The primary goal of the wetland was to protect our rivers, and our secondary goal was to help protect the groundwater, which is one of our sources of drinking water," says Fancher. The wetland also provides a sanctuary for wildlife and serves as an environmental education center with guided tours and signage along the nearby Gresham Fairview trail. It covers a

**"Whether it's water we drink or water in a stream, we don't want to pollute it. Even people who don't consider runoff can enjoy recreational opportunities in hiking and biking and beautiful open spaces as a respite from the city."**

Steve Fancher

small section of a 40-mile loop for bicycling, walking and hiking.

### Meeting a mandate

Gresham is Oregon's fourth-largest city and a fast-growing place, where the population has risen from 90,000 in the 2000

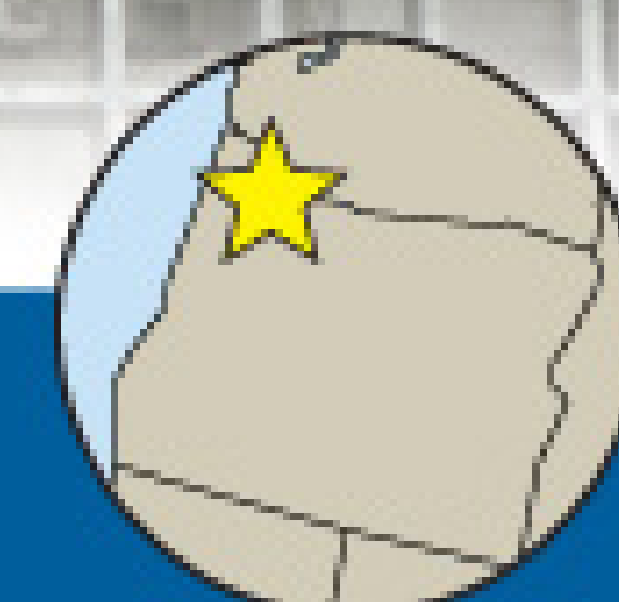
census to 100,000 in 2008. The city covers 22.2 square miles.

Gresham has grown in part because it is close to Portland, an appealing place to live for its culture and many fine restaurants. Gresham is also popular for its proximity to Mount Hood, which attracts skiers, hikers and snow-

boarders. It also appeals to retirees and young people alike, with real estate prices more affordable than in Portland.

The area's water resources are important to local residents and visitors. As a sensitive waterway, the Columbia Slough had an extensive

Photo by Caryl Young



### PROFILE:

**City of Gresham, Ore. (Watershed Management Division)**

**INCORPORATED:**  
1905

**POPULATION:**  
100,000

**AREA:**  
22.2 square miles

**ANNUAL RAINFALL:**  
37 inches

**ANNUAL BUDGET:**  
\$7 million (Watershed Management only)

**WEB SITE:**  
<http://greshamoregon.gov>





“Wetland plants capture and break down the pollutants and the grasses filter them out. We’re also storing water in the pond so that sediments and pollutants drop out, and then when the sediment is dry, we pick it up and dispose of it properly.”

Tom McCausland

Photo courtesy City of Gresham

list of total maximum daily loading (TMDL) limits on pollutants, including PCBs, DDT, bacteria and mercury. “We were mandated by the state to come up with a plan to address the TMDLs and reduce pollution,” Fancher says.

Annual rainfall dictated the size and configuration of the Columbia Slough treatment facility. Gresham averages 37 inches of rainfall annually, most of it from October through March. Fancher notes that rain in the region usually comes as misty, steady drizzles, rather than in downpours that can overload treatment facilities.

The Columbia Slough facility is designed to capture runoff from the first inch of rainfall. In fact, more than 80 percent of the annual rainfall is treated, including the “first flush,” which contains most of the oil and dirt from parking lots and streets.

**The Columbia Slough Regional Stormwater Treatment Facility (left photo) is an innovative engineered wetlands that captures and cleans runoff from a nearby industrial area. Below, Steve Fancher, Gresham’s Watershed Division manager, explains the Columbia Slough facility at a community open house.**

## Finding a partner

“Large-scale stormwater retrofit opportunities are extremely rare in most developed cities like Gresham,” Fancher says. A public-private partnership between the city and the Boeing Co. enabled the wetland to be built. Boeing donated to the city 13 acres of unused industrial land next to an existing manufacturing plant.

The property was perfect for a wastewater treatment facility and close to the 800-acre site that was the source of problem runoff. “We saw the opportunity with 13 acres of land that begged to be used,” says Tom McCausland, a senior engineer for the city. “You need space to build a natural, functioning facility.”

Previously, the land was mainly pasture with some trees. To develop the wetlands, contractors excavated to create a series of wetland terraces and a pond to which the runoff water was diverted. In addition, the city planted some 8,500 native riparian plants and trees from local nurseries.

“We wanted to treat the runoff naturally,” says McCausland. “Wetland plants capture and break down the pollutants and the grasses filter them out. We’re also storing water



Photo courtesy City of Gresham

## DOING THINGS RIGHT

The building of the Columbia Slough stormwater treatment facility went smoothly, with relatively few glitches, and no cost overruns. City staff members Steve Fancher and Tom McCausland offer advice on successfully building a similar stormwater treatment facility.

**1. During the design phase, create an open dialogue** with as many stakeholders as possible. It helped to have representatives from the city meet with civic leaders and with representatives of Boeing Corp., which donated land for the project. “If people feel involved in the design process, they’ll be more likely to buy in,” Fancher declares.

**2. Think broadly.** If the treatment center has multiple goals, it will create

more impact and generate more support. At the Columbia Slough facility, Gresham developed a wetland habitat used for education and recreation, not just for filtering water.

**3. Think ahead.** Gresham found it helpful to invite a maintenance supervisor to the design meetings to discuss maintenance topics post-construction. This brought out many issues that otherwise might have been ignored. For example, discussions on what kind of vehicles would visit the site to conduct maintenance helped to determine how to build the access roads that would enable crews to reach critical maintenance areas.



The Columbia Slough facility treats stormwater at roughly 13 cents per square foot of impervious surface from which runoff flows. Inset: To minimize runoff, the facility uses pervious asphalt and pavers for its access roads.



Photos courtesy City of Gresham

in the pond so that sediments and pollutants drop out, and then when the sediment is dry, we pick it up and dispose of it properly."

### Making it work

A series of pipes and a concrete structure divert runoff into the wetland. The plants, grasses and soils filter most pollutants and fine sediments from the water. The design also includes three underground vaults, each 20 feet deep and 8 to 10 feet in diameter. As water flows through the vaults, heavier sediments are removed, and with them hydrocarbons and metals.

The vaults have shut-off valves that would operate and protect the slough in case of a major spill of a hazardous or toxic substance. "We wanted to be sure that we could capture pollutants from an event such as a diesel fuel spill and control it so it wouldn't end up in the slough," McCausland says.

Before the project was authorized, the state Department of Environmental Quality (DEQ) reviewed the plans for compliance with all environmental regulations, then issued a permit that covered erosion control during construction.

Everything was ready to go until the U.S. Army Corps of

Engineers, which also had jurisdiction, questioned whether Native American artifacts would be affected. The city hired a Native American expert who confirmed that artifacts most likely would not be found in the area of construction, and in fact none were found.

### Collaborative effort

The design of the wetland was a collaborative effort. Planning meetings included representatives of the cities of Gresham, Fairview and Portland, Boeing, and the Columbia Slough Watershed Council, a broad-based citizen group that fosters action to protect, enhance, restore and revitalize the slough and its watershed.

Even in the design phase, the project team considered maintenance issues that would arise after construction. For example, a maintenance supervisor gave input on how his crew would need to travel onto the site to conduct maintenance. One innovative aspect of the facility was the use of pervious asphalt and pavers to build the access roads. Maintenance is critical to the wetland's long-term stability. "At the beginning we conducted frequent inspections to make sure everything was functioning smoothly," says McCausland. "We were looking for evidence of accumulated pollutants, and if we found any, we started to remove them. Our experienced maintenance crew knows how to look for clogging of pipes and inlet grates.



Diligent maintenance of stormwater infrastructure is part of the city's management program.

Photo by Caryll Young

You wouldn't believe what you can find there — tires, trash, anything can end up in the stormwater system."

Meanwhile, plans have been drawn for a 30-acre industrial park that will surround the wetland. "The wetlands were designed large enough to treat stormwater runoff from the area," Fancher says.

### Comprehensive approach

The Columbia Slough facility is only one way in which Gresham addresses stormwater runoff. The city maintains 220 miles of storm sewer pipe, some 5,700 catch basins, 1,000 drywells, 150 sedimentation manholes, 137 underground structural detention facilities with control-release manholes, 15 treatment swales, 32 neighborhood ponds, 15 miles of roadside drainage ditches, 581 outfalls and more.

The city's Green Streets program helps manage runoff from city streets. Rain gardens and

stormwater planters form an interconnected network of shallow, heavily planted landscapes that convey, treat, retain and absorb stormwater.

In addition, in an outreach program for streamside property owners, Americorps volunteers went door-to-door to inform people not to treat their yards with pesticides and fertilizers, which will find their way into the waterways. "The goal was to make them better stewards of the environment," Fancher says.

Fancher and colleagues take special pride in the Columbia Slough wetland. The best things about the project, he says, were "improving water quality and removing pollutants from the system. Whether it's water we drink or water in a stream, we don't want to pollute it. Even people who don't consider runoff can enjoy recreational opportunities in hiking and biking and beautiful open spaces as a respite from the city." ♦



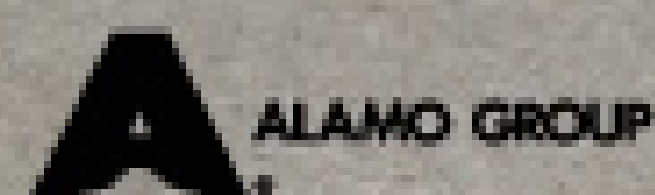
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RIDGID Roundup participants.

## RIDGID Hosts Forum Appreciation Day

RIDGID hosted a three-day Roundup to recognize individuals who contributed to its online forum. Activities included product discussions, competitions, plant tour and open discussion.

## Federal Signal Expands Guzzler, Vactor Facilities

Federal Signal's Environmental Solutions Group is adding 60,000 square feet to its 175,000-square-foot Guzzler and Vactor manufacturing

facilities in Streator, Ill. The \$7 million expansion will include relocation of the assembly, welding and paint departments for both the Guzzler and Vactor lines, as well as installation of new equipment and a larger parking area. The project is scheduled for completion by the middle of 2009.

## Hannay Releases Pressure Wash, Spray Hose Reel Catalog

Hannay Reels' latest catalog features pressure wash and spray hose reels for steam cleaning, washdown, general maintenance and spray options. Also included are compact reels for smaller, mobile steam cleaning and pressure wash units.



## Envirosight Expands Headquarters, Opens Regional Center

Envirosight has expanded the size of its Randolph, N.J., headquarters. The new facility is triple the size of its original headquarters and houses an expanded customer service team, technical service center, larger warehouse, 25-seat classroom and new technology lab. The company also opened a regional service center at the Kansas City, Kan., facility of Key Equipment, serving Missouri, Kansas and Southern Illinois.



Rusty Gant

## PipeHunter Names Parts Manager

Rusty Gant has been named national service and parts manager for PipeHunter Inc. He brings extensive industry experience to his position. ♦

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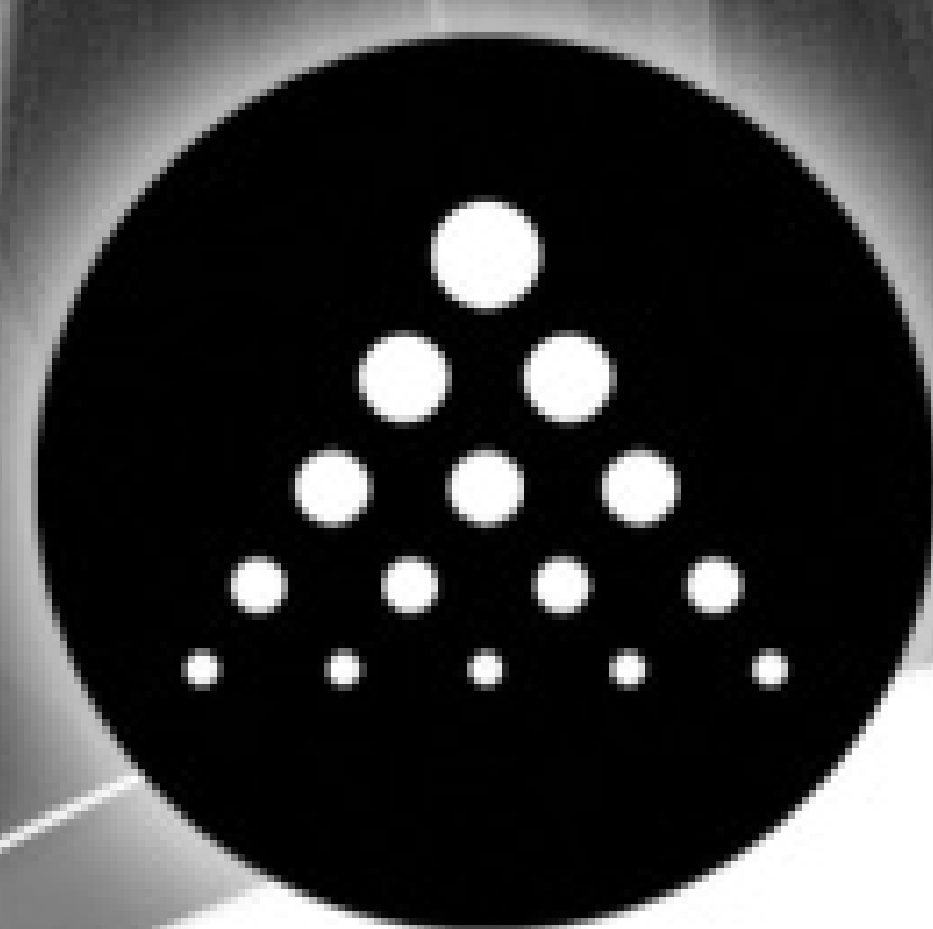
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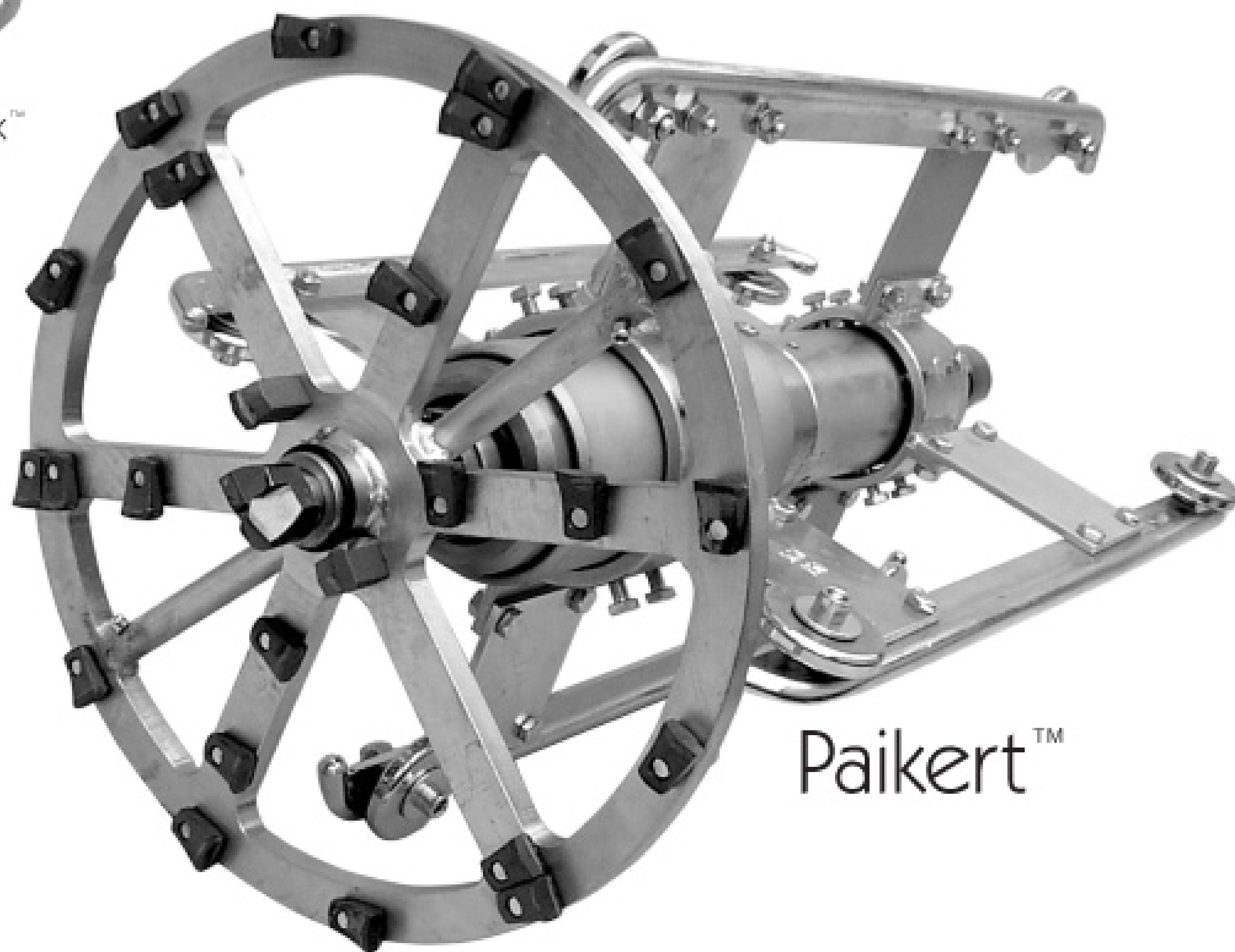
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# HIGH-POWERED CHEWER-UPPER

