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December 2009

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MAPPING SUCCESS

GIS and mapping technologies
help the City of Long Beach
chart a true course

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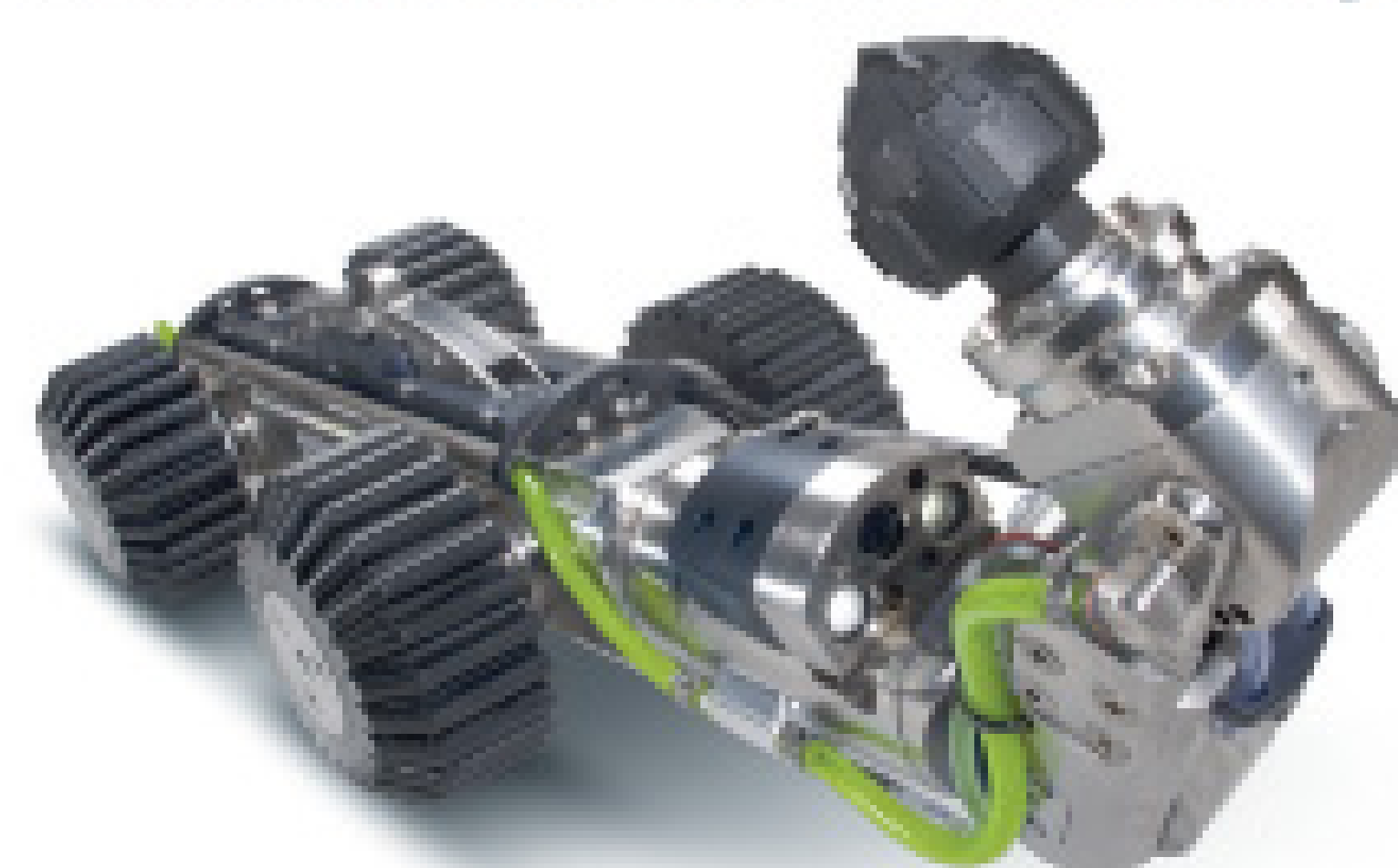