The Paikert cutting tool saves users money by ripping through tough clogs in pipes that otherwise would need to be dug up and replaced

By Jim Force

Plugged pipes are a pain. If they can't be cleared easily, a city can spend six figures digging them up and replacing them. The advent of low-speed, high-impact rotary cutting technology is changing that.

Durable, workhorse cutters can chew through concrete and other dense material, clearing a clogged pipe within minutes or hours and at a much lower cost. One of these tools, the Paikert cutter, manufactured and marketed by NozzTeq Inc. of Dunedin, Fla., is driven by water pressure and is available in a variety of sizes to fit most pipe diameters.



Water and debris discharge from the clean end of the pipe as the cutter goes to work.

It is designed to work with sewer jetting units and requires no electrical connections or lubricants. Its small but powerful Hydro-Torque impact drill motor pounds into the plug at 1,500 impacts per minute, and its carbide cutting teeth spin at 200 rpm. The cutter can pulverize and flush out concrete, dense root growth, chemical sediments, mineral deposits, protruding taps and other blockages.

NozzTeq demonstrated the cutter in late August on the grounds of its distributor, Infrastructure Technologies Inc. (Infratech), in Rogers, Minn. On the scene were Scott Paquet, president and CEO of NozzTeq; Todd Sykora, project manager with Infratech; operators Jon Fashant, Mike Bohlman and Matt Kerzman, also with Infratech; and a few other observers. The test took place in a parking area behind the Infratech building.

## Walk-around

To demonstrate the cutter, the NozzTeq and Infratech crew used a 10-foot length of clear 8-inch PVC pipe, and poured enough 4,000-psi



The Paikert cutter head, showing its carbide teeth. (Photography by Jim Force)

Quick-Crete concrete into it to harden into a 4-foot-long plug that completely blocked the line. They set the plugged pipe on the ground and backed the plugged end against a 4-foot square of 3/4-inch plywood. Then they notched the plywood to allow an Aries pan-and-tilt camera to be inserted into the back end of the pipe to record the action.

Paquet brought out two Paikert cutters and placed them on a metal cart near the pipe. One, a model SB 150, can cut through plugs in 27- to 36-inch lines. Its companion, a model SB 110, which was used for the demonstration, is designed for pipes from 6 to 24 inches.

The cutter is a strange-looking device made of many different metals and a bit reminiscent of a propeller-driven airplane engine. The SB 110 is about 27 inches long and consists of a cylindrical motor with a cutting wheel at the business end. A dozen carbide cutting teeth are mounted on the face of the wheel. "The operator can install saw-tooth blades instead for use on roots," says Paquet.

## TECHNOLOGY TEST DRIVE

### EQUIPMENT:

Paikert high-impact, high-torque cutter

### MANUFACTURER:

NozzTeq Inc., Dunedin, Fla.  
866/620-5915  
www.nozzteq.com

### LOCATION OF DEMO:

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### DEMONSTRATED BY:

NozzTeq and Infrastructure Technologies Inc. (Infratech), the company's distributor in the north central United States

### PRICE:

\$595 per day rental fee.  
Purchase price of \$15,000 to \$18,000 per unit.

An adjustable sled made up of four horizontal runners called "distance plates" framed the motor and allowed the machine to fit and slide perfectly inside the pipe. The same machine can be used for different-sized pipes simply by changing the cutting head and adjusting the distance plates to different interior diameters.

Water jets, installed in the housing, provide the propulsion needed to get to the problem area.



**Above, the cutter on display with pressurized water flowing into it. Note the discharge out the back, and the forward jets that cool and lubricate the cutting head. At left, the cutter, inserted into a pipe, is connected to a high-pressure water hose from the combination truck.**



A counterweight absorbs the recoil from the impact motor action. Spent water is discharged out the front of the device to cool and lubricate the cutting head, and out the sides and rear of the device to flush out debris.

Infratech positioned two of its vehicles near the test pipe: a panel truck containing the video equipment and monitoring station, and a GapVax MC 1510 combination truck from GapVax Inc. of Johnstown, Pa. The GapVax truck carried about 1,500 gallons of water. A pressurized water hose ran from the truck to the test area.

### Operation

After explaining the test procedure and reviewing the cutting equipment, Paquet connected the high-pressure water hose to a nozzle on the rear of the SB 110 cutter and tightened it by hand. He inserted the cutter into the pipe and, using the connected hose,

pushed the unit down the line until it met up with the blockage. Personnel donned safety vests to simulate real conditions as closely as possible.

The operation started like a blast-off. From the truck's control panel, Sykora turned the water flow up to about 80 gpm and 2,000 psi. Immediately, the cutter started chewing into the plug, and spent water and pulverized concrete shot out of the end of the pipe, quickly flooding the adjacent area. (In a real-life situation, the spent water would go into the sewer to be vacuumed out by the vacuum truck.)

Through the wall of the clear PVC pipe, observers could see the cutter as it broke the concrete into chunks and then pulverized those and flushed the debris out of the pipe with the jet stream of water. The machine gave the impression of a ravenous animal as it tore into the block; the concrete had no chance.

Within ten minutes, the block was cleared, Sykora shut off the water, and Paquet pulled the cutter from the pipe. Fashant withdrew

the camera from the other end and the group went into the panel truck to view a replay of the video-taped action.

The onscreen image showed the cutter breaking through the concrete, eating its way through the block toward the camera until the concrete was gone. "We try to video every job," said Paquet. "The camera also allows us to view the condition of the pipe and the extent of the blockage before we start cutting."

### Observer comments

The thrust and cutting action of the machine is very powerful. Does it ever damage the pipe it is cleaning? Or are there pipes or pipe conditions where the cutter cannot or should not be used? What about burrs inside pipe joints? Turns and corners are another question. The machine did not appear to be able to negotiate turns, only straight-line pipes or pipe sections.

The Infratech crew brought up a second water truck as a standby during the operation. "A continuous supply of water is necessary," Paquet says. "We don't want to run out of water and have to stop the cutter midway through a job." In normal conditions, a hydrant may be used as the water source.

Another obvious question was

how the cutter would be inserted into the blocked pipe in a real application. Would it be dropped into a manhole? If so, how? The SB110 weighs 60 pounds — what about the larger units?

Finally, it was clear that the cutting approach was less costly than excavation and replacement, but by how much?

### Manufacturer comments

Paquet observes that the video camera is helpful in examining pipe conditions before the cut. "If the pipe wall is cracked or broken, that's not going to be a good application," he says. "Sometimes

**The cutter is a strange-looking device made of many different metals and a bit reminiscent of a propeller-driven airplane engine. The SB 110 is about 27 inches long and consists of a cylindrical motor with a cutting wheel at the business end. A dozen carbide cutting teeth are mounted on the face of the wheel.**

**The cutter is about to be inserted into an 8-inch PVC pipe.**





we find chunks out of the side walls, or the bottom of the pipe completely eroded. Those issues will prevent us from using the cutter because the machine needs to slide smoothly inside the pipe wall."

The cutter could damage a pipe if there are bad offset joints or if incorrect pipe measurements prevent proper sizing of the cutting head and sled, he adds. Burrs and minor offsets at joints are not an issue: "The machine cuts them off and actually smoothes out the pipe, improving flow."

The machine can negotiate turns, Paquet reports, but cannot be used in pipes that turn or bend

asked to complete a comprehensive questionnaire to help determine the feasibility of the cutting application.

"We ask questions about the thickness of the material, the inside diameter measurement of the pipe, the psi of the material, the length of hose, and the flow capacity of the truck," Paquet explains.

While the demonstration at Rogers took only a few minutes on a small pipe, NozzTeq can claim much larger projects. Infratech used a Paikert cutter to clear concrete accidentally pumped into several pipes during the construc-

**"If the pipe wall is cracked or broken, that's not going to be a good application. Sometimes we find chunks out of the side walls, or the bottom of the pipe completely eroded. Those issues will prevent us from using the cutter because the machine needs to slide smoothly inside the pipe wall."**

Scott Paquet

more than about 7 to 10 degrees. Where corners are involved, the user simply runs the machine in from both directions. "The chunk right at the corner usually comes out, too," Paquet says.

As for insertion of the cutter, it is positioned at a manhole or a pit at the pipe end. The crew, usually two men, drops the machine down to the pipe with a rope, then tips the machine so it's parallel to the pipe. It can be pushed into the pipe and withdrawn from the pipe using the reel on the vacuum truck. The largest unit weighs 200 pounds.

The units are marketed through four distributors and out of Paquet's office in Dunedin. While some units are sold outright to contractors, most are rented or leased. "We rent them by the day with a declining rate the longer it is rented," Paquet says. Sometimes, his company provides a training package for an additional fee. On all projects, customers are

tion of a new airport terminal in Minneapolis, and on pipes supplying the new Yankee Stadium in New York City.

"We had one chemical plant in New York state where we cleared 128 feet of pipe," Paquet says. "The project took 18 hours of actual cutting time." ♦

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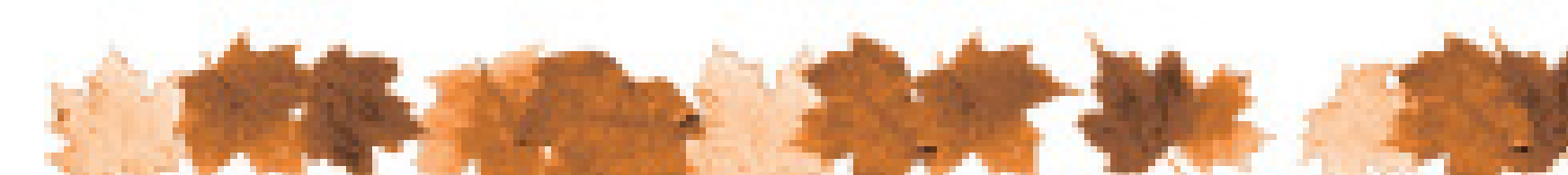
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# CLAMPING DOWN

Cities look to security locking devices, stiffer penalties, different materials and stricter regulations on metal recyclers as ways to deter thefts of manhole covers

By Gary M. Stern

**C**ity and utility officials know that manhole covers are disappearing from the streets — some 2,050 from Philadelphia alone in just the first seven months of 2008.

The question is what to do about it. Officials across the country are taking a wide range of steps to curtail theft, from installing security locking devices, to replacing high-value iron covers with plastic covers that have little or no worth on the scrap market, to passing laws that require metal recyclers to identify those who sell materials to them.

It's all because the value of scrap metals — including the cast

iron that most manhole covers are made from — has risen rapidly in recent months, creating incentive for thieves. The cost of replacing the covers is a concern, but a much bigger one is the safety issue: Open manholes present a serious hazard.

## On the rise

If you asked Ryan Alsop about stolen manhole covers a couple of years ago, he might have dismissed the question. Not so today. Alsop, director of government and public affairs at the Long Beach Water Department in Long Beach, Calif., reported one stolen manhole cover in that year and none in 2007 — this from the state's fifth

largest city (population of 500,000). But manhole cover thefts in Long Beach reached 80 by the midpoint of this year.

No city has been as hard hit in the first half of the year than Philadelphia, where manhole cover thefts set the city back \$300,000 in replacement costs. Phoenix had 10 stolen in 2007, but that number rose to 160 just seven months into 2008.

"It's a sign of the times," said Sgt. Jay Baker, a sheriff in Cherokee County, Ga., where 28 manhole covers were lifted. "When the economy gets bad, people start stealing iron," he told *USA Today*.

Since most covers are stolen in the middle of the night, repair crews can't immediately replace them. "Virtually anything could fall into a hole, including an unsuspecting pedestrian, a child on a bike or scooter, or kids playing tag," Alsop says. Automobiles could also face serious damage.

Alsop says Long Beach spent \$500 to replace each stolen cast-iron manhole cover, for a total of \$40,000 in six months. That could buy a lot of textbooks for local public school students. Moreover, two drivers whose cars were damaged are

noted that 16 states had passed bills (and 12 more are pending) to increase penalties for stealing manhole covers and to require scrap metal recyclers to fingerprint their customers.

Catching the criminals in the act or identifying them after the



The Stabiloc manhole security system from Stabiloc LLC.

crime is not easy. Law enforcement experts say the most effective way to nail the thieves is to work with scrap metal recyclers to identify the criminals trying to sell the stolen property.

The Long Beach police department learned that many stolen covers had been transported and sold in Mexico, making it very difficult to catch the thieves. Police

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**"Virtually anything could fall into a hole, including an unsuspecting pedestrian, a child on a bike or scooter, or kids playing tag."**

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Ryan Alsop  
City of Long Beach, Calif.

suings the city for the cost of repairs.

Alsop admits that the rash of manhole cover thefts "has taken us by surprise. It's a huge task to figure out how we change from the traditional method of maintaining them to how we mitigate the potential for theft," he says.

## Change materials?

Manhole cover thefts are directly connected to the rising cost of scrap metal, which sold for \$77 per ton in 2001, \$300 per ton in 2004 and \$500 per ton in 2008. As fast as you could say, "Get a crowbar, two guys and a van," thefts proliferated. The National Conference of State Legislatures

were working with local scrap dealers to gather leads and investigate the crimes.

After thefts started mounting, the city began researching the most cost-effective ways to replace the covers. Options include switching to cheaper plastic covers and buying any of several locking devices.

Another factor municipalities must consider is the liability exposure. The *Philadelphia Inquirer* reported on a case in which a 30-year-old University of Pennsylvania medical student fractured his back after a fall into an open manhole and in February 2008 won an \$18 million award from Triger-Philadelphia Energy Corp.

## KEEPING COVERS

To replace the 2,050 stolen manhole covers, Philadelphia is investigating composite plastic covers, says Laura Copeland, a spokesperson for its water department.

"They're not metal, have no real value and provide easy access," Copeland says. Philadelphia had looked into tarring or welding the covers in place, but ruled that out because both measures would prevent quick access to the manhole in case of emergencies.

To minimize thefts, the city has



Anti-theft composite cover from McGard.

started chaining the covers with two locking bolts, notes Martin McCall, a superintendent in the water department. He acknowledged that thieves could still break through the bolts, but so far, none has been stolen since the bolts were added.

Though publicity about the rise in manhole cover thefts in Philadelphia could be viewed as a negative, Copeland thinks the attention may contribute to curtailing the crime. "I think public awareness is a key factor and can be a deterrent. The fact that it's on the news and has become a national issue can help stem the problem," she said.

### Working with recyclers

Cleveland has kept its manhole cover thefts under control by establishing an overall approach to stolen metal, not just manhole covers. By mid-2008, the city had seen 50 manhole covers and 24 catch basin grates stolen. Staff looked at the broad issue of stolen metals as a crime, including theft of metals from homes vacant due to foreclo-

sure. The city worked with the police to target scrap metal recyclers, notes Barry Withers, director of the city's water department.

To discourage theft, each Cleveland recycler must file reports to the police with the names and addresses of people who sell metals to them. The city threatened to prosecute recyclers who accept stolen material and fence stolen goods, and also made

penalties for theft more severe. If the thieves have no outlet to sell the stolen material, odds are the number of thefts will drop, Withers says.

To make the crime more difficult, Cleveland tarred about 20 manhole covers in certain areas. Withers acknowledged that thieves still could remove the covers, but it would be noisier and more time-consuming and make the crime

A variety of security devices can help cities prevent thefts of manhole covers. Here are several companies that offer antitheft solutions.

**Manhole Barrier** is the only product manufactured by Manhole Barrier Security Systems Inc. in Garden City, N.Y., and is used by Homeland Security departments in Miami and Tallahassee, Fla., and the Port of Long Beach, Fla. The stainless steel device provides a drop-and-lock procedure whereby the manhole cover is removed and the device rests under the cover. It is easily installed, can't be broken into with a crowbar, and requires a key to open. In Miami, which acquired 2,000 units, keys are given to fire, police, emergency management and water department personnel for quick access in emergencies. Visit [www.securemanholes.com](http://www.securemanholes.com) or call 800/643-5030.

**McGard**, in Orchard Park, N.Y., introduced a new antitheft composite cover, made of resin and plastic, in July 2008. The firm also offers Intimidator Man-Lock manhole bolts that cannot be removed with ordinary hand tools. Removal or installation is accomplished with a matching key tool. Visit [www.mcgard.com](http://www.mcgard.com) or call 888/888-9192.

**PAM Covers**, made by CF Manufacturing in Pittsburgh, Pa., are ductile iron manhole covers. They weigh half as much as cast iron. "They're like an alloy and are worth a quarter of the cast iron," says Ed Grieser, president. A hinge on the cover with a lock makes them difficult to steal. Among cities using these covers are Modesto, Calif., Alexandria, Va., and Portland, Maine. Visit [www.pamcovers.com](http://www.pamcovers.com) or call 877/361-3498.

**Bryce Fastener** in Gilbert, Ariz., offers a variety of tamper-resistant stainless steel bolts that can be used to secure manhole covers. Visit [www.brycefastener.com](http://www.brycefastener.com) or call 800/558-1082.

**Stabiloc** manhole covers from Stabiloc LLC in Warren, Mich., are described by CEO Tom McClanaghan as a retrofit system that contains a bolt-and-socket design. To install it, maintenance staff drill several holes to keep the socket in place. The lock devices enable the owner to install a radio-frequency identification (RFID) chip that can detail the service history of each cover, but so far no clients have requested it. Visit [www.stabiloc.com](http://www.stabiloc.com) or call 877/782-2456.

Products sold by **LockDown-LockDry** in Conyers, Ga., will not deter manhole cover thefts but do prevent access to manholes, says Michelle Robinson, press representative. The product fits under the cover and keeps people from falling in the hole. The devices were created for the 1996 Olympic games in Atlanta, Ga. The Lock Dry product is a pan placed in the hole that does not lock but prevents inflow. The Lock Out product has a lock with bolts. Visit [www.lockdown-lockdry.com](http://www.lockdown-lockdry.com) or call 800/572-3119.



A PAM Cover from CF Manufacturing.

**"I think public awareness is a key factor and can be a deterrent. The fact that it's on the news and has become a national issue can help stem the problem."**

Laura Copeland  
City of Philadelphia



The Manhole Barrier from Manhole Barrier Security Systems.

more noticeable.

Among cities that have bought manhole cover lock devices is Miami, Fla. After seeing manhole cover thefts rise by 90 percent, the city conducted field tests on various manhole locks. It used some of its \$330,000 federal and state Homeland Security grants to acquire 2,000 Manhole Barrier devices from Manhole Barrier Security Systems Inc. in Garden City, N.Y.

Copeland, of the Philadelphia Water Department, expects manhole cover thefts to decline because of police vigilance, scrap recyclers' reporting of customer information to the police, chaining down the covers, and using plastic covers rather than cast iron. ♦



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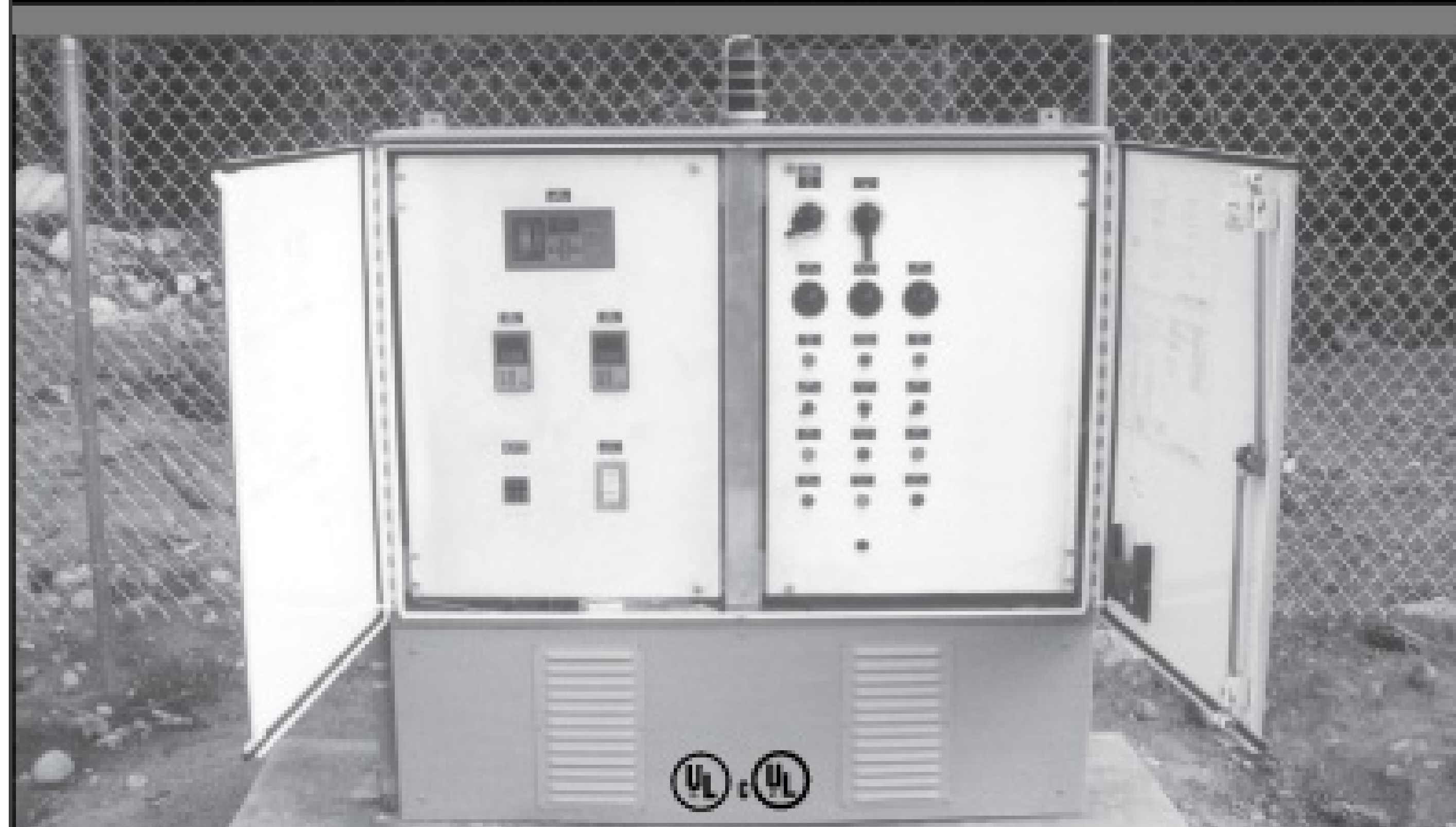
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# Product Spotlight

## Hydroexcavator Helps Users Avoid Overweight-Vehicle Citations

By Ken Wysocky

**M**unicipalities, utilities and contractors face stricter enforcement of overweight-vehicle laws. The X-10 vacuum excavator from Hi-Vac Corp. is designed as a lighter yet durable vehicle that safely digs holes and slot trenches.

"We used the knowledge of a number of hydroexcavation contractors to design this unit," explains Patrick Snyder, vice president of sales and marketing. "We wanted a unit that meets state overweight-vehicle laws for a 6-by-4 chassis with a full debris tank. We tried to accommodate as many state regulations as we could with a standard design."

Snyder notes that more and more states are cracking down on overweight vehicles. Some even use portable scales that allow them to pull over drivers anywhere. "In a number of states, it doesn't matter if you're a municipal operator or a contractor, you're going to get a ticket if you're overweight," Snyder observes. "Plus there are true traffic safety hazards associated with operating an overweight vehicle."

The X-10 is engineered for maximum weight distribution. It weighs 54,000 pounds with a full debris tank, and the weight is properly distributed by using a 20,000-pound front axle and 34,000-pound rear tandem axles.

The unit has a 10-cubic-yard debris tank. Four side-mounted tanks hold a total of 1,000 gallons of water, and the water pump produces up to 18 gpm at 2,000 to 3,000 psi. A cold-weather recirculator aids the pump by keeping water moving so it doesn't freeze.

In addition, a 27-inch Hg vacuum pump moves material at 3,800 cfm through an 8-inch vacuum tube. "We found that if you use a 27-inch vacuum pump and properly introduce water, you can dig a hole without producing a massive amount of mud," Snyder says. "There's no need to soak the ground, just get it wet enough to be easily conveyed."

Additional features include a 360-degree-radius boom; a heated enclosure for tools, nozzles and clothing; a 700,000-Btu boiler that heats water for winter or clay excavating; a cyclone separator that helps keep debris from entering the blower; and a remote control that operates the boom and water pump. The unit also comes with an optional 15-cubic-yard debris tank.

"You can use our unit when it's 30 degrees below zero or when it's hotter than 120 degrees outside," Snyder says. 800/752-2400; [www.hi-vac.com](http://www.hi-vac.com).



X-10 vacuum excavator from Hi-Vac Corp.



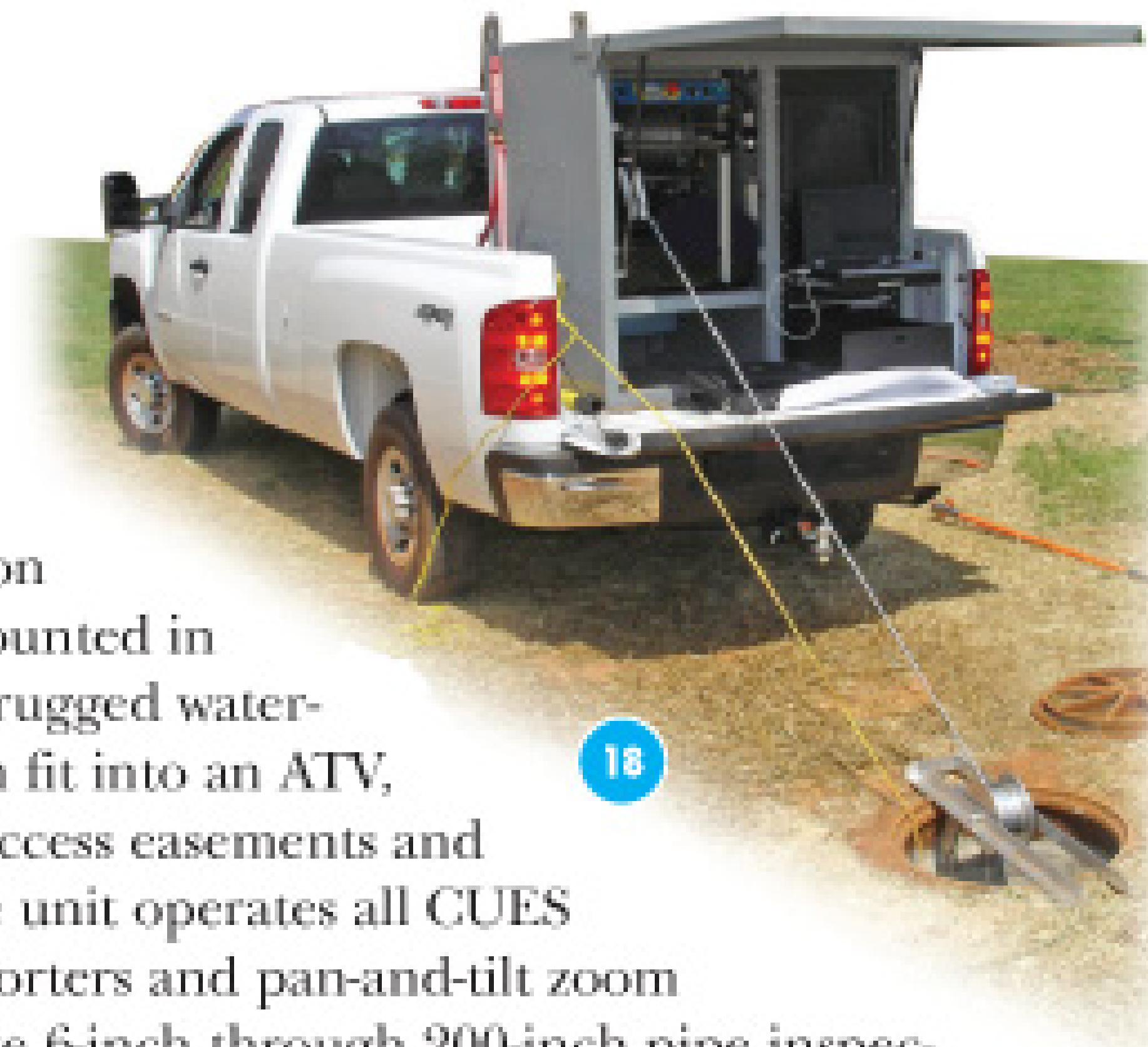
## Radiodetection Introduces Penetrating Radar System

The RD1000 portable ground-penetrating radar system from Radiodetection enables technicians to see a pipe or cable in its topographical context, including nonconductive materials and plastic pipes. Weighing less than 50 pounds, the unit can be assembled on-site in less than two minutes and dismantled for compact storage and safe transportation. Its DSP core displays a subsurface map in real time on a high-contrast LCD. It also features integrated digital color and gain enhancements that let the operator maximize quality and performance. Advanced digital filtering helps the operator eliminate unwanted signals and provides greater accuracy. 877/247-3797; [www.radiodetection.com](http://www.radiodetection.com).