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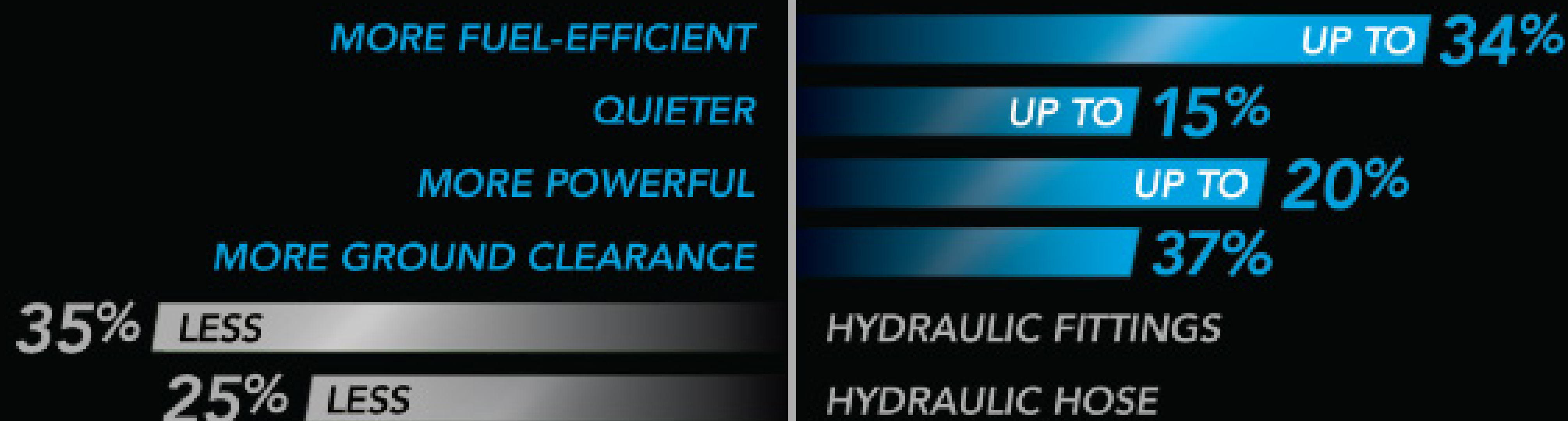