## CUES Introduces K2 CCTV Base Station

The K2 Base Station portable CCTV inspection system from CUES is mounted in a compact, lightweight, rugged water-proof enclosure that can fit into an ATV, van or pickup truck to access easements and hard-to-reach areas. The unit operates all CUES wheeled/tracked transporters and pan-and-tilt zoom cameras to accommodate 6-inch through 200-inch pipe inspection. Camera options include a built-in inclinometer, sonde or laser diode system to measure cracks and offsets. 800/327-7791; [www.cuesinc.com](http://www.cuesinc.com).



## Electric Eel Introduces D-5 Cleaner

The D-5 continuous cable drum-cleaning machine from Electric Eel Manufacturing Co. features 3/4-inch Tri-Max cable that can clean 3- to 10-inch diameter pipe up to 100 feet long. The unit has a high-density polyethylene drum, 1/2-hp capacitor-type motor and loading wheel built into the handle. 800/833-1212; [www.electriceel.com](http://www.electriceel.com).



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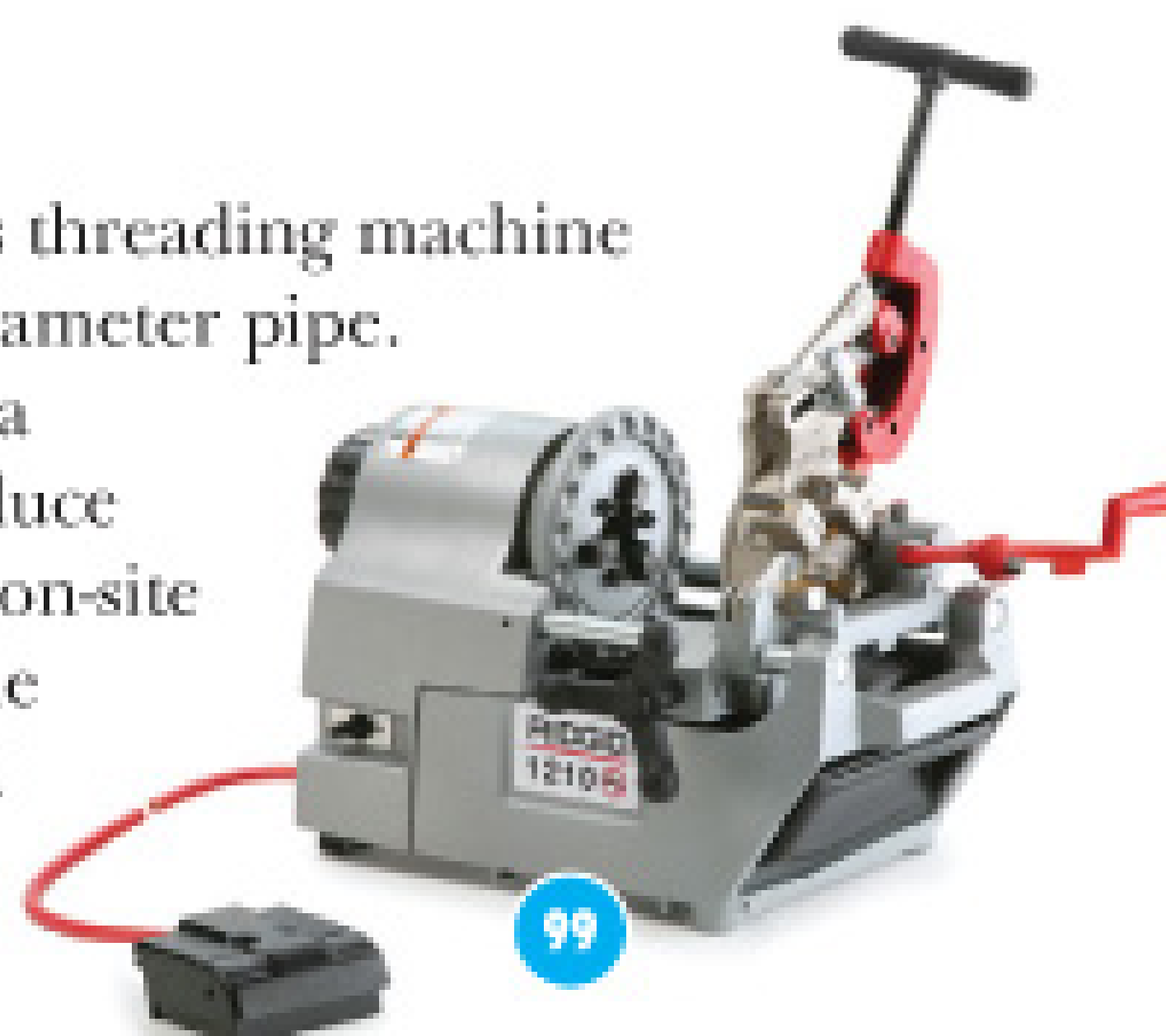
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## Coxreels Increases T-Series Capacity

Coxreels has increased the capacity of its heavy-duty Truck Mount Series to 75 feet of 3/4-inch I.D. hose and 50 feet of 1-inch hose. The new reels accompany the original heavy-duty T-Series and feature a dual-bearing axle support system. All T-Series reels are spring-motor operated and come standard with Super-Hub and full-frame triple-axle support. Stainless steel rollers are standard on 3/4- and 1-inch hose-handling reels. 800/269-7335; [www.coxreels.com](http://www.coxreels.com).

## RIDGID Designs Oil-Less Threading Machine

The RIDGID Model 1210 oil-less threading machine is designed for 1/2-inch to 1-inch diameter pipe. It combines Oil-Less Gold Dies and a specially formulated coolant to produce virtually dry threads for immediate, on-site installation. Weighing 59 pounds, the unit is equipped with two integrated carrying handles. 800/769-7743; [www.ridgid.com](http://www.ridgid.com).



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# THE DOPE ON DIESEL

Market conditions and other factors drive up the price of fuel for heavy trucks and equipment. Expect prices to remain high in the foreseeable future.

By Greg Northcutt

**D**iesel prices have been taxing for municipalities and utilities and anyone else who depends on diesel-powered equipment and trucks. From July 2007 to July 2008, the national average price of diesel fuel in the United States increased 65 percent from \$2.89 to a record \$4.76 per gallon before dropping slightly.

And forget the traditional price advantage that diesel once had over gasoline. During mid-summer, the average retail price of diesel was 66 cents higher than that of regular gasoline.

The reason for the rise in diesel prices comes down to supply and demand. Supplies are limited by diminished refinery capacity and areas of strife in oil-producing regions. And demand is up all over, especially in China and India, where construction is ramping up and more people are driving cars. And demand for diesel is growing over gasoline because it is the fuel

of choice for autos in Europe and elsewhere.

While the experts say a little price relief may come, it's not just around the corner. They say fuel prices will probably never drop to where they were a few years ago.

If there is any good news, it is that analysts with the U.S. Department of Energy's Energy Information Administration (EIA) expect the rate of increase in diesel prices — about 40 percent during the first half of 2008 — will taper off significantly between now and the end of 2009. But that's barring further changes in crude oil supplies or demands — a big *if* these days.

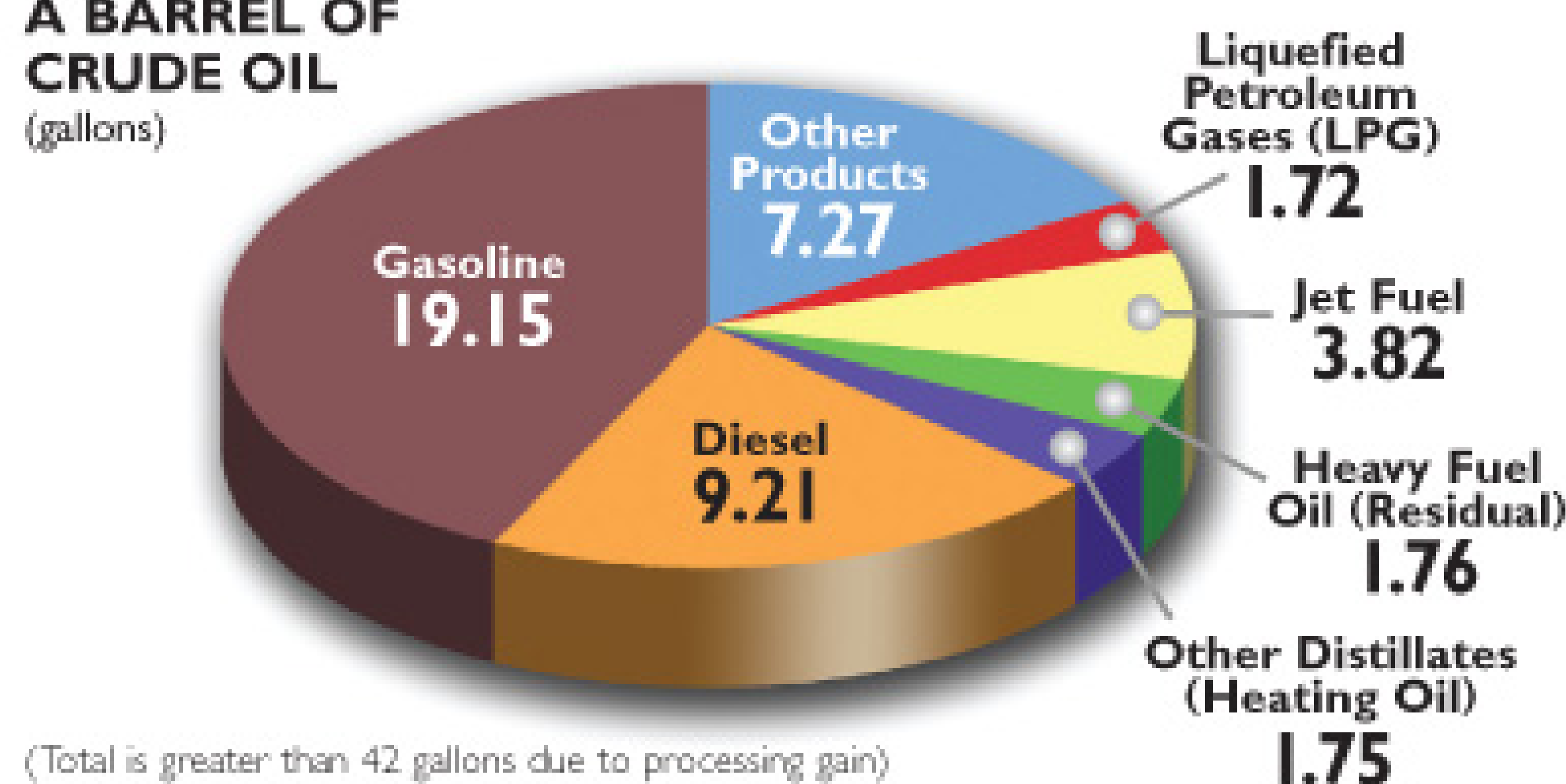
## A closer look

Supply and demand issues have affected the petroleum industry in general. Lucian Pugliaresi, president of the Energy Policy Research Foundation, said at a May hearing before the U.S. House of Representatives: "Over the last 10 years, the world oil market has clearly experienced an unprecedented number of new and sustained impediments to development. At the same time, global oil demand has grown robustly."

Ben Montalbano, a senior research analyst for the foundation, adds, "It's basically a matter of supply and demand forces at work, but the main point to realize is that demand for diesel is being met. There have been no shortages."

Diesel is one of several

## PRODUCTS MADE FROM A BARREL OF CRUDE OIL (gallons)



**"It's basically a matter of supply and demand forces at work, but the main point to realize is that demand for diesel is being met. There have been no shortages."**

Ben Montalbano  
Energy Policy Research  
Foundation

middle distillates refined from crude oil. The price of No. 2 distillate, the main source of motor diesel fuel in the U.S., is affected by various factors, the largest being the price of crude oil, which accounts for nearly two-thirds of the retail price. "The rule of thumb is that every one-dollar change in the price of crude results in a 2.4-cents-per-gallon change in the price of diesel," says Tancred Lidderdale, a senior economist with the EIA. The price of crude oil, in turn, is affected by various factors.

**Growing demand.** World oil consumption continues to grow despite seven consecutive years of increasing prices, the EIA reports. Rising incomes in many areas of the world, including India and

China, have increased the demand for diesel significantly. In fact, most countries rely more heavily on diesel fuel than the U.S. does. Government subsidies for gasoline and diesel have also pushed up demand for crude oil.

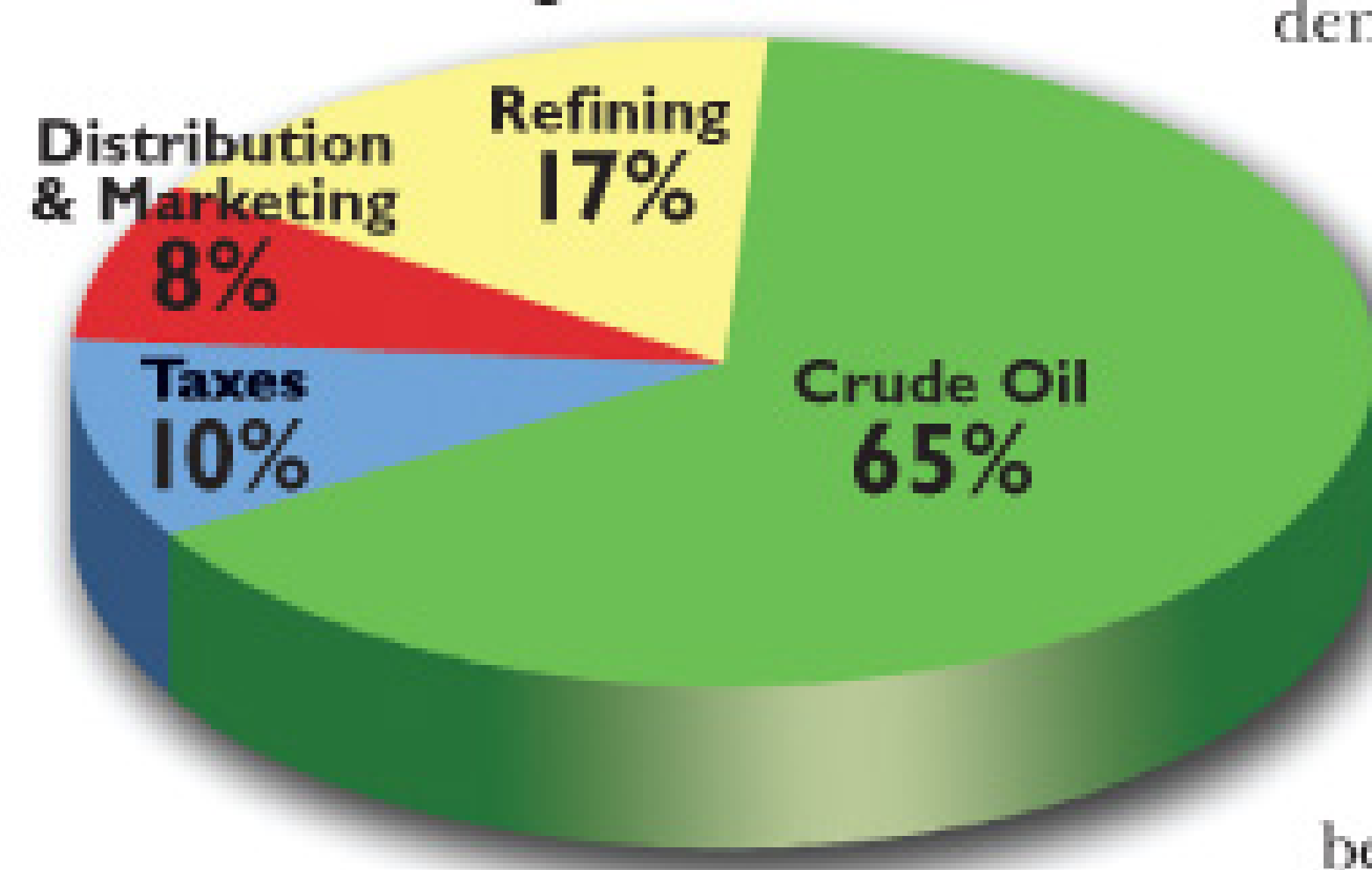
**Tight supplies.** The oil market remains tight, as shown by rising prices, low surplus production capacity, and concern that global supply growth may not keep pace with demand growth, at least in the short run. Two years ago, the U.S. consumed 20.7 million barrels of petroleum products a day, 60 percent imported. Almost half the imports came from the Western Hemisphere.