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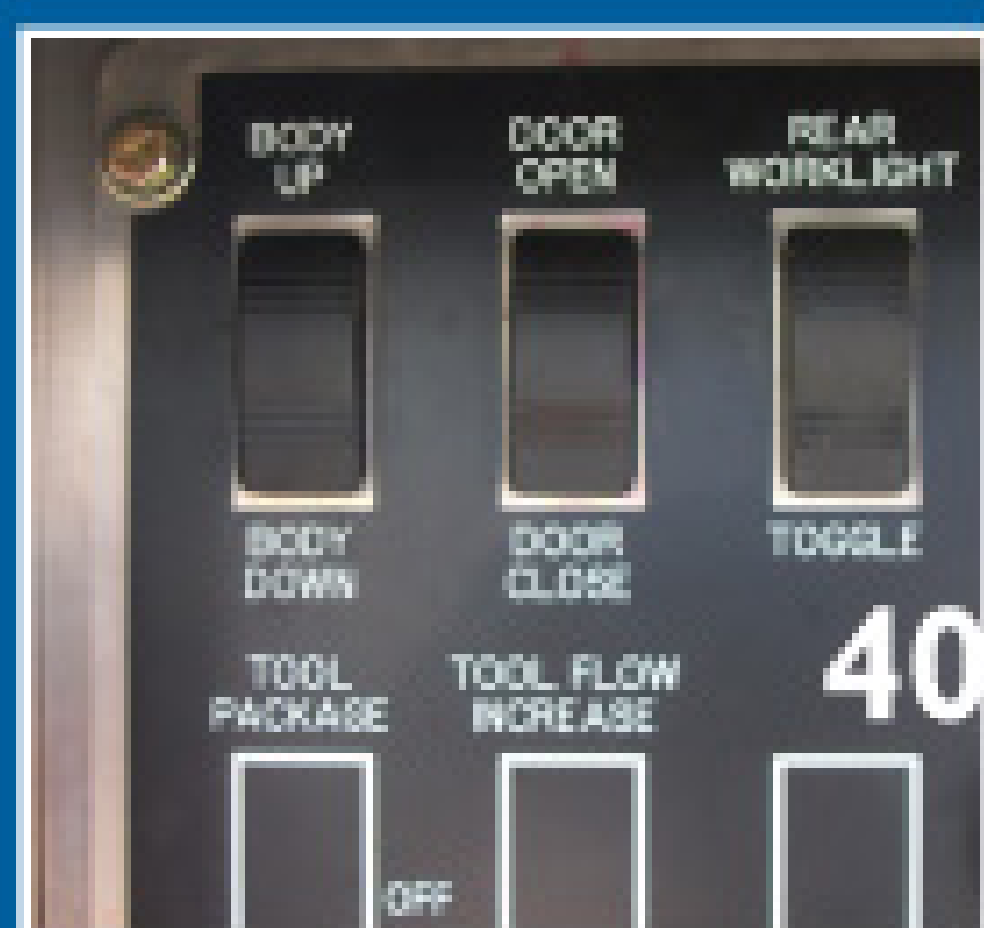
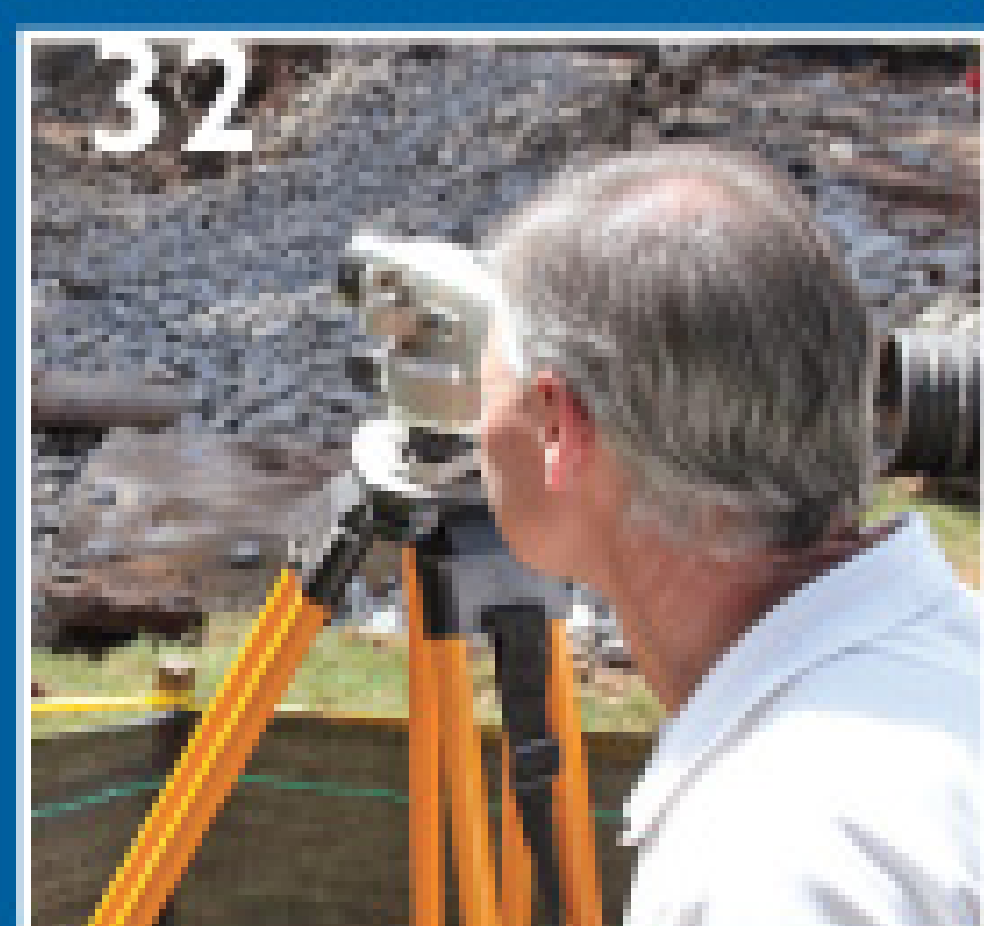