Today the EIA estimates the world supply of crude oil at 86.5

## WHAT WE PAY FOR IN A GALLON OF DIESEL FUEL

(June 2008)

Retail Price: \$4.68/gallon



Source: Energy Information Administration

## INNOVATION ON THE WAY

Biodiesel and hybrid drive trains for trucks and construction equipment offer some long-term promise to help equipment users deal with diesel fuel prices.

Most biodiesel is made from soybean oil, although it can be produced from other oil crops and from animal fats, recycled cooking oils and trap greases.

"Biodiesel is one of the best-tested alternative fuels and the only alternative fuel to meet all the testing requirements of the Clean Air Act," says Amber Pearson, with the Biodiesel Board. "Biodiesel can be operated in any diesel engine with little or no modification to the engine or the fuel system."

Biodiesel is typically blended with petroleum diesel fuel at concentrations up to 20 percent (B20). Nearly all U.S. engine makers accept at least B5. Case, Cummins, Caterpillar and John Deere have approved B20 or higher in some or all engines, Pearson notes. New Holland supports B100 in all equipment with New Holland-manufactured diesel engines, including electronic injection engines with common rail technology.

"Thanks to the June approval of biodiesel blend levels by the standard-setting organization ASTM International, engine makers will be more receptive to adding to their warranty statements higher blend levels of biodiesel, like B20," Pearson says.

Biodiesel is also helping to keep a lid on petroleum prices. "Earlier this year, a commodity strategist with Merrill Lynch estimated that oil and gasoline prices would be about 15 percent higher if producers of biodiesel and other biofuels were not increasing their output," Pearson says.

In January, Mack Trucks demonstrated the use of hybrid technology in a 64,000-pound truck. Hybrid drive systems convert braking energy into electrical power, which then supplements engine power, saving on fuel.

"This project has persuaded us that hybrid systems can have a major impact on reducing the more than 38 billion gallons of diesel fuel the U.S. trucking industry consumes every year, but only if our industry and government apply creative thinking to the commercialization of this technology," says Paul Vikner, Mack president and CEO. "Our research indicates that hybrid electric systems in heavy-duty trucks could save as much as 35 percent of the fuel consumed by conventional vehicles."

Meanwhile, diesel fuel-saving hybrid vehicles are starting to show up in construction equipment. For example, New Holland Construction, in cooperation with Kobelco Construction Machinery America Co. Ltd., has developed a prototype hybrid 7-ton hydraulic excavator. Last March, Volvo unveiled a prototype of its L220F Hybrid wheel loader. Two months later, Komatsu introduced the PC200-9 Hybrid excavator to the Japanese market.

million barrels per day. "The market these days is calling for just about all of that supply immediately," says Montalbano. What's more, he notes, world oil supplies are about 2.5 to 4.5 million barrels per day less than predicted at the beginning of this decade.

**Risks to production.** The price of diesel is also tied to the actual and perceived risks of a reduction

in supplies of crude or refined oil. Those risks range from war and weather-related threats at production and transportation facilities to government policies affecting development of oil resources. The higher the risks, the more money oil investors and buyers demand.

**Cleaner-burning fuels.** The phase-in of U.S. EPA standards to reduce sulfur content in diesel fuel

**"We don't see the global forces pushing up oil prices over the past four years letting up immediately. ... There's always a certain degree of uncertainty in the world oil market. So many things can happen to prove us wrong."**

**Tancred Lidderdale  
Energy Information  
Administration**

helped pressure diesel prices upward, according to the EIA. These standards require all on-highway diesel fuel sold in the U.S. to be ultra-low-sulfur diesel (ULSD) by Dec. 1, 2010. Phasing in of clean-fuel requirements for off-highway began last year. Nearly all diesel fuel used in the U.S. must be ULSD by the end of 2014.

**Market speculators.** Rising crude oil prices have prompted calls in the U.S. Congress for closer scrutiny of trading in oil futures contracts and for limiting the role of speculators. As the value of the U.S. dollar has fallen, says Tavio Headley, staff economist with the American Trucking Associations, investors have been buying petroleum futures contracts as a hedge against inflation. "The big question is how much this is contributing to the run-up in crude oil prices," he says. "The federal Commodity Futures Trading Commission is looking into the matter."

### No sudden price decreases

Historically, the pump price for diesel has been lower than that of

regular gasoline, except during some winters when demand for heating oil was high. However, since fall 2004, diesel prices have generally been higher than gasoline prices. One reason is an increase in federal tax on diesel fuel. Another is increasing global demand.

By late summer, there were signs of moderation in diesel fuel prices. In July, EIA analysts projected the rate of increase in the spot price of West Texas Intermediate (WTI) crude oil to be moderate, peaking at \$140 per barrel in the fourth quarter before declining to \$127 by the fourth quarter of 2009. Analysts expected a similar trend in the refinery price of diesel fuel, rising from \$3.67 per gallon in the second quarter to \$4.01 in the fourth quarter, then falling to \$3.53 by the fourth quarter of 2009.

In their July 2008 *Short-Term Energy Outlook*, the analysts reported, "WTI prices, which averaged \$72 per barrel in 2007, are projected to average \$127 per barrel in 2008 and \$133 per barrel in 2009. Diesel fuel retail prices in 2008 are projected to average \$4.35 per gallon, up from \$2.88 per gallon last year, and increase to an average of \$4.48 per gallon in 2009."

EIA's Lidderdale observes, "We don't see the global forces pushing up oil prices over the past four years letting up immediately. There's always a certain degree of uncertainty in the world oil market. So many things can happen to prove us wrong." ♦



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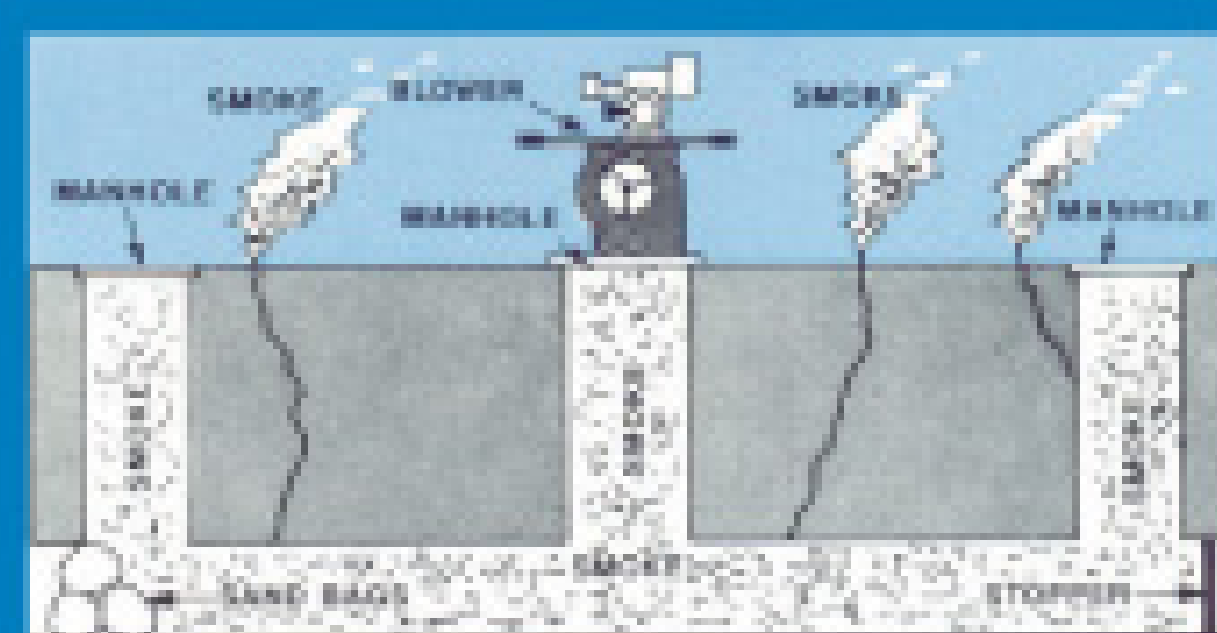
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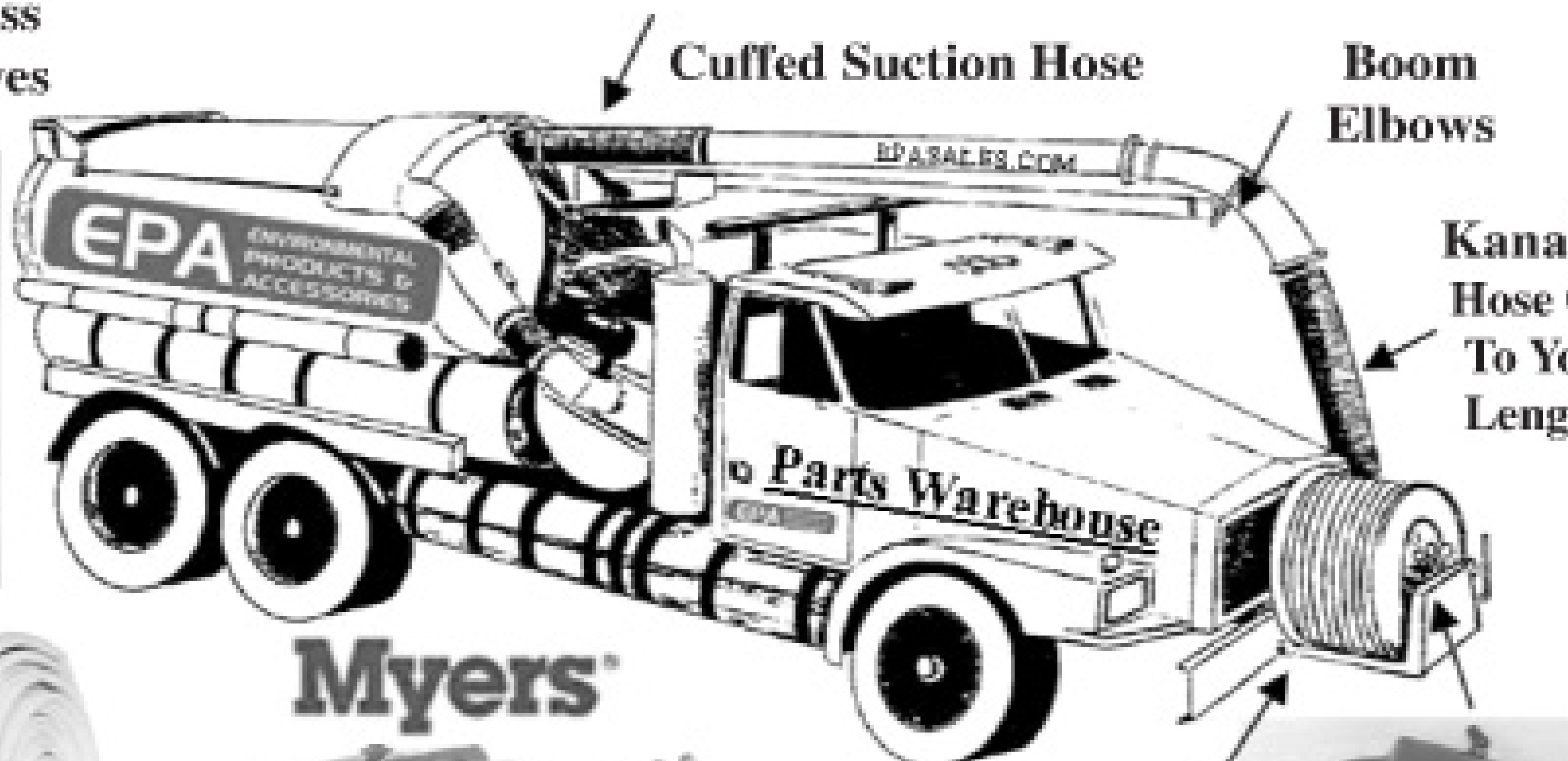
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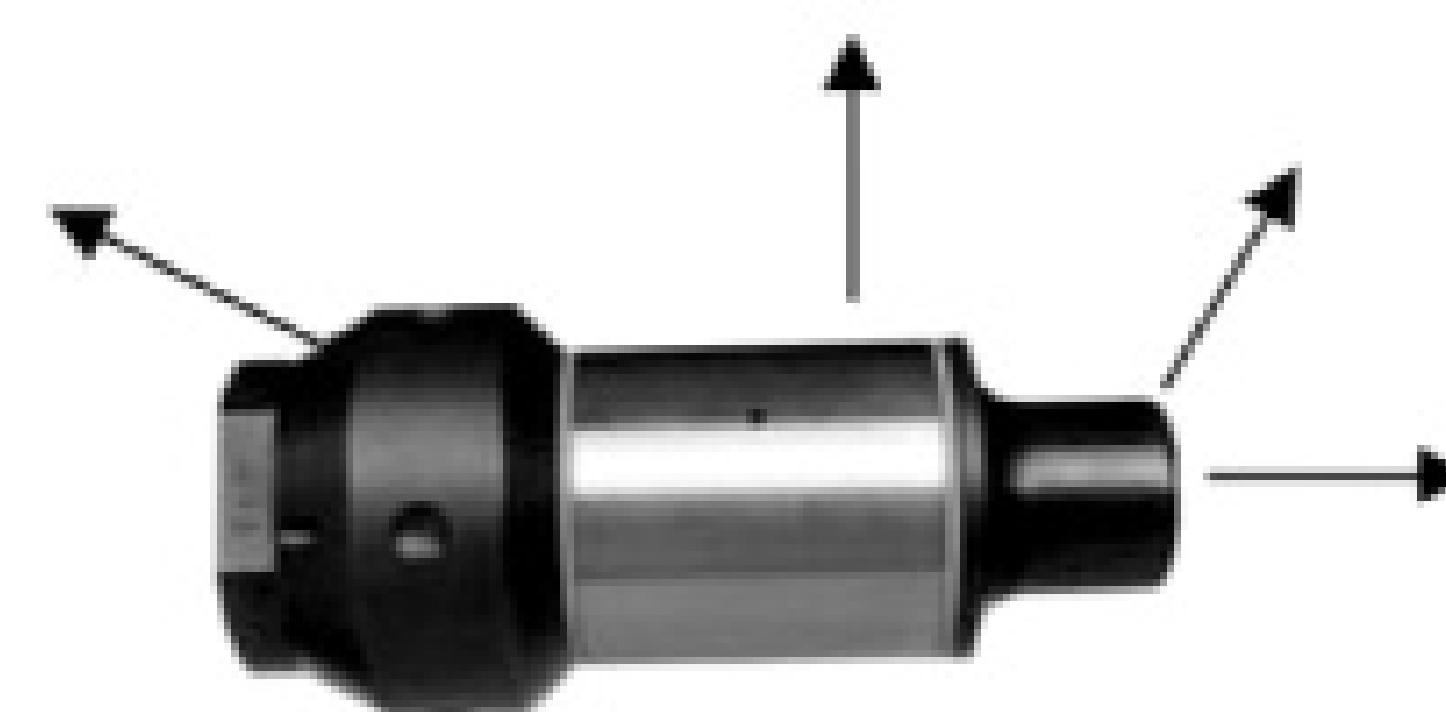
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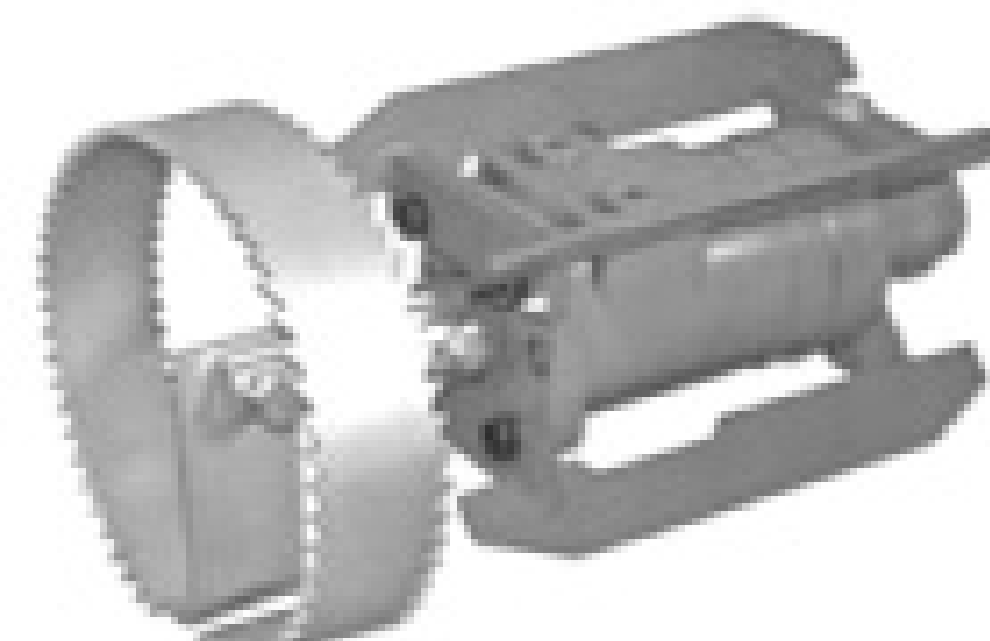
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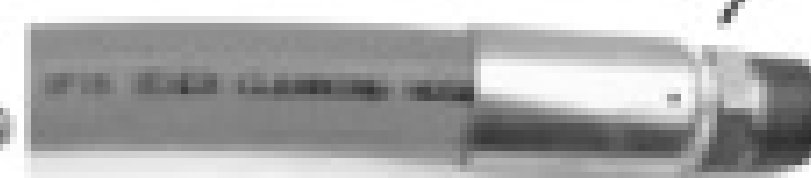
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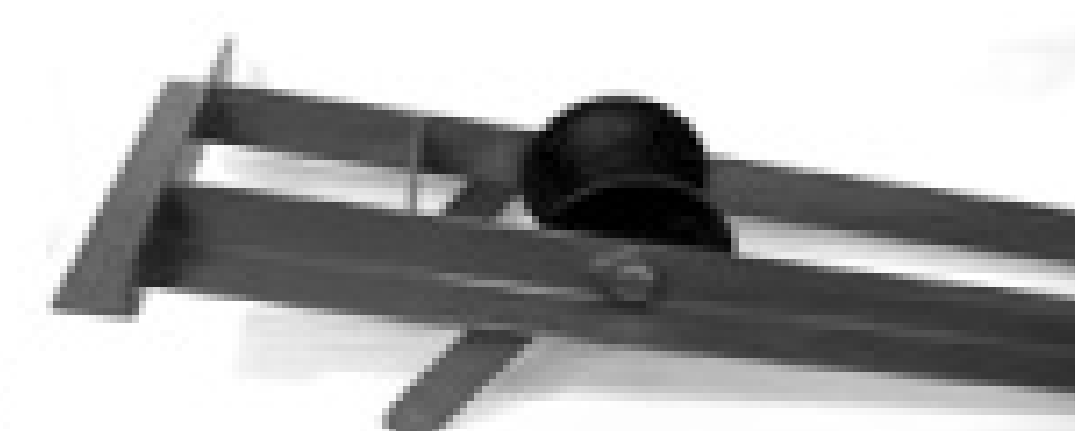
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# MAKING IT FUN

The Portland Water Bureau uses entertainment as a tool to deliver vital information — and enhance public support for its initiatives

By Ken Wysocky

People who aren't in the business may find most municipal public works Web sites less than exciting. That's not the case in Portland, Ore.

The Portland Water Bureau Web site is as entertaining as it is informational. A frequently updated water blog, written by a bureau staffer in a breezy, conversational style, is the centerpiece of an Internet public outreach program, says Jimmy Brown, manager of the bureau's community involvement and information section.

"It's another way for us to tell the bureau's story," Brown says. "About 60 percent of the city's households are wired to the Internet, so this is a good vehicle to connect with those residents on information that's important to them."

The numbers back up Brown's assertion. The site, which had initially received about 2,000 hits per month, suddenly got 6,000 to 8,000. Brown attributes that to Portland residents' affinity for social networking and to the blog's increasing editorial content — hundreds of articles are archived on the site.

In addition, city surveys show that residents' support for bureau projects has increased by more than 50 percent during the last couple of years. Brown says that overall public outreach is successful.

## What's going on?

Visitors to the Web site ([www.portlandonline.com/water](http://www.portlandonline.com/water)) enjoy a mix of serious and amusing stories. They learn about things like hard water (including an answer to the age-old question of whether it can really break teeth). Or they can read about the two residents arrested for skinny-dipping in a reservoir, repairs to one of the city's famous fountains, a new water bottle for hikers that filters out water-borne viruses, and the bureau's "I Only Drink Tap Water" campaign.

The blog also engages readers with fun yet informative trivia questions. For example, readers recently were asked:

- How many customers does the bureau serve? (860,000)
- Which country was the first to treat its public drinking water? (Belgium)

In short, the bureau takes information seriously by using humor to convey it. "We can get technical with the best of them," says Brown, a city employee for almost 15 years. "But the real question is: Can we get the information out so that the average person understands what's going on with their water system?"

"We want the site to be somewhat technical, but not so laced with scientific principles that people throw up their hands and

say, 'I don't really want to read this stuff.' It's better to make it enjoyable as well as informative."

The seeds of the blog were sown when the bureau sent a group of employees to New Orleans to help rebuild infrastructure after Hurricane Katrina. A public information officer who enjoys blogging began sending daily reports to bureau colleagues that, in turn, were posted

**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 Ted Rulseh at 800/257-7222, or e-mail [editor@mswmag.com](mailto:editor@mswmag.com).

**"We can get technical with the best of them.**

**But the real question is: Can we get the information out so that the average person understands what's going on with their water system?"**

**Jimmy Brown**  
Portland (Ore.) Water Bureau

on an employee intranet site.

"Out of that, we decided to go public and write articles about the water bureau, based primarily on information requests from residents," Brown says. "We didn't want anything really heavy or technical, but more along the lines of, 'This is the life of the water bureau.'"

"If you look at the blog now versus the fall of 2007, it's a 180-degree difference," he says. "It's a much more robust blog, with much more zip and personality. It puts technical information out there in light, airy and user-friendly fashion."

The blog takes national stories and brings them down to a local,

## Reaping benefits

Raising the public's awareness of the water system is critical to its future, Brown says. City planners estimate the Portland metro area will grow by two million people in the next 20 to 25 years, imposing more demands on the 150-year-old system.

"We operate based on ratepayer resources," Brown says. "In order to maintain, repair and expand the system, we're charging people for something that falls from the sky for free. People are always concerned about costs, and if we aren't adept at telling our story, then it's difficult to go to the public

and ask for a 5- or 10-percent rate increase."

Moreover, a well-educated public that understands the system's needs is less opposed to major projects and improvements. That's critical, because with prices rising for commodities like steel and oil, delays in starting new projects can increase their costs.

"By engaging the public, we let stakeholders have a say in what's going on in their particular neighborhood or around their businesses," Brown notes. "The more informed they are, the easier it is for us to do the work that's necessary. We've seen what lack of engagement does to the body politic. It shuts down projects and causes ill will among residents. We want to avoid that at all costs."

The department's outreach goes far beyond the Internet. For

instance, a recent extension of the city's light rail system coincided with a large water line reconstruction project and could have created a public relations nightmare. But 18 months before the project started, the department went door-to-door to every business affected by the project — a 16-block area with more than 75 businesses. The department also held focus groups where representatives from those businesses could express their concerns.

In addition, instead of using typical construction fencing to block off the project work zones, the department designed messages printed on mesh screens that explained how the bureau's Forest to Faucet water system works. (Water from Bull Run Lake, some 40 miles east of Portland, travels via the Bull Run River to reservoirs

before it emerges as tap water in residents' homes.)

Other screen-fencing sections explained things like water conservation, sustainability and infrastructure maintenance. "We looked at the fences as more than just a device to close off a gaping hole," Brown says. "It was an opportunity to continue to let folks know about this wonderful resource. We believe that if you're going to maintain a strong water system, then more people need to know about it than just the interested few. So we're very aggressive about getting those messages out."

#### Keep residents informed

The department also goes door-to-door in residential neighborhoods to alert people about construction projects. "We even notify people about a valve replace-

ment," Brown says. "We put notices on residents' doors 48 hours ahead of time, telling them they'll be without water for a period of time."

"The day before, we try to personally contact all the people affected so they're prepared to find alternate water sources," he says. "On occasion, we've even purchased bottled water, as well as groceries, for residents who can't get out and do it themselves."

Do these outreach efforts benefit the bureau? Absolutely. "Part of it is intuitive," Brown says. "But city surveys show that in the last couple years, we've gone from an average of 40 percent approval rating (in support of water projects) to 64 percent. So we know our efforts are bearing fruit." And seriously entertaining residents, too. ♦



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1:00 - 2:00	Selling Value
2:30 - 3:30	How to Add Value to Every Customer You Have and Future Customers
4:00 - 5:00	How to Determine Your Operating Costs

### ROOM C203

#### WJTA / PSAI / CBSA

8:00 - 9:00	What an Air Mover Can Do For You
9:30 - 10:30	The Basics of High Pressure Waterblasting
11:00 - 12:00	Waterjetting Applications
12:00 - 1:00	Lunch Break
1:00 - 3:30	Understanding Your Cost to Insure Profitability (PSAI)
4:00 - 5:00	Cross Bores of Gas Lines in Sewers (CBSA)

### ROOM C204 & C205

#### SSCSC Southern Section Collection Systems Committee

8:00 - 9:00	Trenchless Pipe Rehabilitation
9:30 - 10:30	CCTV Pipeline Inspections
11:00 - 12:00	The Nuts and Bolts of GIS
12:00 - 1:00	Lunch Break
1:00 - 2:00	The Nitty-Gritty on Pipeline Cleaning
2:30 - 3:30	Confined Space and Protective Equipment Safety Requirements
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11:00 - 12:00	Evaluating Costs as Part of the Decision Making Process
12:00 - 1:00	Lunch Break
1:00 - 2:00	Meeting Part 503 Requirements
2:30 - 3:30	Turn Grease Trap Waste Into Gold
4:00 - 5:00	Developing a Business Plan

### ROOM B103 & B104

#### NOWRA National Onsite Wastewater Recycling Association

8:00 - 9:00	NOWRA Overview & Industry Trends
9:30 - 10:30	Soil & Site Evaluation Overview
11:00 - 12:00	Septic Tanks: Function, Inspection, Installation & Trouble Shooting
12:00 - 1:00	Lunch Break
1:00 - 2:00	Aerobic Treatment Units & Filters
2:30 - 3:30	Pumps & Controls
4:00 - 5:00	Operation & Maintenance of Systems

### ROOM C101 - C104

#### NASSCO National Association of Sewer Service Companies

8:00 - 9:00	Robotics For the Future, What Does it Mean for You?
9:30 - 10:30	Small Diameter Epoxy Coatings
11:00 - 12:00	Root Control, How Does it Work and Why is it Needed?
12:00 - 1:00	Lunch Break
1:00 - 2:00	OSHA Regulations
2:30 - 3:30	Choosing the Correct Chemical Grouts
4:00 - 5:00	Trained Technology Inspectors

### ROOM C105 - C108

#### NEHA National Environmental Health Association

8:00 - 9:00	How to Work With Regulators and Regulations
9:30 - 10:30	Pumpers: Operation and Maintenance
11:00 - 12:00	Routine Maintenance Inspections
12:00 - 1:00	Lunch Break
1:00 - 2:00	Using the Certified Installer Credential to Help Your Business
2:30 - 3:30	T.B.D.
4:00 - 5:00	T.B.D.

### ROOM C109 - C112

#### SCOTT HUNTER Business Track

8:00 - 9:00	The Art of Personal Sales
11:00 - 12:00	The Art of Personal Sales (Part 2)
12:00 - 1:00	Lunch Break
1:00 - 2:00	Yes, We Have to Work Together, but Does it Have to be So Painful?
4:00 - 5:00	The Art of Being Outrageously Successful!

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09



## THURSDAY

February 26th, 2009

ROOM B101 & B102

### Portable Toilet Track

- 8:00 - 9:00 Portable Sanitation Start Up  
**Hampel**
- 9:30 - 10:30 Selling Portable Restrooms Services  
**Satellite Industries**
- 11:00 - 12:00 T.B.D.

## FRIDAY

February 27th, 2009

ROOM B101 & B102

### Sewer Cleaning Track

- 8:00 - 9:00 High Pressure Hose Safety & Proper Use  
**Spir Star**
- 9:30 - 10:30 The Better Jetter, Secrets to Jetting  
**US Jetting**
- 11:00 - 12:00 Chemical Root Control  
**Douglas Products**



ROOM C105 - C108

### Liquid Waste Track

- 8:00 - 9:00 Decentralized Wastewater Sustainability - **Aquatest**
- 9:30 - 10:30 T.B.D.
- 11:00 - 12:00 Modular Waste Water Treatment  
**Big Fish Environmental, LLC**

ROOM B103 & B104

### Business Track

- 8:00 - 9:00 Maintenance Agreements for Commercial Accounts  
**Spartan Tool**
- 9:30 - 10:30 First Rate Customer Service  
**RooterMan**
- 11:00 - 12:00 Insurance and Risk Management  
**Heffernan Insurance**



ROOM B103 & B104

### Municipal Track

- 8:00 - 9:00 Why Measure Sewer Flows from Private Services? - **City Meter**
- 9:30 - 10:30 Polymer Solutions for Wastewater Treatment - **Fort Bend Services**
- 11:00 - 12:00 Rotary Jets for Material Removal  
**StoneAge**

ROOM C109 - C112

### Miscellaneous Track

- 8:00 - 9:00 Keys to Proper Power Take-Off  
**Muncie Power Products**
- 9:30 - 10:30 Vacuum Tank, Chassis and Pumps  
**Amthor International**
- 11:00 - 12:00 Lateral Replacement Program  
**TT Technology**

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# EXHIBITING COMPANIES

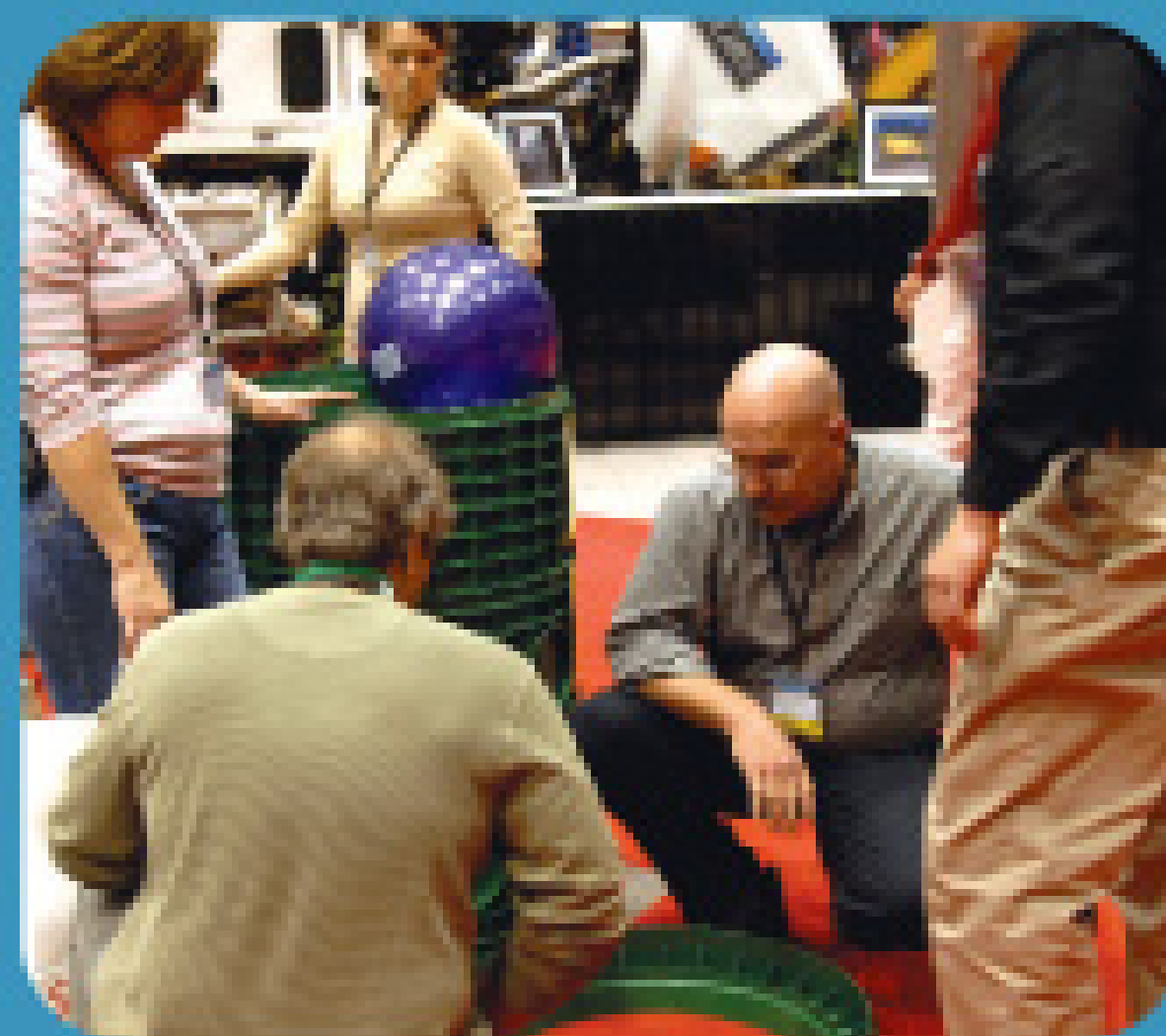
Current list of exhibiting companies as of October 8th, 2008. List subject to change without notice.

27th Trucks, Inc.  
A & L Systems, Inc.  
A Corp/Rooter-Man  
A Global Chemical Co.  
A.R. North America  
A.W. Cook Cement Products  
Abbott Rubber Company  
Abernethy Welding & Repair Inc.  
Accent Manufacturing  
ACE DuraFlo Systems  
Acro Trailer  
Adler Tank Rental  
Advance Pump & Equipment  
Advanced Containment Systems Inc.  
Advanced Drainage Systems  
Advanced Infrastructure  
Advanced Pressure Systems  
Advanced Tank Systems  
Advanced Wastewater Systems  
AGCO-Ag Chem Division  
AK Industries  
Allan J. Coleman  
AllGreen Manufacturing, LLC  
Allied Construction Products, LLC  
Allied Graphics  
Allied Tank Co.  
Alpha Mobile Solutions  
Alpine Leasing, Inc.  
AltumaMats  
Ameri-Can Engineering  
Amerik Engineering  
AP/M Permaform  
Aqua Ben Corporation  
Aqua Blast Corporation  
Aqua Male Technologies  
Aqua-Zyme Disposal Systems Inc.  
Arcan Enterprises Inc.  
Aries Industries Inc.  
Armal, Inc.  
Arthur Products  
Ashland Trap Distribution, Co.  
Ashtead Technology Rentals  
Atlanta Rubber & Hydraulics Inc.  
Avanti International  
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Badger Truck Center/Badger VACS  
Baker Corp.  
Bakers Waste Equipment  
Bandlock Corporation  
Banjo Corp.  
BASE Engineering  
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Brenlin Co., Inc.  
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Cadman Power Equipment  
Cam Spray  
Canplas Industries Ltd.  
Cape Cod Biochemical Co.  
Capital Partners  
Capital Rubber Corp.  
Cat Pumps Corporation  
Center Capital Corporation  
Century Chemical Corporation  
Champion Pump Company, Inc.  
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Chelsea Products/Div. of Parker  
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Chempure Products Corp.  
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Clear Computing  
Clearstream Waste Water Systems Inc.  
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Cobra Technologies  
Comforts of Home  
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Compliance Solutions  
Concentric Enviro Inc.  
Consolidated Treatment  
Containment Solutions Inc.  
Control Chief  
Cook Compression  
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Coxreels  
CreteX Specialty Products  
Cross Bore Safety Association  
Crust Buster/Schmitz Bros.  
CUES Inc.  
CuraFlo Technologies Inc.  
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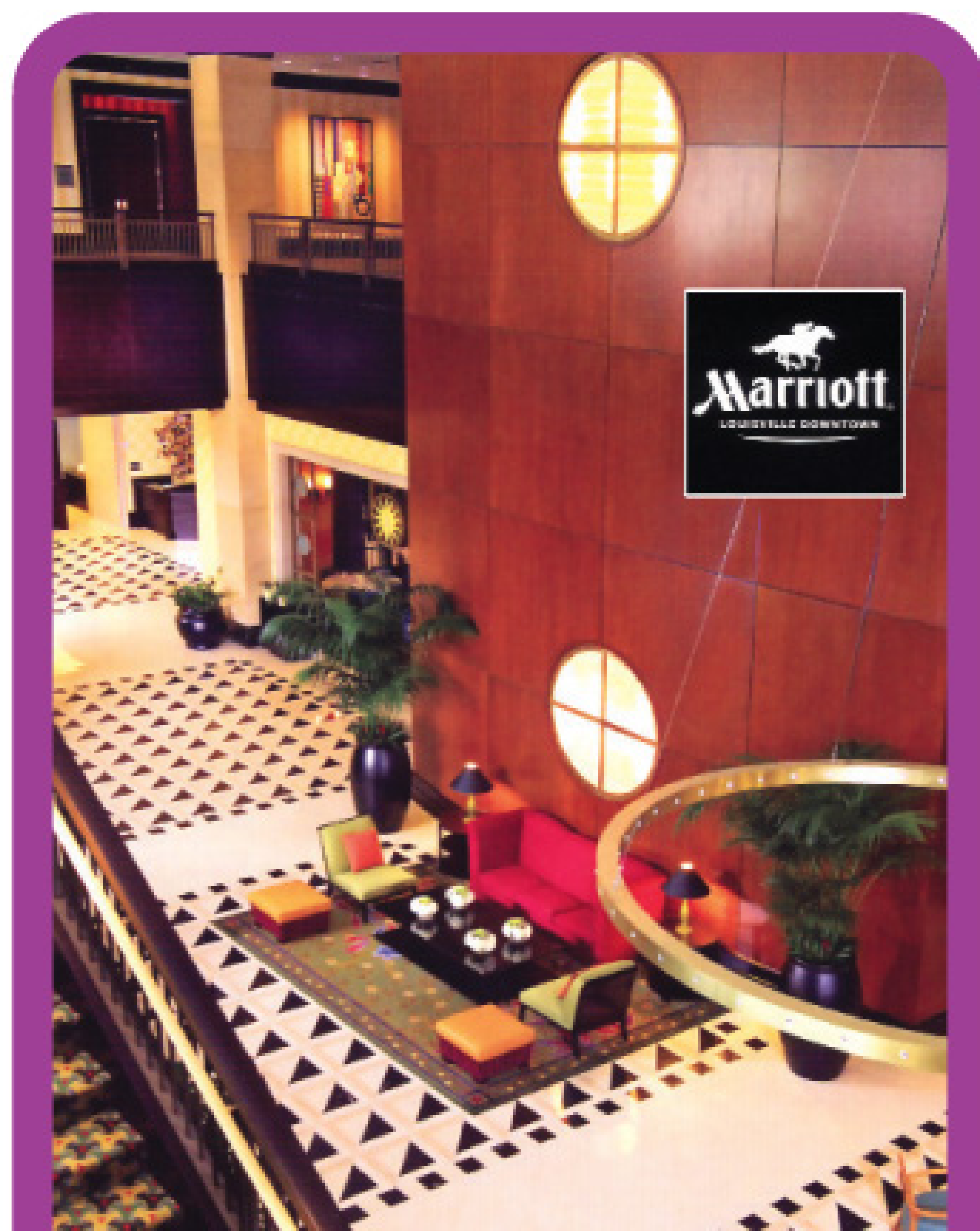
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# NASSCO MEMBERSHIP KEEPS ON GIVING

By Irvin Gemora

**I**n the spirit of the holiday season, take a moment to reflect on the year that's nearly over. Think of what you've accomplished and about your goals and desires for the year ahead. How is your business doing? Where do you want it to go? How deep is your industry knowledge? What are you doing to develop your skills and keep up with the industry?

One of the best gifts and investments you can make this holiday season is a gift to yourself. Treat yourself to a NASSCO membership. It's a gift that truly keeps on giving — to you, your family and your employees.

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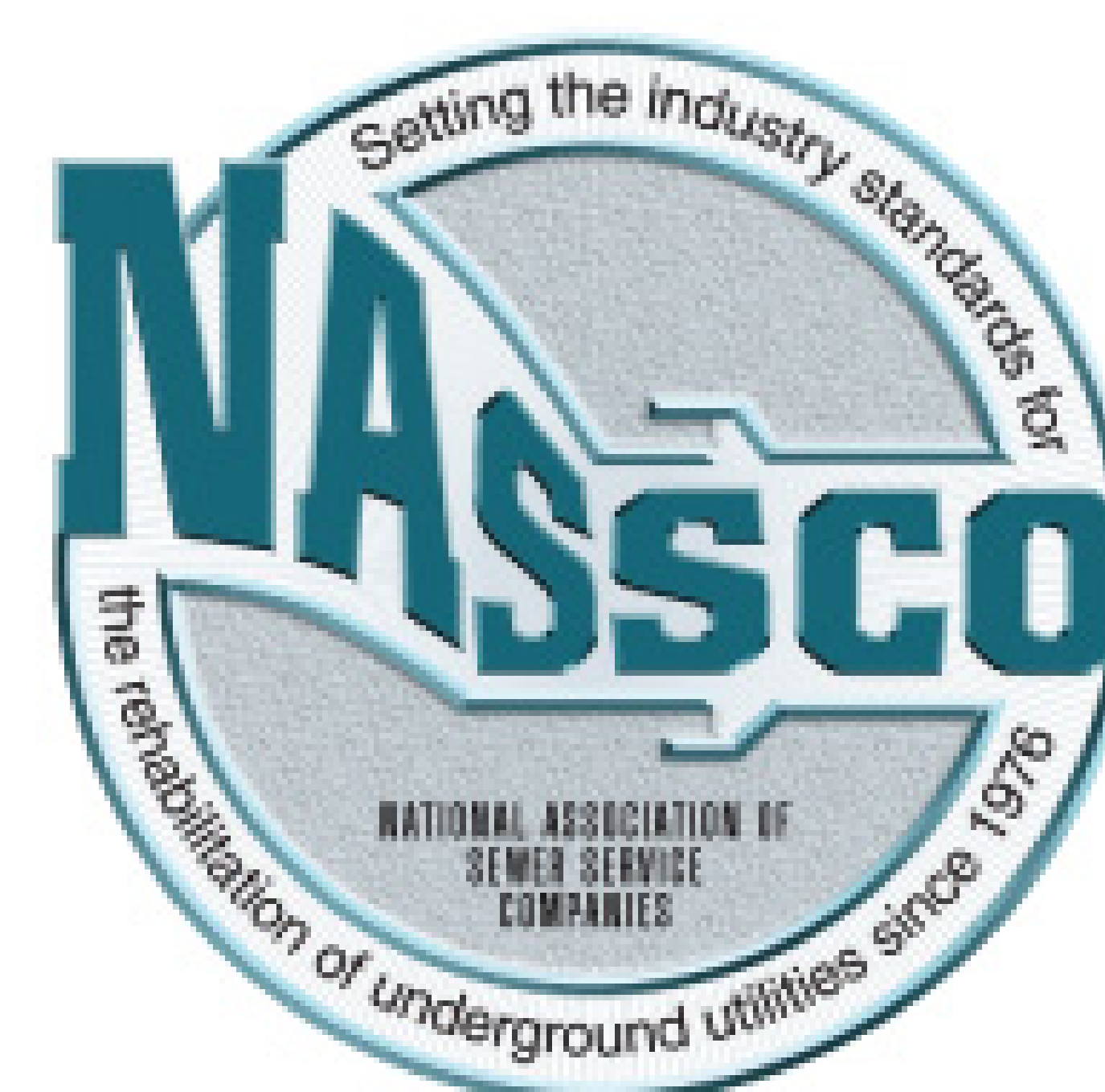
three decades has led the way for the trenchless technology industry with networking, education and training. While setting standards for the rehabilitation of underground utilities, NASSCO has helped our businesses grow and achieve success. Throughout the year, you'll receive our print and electronic newsletters, access to free performance specifications (free even to nonmembers), networking opportunities, educational sessions and much more.

It may sound like a stretch that your family will benefit from NASSCO membership, but I've seen it happen. Every year, our annual meeting is held in a sunny location during the heart of winter. While these meetings are filled with educational and training

opportunities, they are also a great time to get away.

Along with our technical sessions, business meetings and networking events, we arrange spouse tours, golf outings and more. My wife and I have made many friends by attending these meetings year after year. Members who attend alone say their families still benefit because they return from meetings happy, refreshed and armed with new enthusiasm for their careers.

Your employees will benefit from NASSCO membership because you will have so much great information to share. You can provide educational and training opportunities to help them learn and grow. This year we kicked off our new Inspector Training and Certification Program for CIPP. We will



expand it in 2009, offering training for other rehabilitation technologies.

I invite you to join me at NASSCO and experience for yourself the wonderful gift a NASSCO membership provides. To learn more, visit [www.nassco.org](http://www.nassco.org) or call Andrea Carter at 410/486-3500. ♦

Irvin Gemora is executive director of NASSCO. He can be reached at [director@nassco.org](mailto:director@nassco.org). The NASSCO headquarters is at 11521 Cronridge Dr., Suite J, Owings Mills, MD 21117.

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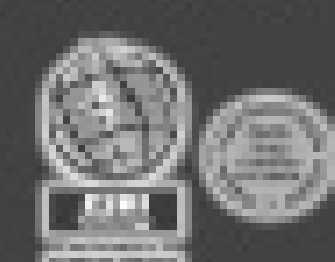
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2007 Mack CTP713B pump truck. 20 front and 44 rear, 5,363 miles, AM/FM, CD player. 4000 gallon tank with 506 Challenger pump. \$145,000. Kevin 850-333-1651. (PTIM12)

## SWEEPERS

2008 American La France Condor with a Vac/All Model VS10DC 3-in-1 machine (sweeper, catch basin, leaf collector), 350 water comp, 10-yd. debris body; vacuum system: 16,500 cfm belt drive with silencer, driven by Cummins turbo charged 6 cyl. diesel. In stock RENT ME!!! (Stock #1791) [www.VacuumSalesInc.com](http://www.VacuumSalesInc.com), (888) VAC-UNIT (822-8648). (M11)

## TRAILERS: VACUUM/TANKER

**Absolute Public Auction** surplus from Metropolitan Sewer of St. Louis on November 20th including vac-trucks, jetters, compost turner and other heavy equipment. [www.jkane.com](http://www.jkane.com). (CMPT11)

## TV INSPECTION

2007 Aries Pathfinder portable, steerable, pan/tilt TV inspection system. Excellent condition, very low hours (<15 hrs.), 1000' cable for use in 6" to 30" pipe. Call Keith @ 615-242-6144. (CM12)

2005 Ford E450 TV Truck, 37,000 mi., EXCELLENT CONDITION, Aries Box upgraded by Optical Robotics, Cobra Tech software, new camera & 6"-96" tractor, diesel Onan gen., A/C office, work bench & washdown. Too much to list! \$70,000 OBO. Ready to run. 1-866-533-TEST. (CM12)

**New Cyclops Sewer Inspection System** in a good running 2001 E-150 Ford Cargo Van. Straight-view color camera, heavy-duty transporter, 500' TV/tow cable, 15" color LCD monitor, powered cable rewind, on-screen footage and keyboard data entry, P&T ready all-in-one controller, 10" rear LCD color monitor, DVD player/recorder and associated manhole hardware plus our famous after the sale service and support. All for the low price of \$39,000. Visit our website @ [cyclopstv.com](http://cyclopstv.com) or give us a call @ 830-249-9756 and talk to the guys that build 'em. (CM11)

**Pads and Chain Assemblies:** Silicon carbide filled for maximum traction and long life. Single and double hole pads for all makes of tractors. Money back guarantee. Contact **Pipe Tool Specialties** (503) 1-888-390-6794 or fax 1-888-390-6670. Samples sent upon request. Same day shipping. We are a 6/12 company. (CMBM)



**1999 Vector 2110J:** 10-yd. debris body, 600' 1" rodder hose, 1500 gal. water tank, 8" vac hose, 8' hyd. telescoping boom, 80 gpm @ 2500 psi hydro-excavating package, 2-stage fan. More pics available at [www.metroquip.com](http://www.metroquip.com).

**208-344-3318**

M11



**2000 Sterling, Vac-Con V311:** 3126 Cat, Cummins 3.9 turbo upper, Allison auto., 20 front, 40 rears, 23,470 miles, 3,309 hours vac unit, 611 hours on jetter.

**814-696-4343 - Hollidaysburg, PA**

CMP11



**Leach Vac All Model E10AD Serial #3414:** 1700 vacuum hrs., powered by 6 cyl. B series Cummins, 2100 truck hrs., Mack Midliner tractor. Only 57,000 orig. miles. Allison auto. Runs and drives very well. Recently serviced. ..Priced to Sell \$11,500

**248-640-0908**

CMP11



**1997 Ford:** 300 hp w/Supersucker, 17" HG 1020 blower, wet/dry.

.....Asking Only \$50,000

**For More information,  
Contact Sergio at  
361-318-4459**

CMP11



**2000 Berringer:** FL80 tandem axle, 1000 cfm, 27" Hg tank split 3000/ 300. Options include ASME, DOT412, 20' top manway, jetting system (35 gpm @ 2000 psi), hyd. hose reel w/500' 3/4" hose, vibrator, aux. hyd. power, transfer pump, work lights, hose hooks. CAT CFE 300HT 300 hp engine, Fuller RT0011908 LL trans. Very good condition. ....\$78,000

**773-619-4556**

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**1999 Vector 2110J:** 10-yd. debris body, 600' 1" rodder hose, 1500 gal. water tank, 8" vac hose, 8' hyd. telescoping boom, 80 gpm @ 2500 psi hydro-excavating package, 2-stage fan. More pics available at [www.metroquip.com](http://www.metroquip.com).

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**2001 Vac-Con:** Mounted on a 2001 Sterling LT7501 chassis. CAT 275 hp engine, 9-spd. trans., 109,500 mi., 20,000 lb. front axle, 40,000 lb. rear axle, 60,000 GVWR. ....\$95,000

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**Manhole Rehab. Trailer:** 20' x 8' bed. Fully hydraulic. 99 hp John Deere diesel. Air compressor, generator, pressure washer, mortar mixer and pump, 300 gallon water tank, 50 ft. hose, gun and spincaster. Ready to work.

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## NASSCO Creates CIPP Committee

NASSCO has formed a CIPP committee to explore all issues related to lining for rehabilitation of aging sewer pipes. The committee is led by Lynn Osborn, engineering manager of Insituform.

"Our committees have played a key role during the past three decades," says Irvin Gemora, executive director. "Committees are comprised of hard-working members who go above and beyond to research and educate us on key issues affecting our industry."

The committee's first project is the research and creation of a Styrene Task Force Report that will investigate issues surrounding the use of styrene in CIPP projects. The report will be peer-reviewed by a team representing consulting engineers, resin suppliers and contractors and is to be released in late 2008.

## New APWA Board Members

The American Public Works Association announced that Susan Hann, P.E., AICP, ICMA-CM, a member of the Florida chapter, is the new director-at-large, transportation. David Lawry, P.E., a member of the Chicago Metro Chapter, was named director of Region V. His appointment fills the unexpired term of Larry Koehle, who assumed the position of president-elect.

## AWWA Conducting Survey

The American Water Works Association Water Treatment Plant Employee Survey is the first in a series of online surveys to become part of Water Stats, a database that allows water and wastewater utilities to com-

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

pare themselves against others. The process helps identify strengths and areas for improvement. Information from the database also can be used to support interpretation of industry trends and projections.

All survey information is presented anonymously, but participants are listed in the summary statistical report, which they receive for free. A more complete report will follow. Members may log in and then take the survey at [www.awwa.org/awwa/waterstats/TreatmentPersonnel/default.aspx](http://www.awwa.org/awwa/waterstats/TreatmentPersonnel/default.aspx).

## StormCon Call for Papers

Professionals may submit proposals to speak at StormCon, the North American Surface Water Quality Conference and Exposition, Aug. 16-20, 2009, at the Anaheim Marriott in Anaheim, Calif. The six educational tracks are:

- BMP Case Studies
- Low-Impact Development
- Advanced Research Topics
- Stormwater Program Management
- Water-Quality Monitoring
- Source Control.

The deadline for abstract submissions is Wednesday, Dec. 3. For guidelines and online abstract submission, visit [www.StormCon.com](http://www.StormCon.com).

## ASCE Board Election Winners

The American Society of Civil Engineers announced that Blaine D. Leonard, P.E., FASCE, research program manager for Utah's Transportation Department, is the incoming president-elect. N. Catherine Bazan-Arias, Ph.D., P.E., M.ASCE, of Pennsylvania, is the at-large director. Three regional directors, 18 regional governors and a technical regional director also were chosen. See the complete list at [www.asce.org](http://www.asce.org).

## Manage Your Risk

The Damage Prevention Conference and Expo is Dec. 9-10 at the Riviera Hotel and Casino in Las Vegas, Nev. The event is devoted to damage prevention in underground infrastructures. Keynote speaker Mike Kemper, president of Northern Pipeline Construction Co. in Phoenix, Ariz., will discuss cross bore damages and how his company responded with internal policies and practices. Mark Rosenker, chairman of the National Transportation Safety Board, will give his view on what happened in pipeline-related incidents and damage prevention efforts this past year and present the board's recommendations. Call 800/827-8009, ext. 3337, or visit [www.damageprevention.com](http://www.damageprevention.com).

## Call for Abstracts

The Water Environment Federation is soliciting abstracts on more than 20 water quality topics for its exhibition and conference on Oct. 10-14 at the Orange County Convention Center in Orlando, Fla. The deadline for submission is Dec. 3. Authors will be published in the official conference proceedings and may submit their papers to WEF's peer-reviewed journal, *Water Environment Research*. Visit [www.weftec.org/Education/CallforAbstracts.htm](http://www.weftec.org/Education/CallforAbstracts.htm).

## Stormwater Runoff Web Site

The Wisconsin Department of Agriculture, Trade, and Consumer Protection and the Department of Natural Resources have created a Web site devoted to stormwater runoff and agricultural runoff issues. Besides publications to help local governments manage polluted runoff, stormwater drainage and nonpoint sources, the site links to state rules and regulations and education resources. Go to <http://runoffinfo.uwex.edu>.



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## LEARNING OPPORTUNITIES

### Leadership Experience

The American Society of Agricultural and Biological Engineers' simulation-based course, "Improving Business Outcomes through Systematic Management and Leadership," is Nov. 10-13 at Indianapolis, Ind. Using real-time facilitation and practical application, technical specialists will learn how to lead groups and project teams, and work with others over whom they have no direct authority. Seating is limited to 25. Call 269/429-0300 or visit [www.asabe.org/meetings/leadership/index.htm](http://www.asabe.org/meetings/leadership/index.htm).

### UW-Madison Engineering Courses

The University of Wisconsin-Madison Department of Engineering Professional Development is offering the following CEU, LU, PDH classes. They are at the Madison campus unless indicated otherwise:

- Nov. 5-6 – Preparing an Effective Municipal Capital Improvements Plan (J974), Las Vegas, Nev.
- Nov. 12-14 – Upgrading Your Sanitary Sewer Maintenance Program (K465), Durham, N.C.
- Nov. 17-18 – Pumping Equipment and Systems: Selecting, Operating, Maintaining, and Troubleshooting (K272), Las Vegas, Nev.
- Nov. 17-18 – Storm Sewer System Design (J892)
- Nov. 19-20 – Stormwater Detention Basin Design (J891)
- Nov. 19-20 – Design Workshop for Wastewater Pumping Systems and Lift Stations (K497), Las Vegas, Nev.
- Dec. 8-9 – Improving Public Works Construction Inspection Skills Course (K118), Las Vegas, Nev.
- Jan. 5-9 – Cross-Connection Control and Backflow Prevention (K081)
- Feb. 12-13 – Fleet Management (K325), Las Vegas, Nev. Call 608/262-2061 or visit <http://epdweb.engr.wisc.edu>.

### American Public Works Association

APWA has these Web-based broadcasts:

- Nov. 13 – ETHICS ... or Doing the Right Thing
- Dec. 18 – NPDES Good Housekeeping
- Feb. 12 – Successful Models for Rural Water

Call Carrie Merker at 816/472-6100, ext. 5213, or visit [www.apwa.net](http://www.apwa.net).

### American Water Works Association

The organization is offering the following CEU/PDH seminars or Web casts:

- Nov. 5 – Environmental Values in the Water Industry, Web
  - Nov. 13-14 – Mapping Your Course to a Successful Workforce Plan, Ft. Worth, Texas
  - Dec. 3-5 – CEO and GM Forum, Fort Lauderdale, Fla.
  - Dec. 10 – Alamosa: Lessons Learned, Web
- Call 800/926-7337 or visit [www.awwa.org](http://www.awwa.org).

### North Carolina

North Carolina State University is offering these courses:

- Nov. 5-7 – Subsurface Wastewater Operator Training, Plymouth
- Nov. 18-19 – Onsite Wastewater System Inspector Training, Plymouth

Call Joni Tanner at 919/513-1678 or visit [www.soil.ncsu.edu/training](http://www.soil.ncsu.edu/training), then Training, Shortcourses and Workshops.

### Maine

The Maine WasteWater Control Association and York County Community College in Wells have developed a Certificate of Business Management for Wastewater program. Sessions are Thursdays from 8 a.m. until noon at the college.

- Jan. 8-Feb. 26 – Technical Skills/Regulatory Compliance

## CALENDAR

### Nov. 11-12

Trenchless Road Show, Baltimore, Md. Call Michelle Magyar at 330/467-7588 or visit [www.trenchlessroadshow.com](http://www.trenchlessroadshow.com).

### Nov. 12-14

Treatment Approaches for Water Reuse, Royal Plaza Hotel, Orlando, Fla. Call 207/781-9601 or visit [www.intertechpira.com](http://www.intertechpira.com).

### Nov. 16-20

American Water Works Association Water Quality Technology Conference and Exposition, Duke Energy Center, Cincinnati, Ohio. Call 800/926-7337 or visit [www.awwa.org](http://www.awwa.org).

### Nov. 17-20

American Water Resources Association Water Resources Conference, Sheraton Hotel, New Orleans, La. Call 540/687-8390 or visit [www.awra.org](http://www.awra.org).

### Dec. 1-5

Water Unifies International Conference, University of California-Irvine. Call 949/824-3425 or visit [www.waterunifies.com](http://www.waterunifies.com).

### Dec. 2-3

Water Environment Research Foundation Research Forum, Marriott Suites on Sand Key, Clearwater Beach, Fla. Call 703/684-2470 or visit [www.werf.org](http://www.werf.org).

### Dec. 9-10

Damage Prevention Conference and Expo, Riviera Hotel and Casino, Las Vegas, Nev. Visit [www.damageprevention.com](http://www.damageprevention.com).

### Jan. 25-27

American Water Works Association Water Resources Symposium: Managing in Times of Change and Uncertainty, Portland, Ore. Call 800/926-7337 or visit [www.awwa.org](http://www.awwa.org).

### Feb. 5-6

Ohio Water Quality & Waste Management Conference, Holiday Inn on Lane, Columbus. Call Dr. Karen Mandl at 614/292-4505 or visit <http://setll.osu.edu>.

### Feb. 12-13

American Water Works Association Research Symposium: Emerging Organic Contaminants, Austin, Texas. Call Linda Moody at 303/347-6201 or visit [www.awwa.org](http://www.awwa.org).

### Feb. 17-20

American Water Works Association/Water Environment Federation Utility Management Conference, Hotel Monteleone, New Orleans, La. Call Linda Moody at 303/347-6201 or visit [www.awwa.org](http://www.awwa.org).

### Feb. 25-28

Pumper & Cleaner Environmental Expo International, Kentucky Exposition Center, Louisville. Education Day Feb. 25; exhibits open Feb. 26-28. Call 800/257-7222 or visit [www.pumpershow.com](http://www.pumpershow.com).

### March 4-6

Utility Construction Heavy Equipment Expo, Phoenix Convention Center, Phoenix, Ariz. Call 703/358-9300 or visit [www.nuca.com](http://www.nuca.com).

- March 5-April 23 – Elective (training or computer skills)  
Call Joan Kiszely at 800/452-8786 or visit [www.mwwwca.org](http://www.mwwwca.org).

### Pennsylvania

The Pennsylvania Water Environment Association is offering Nutrient Removal Technology Workshops at:

- Nov. 7 – Wyomissing
  - Nov. 14 – Cranberry Township
- Contact Cindy Rock at 570/549-2204 or visit [www.pwea.org](http://www.pwea.org). ♦



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