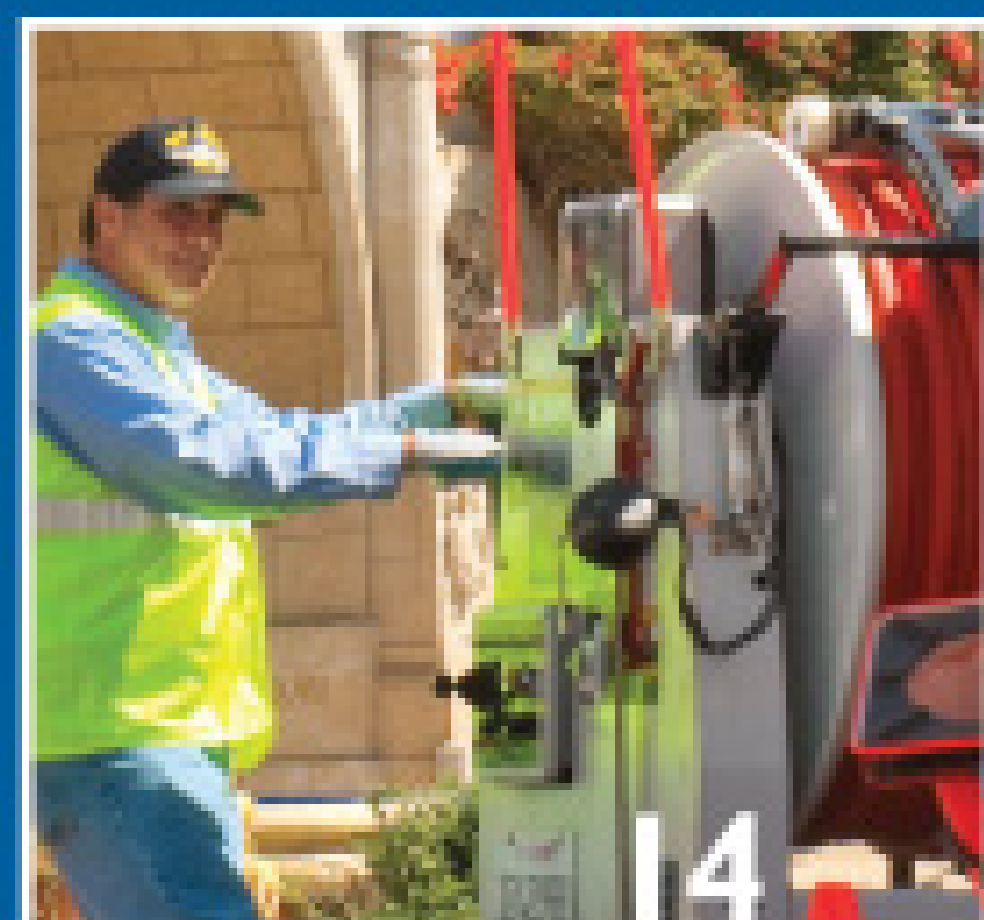
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INSIDE:

FIELD AND OFFICE TECHNOLOGY



COVER:

The Long Beach Water Department has an ongoing sewer inspection program that covers the entire sewer system on a 5-year cycle. The city uses GIS and mapping systems to organize its water and wastewater system maintenance programs. From left are Dan Galaz, water utility mechanic II; Walter Trujillo, water utility supervisor I; Albert Lin, GIS officer; and Ray Pamintuan, GIS analyst. (Photography by Paul Kiler)



COMING IN JANUARY 2010

Water System Maintenance and Rehabilitation

- ◆ Water: El Paso (Texas) Water Utilities
- ◆ Storm: Sound approaches to BMP maintenance
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- ◆ Technology Test Drive: Panoramio SI manhole inspection system, RapidView LLC

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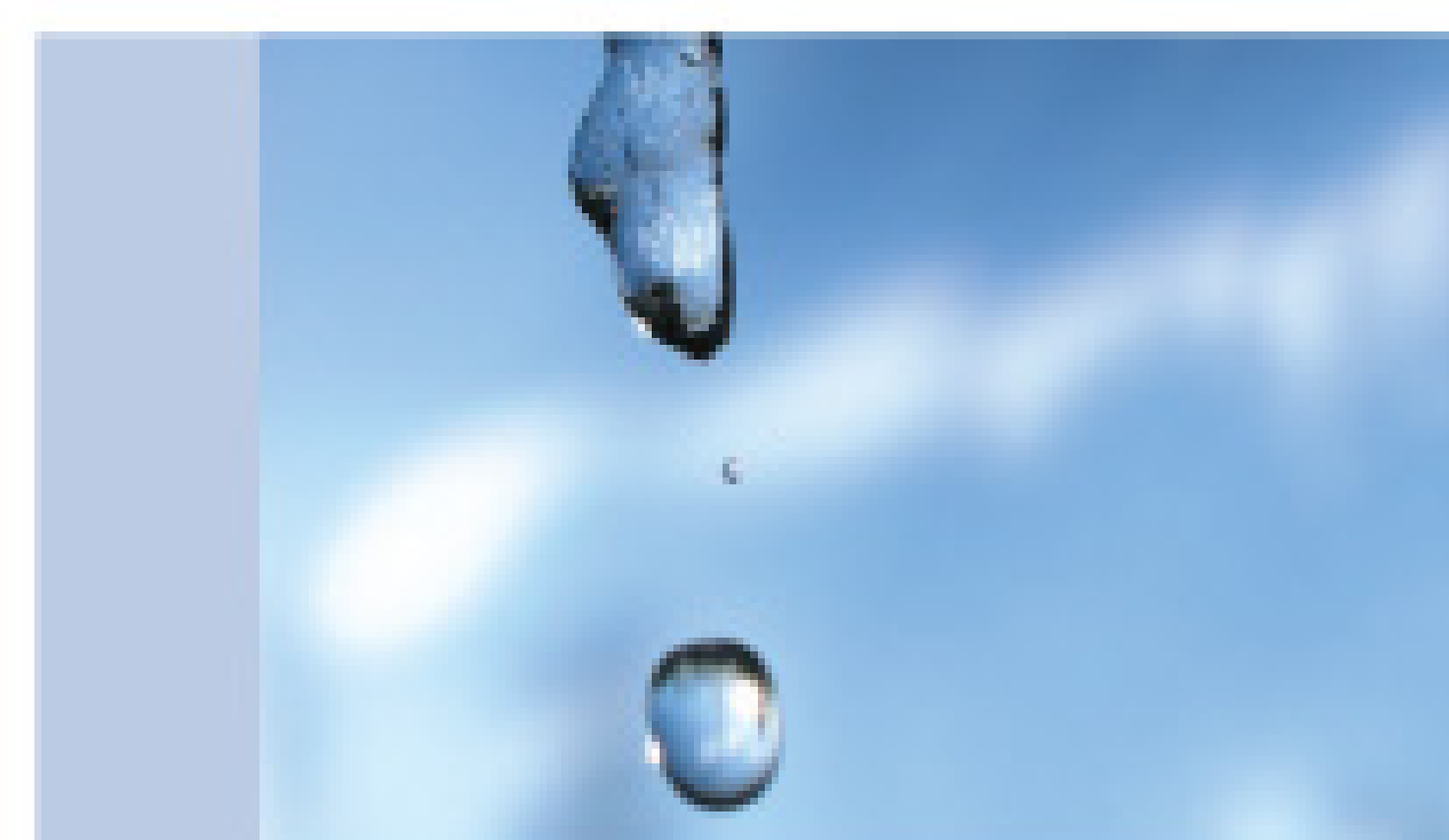
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Don't Pick on Ed

To the editor:

I enjoyed reading the column, "Are You Certified?" ("From the Editor," MSW, November 2009). What was being urged (certification of sewer workers) is an essential element of professional development in this day and age.

However, I must object to the use of the name "Ed Norton" to imply that such people are anything other than hard workers, essential, and well trained for the work they are asked to do.

Quite to the contrary, without the "Ed Nortons" of the world, past and present, in today's or yesterday's sewer maintenance field, we would indeed be in a world of trouble. Their presence continues to be vital to the operation and maintenance of our sewer systems, and thus, to the health and well-being of our citizens, customers and the environment.

Yes, further education and training will always be important and should definitely be encouraged. At the same time, however, don't knock the individuals whose efforts, in the almost always uninviting or dangerous atmospheres of our sewer systems, continue to be fundamental to the effective, efficient and environmentally sound operation of those systems — all without certifications listed on their resumes.

Jon C. Schladweiler, P.E.
Retired

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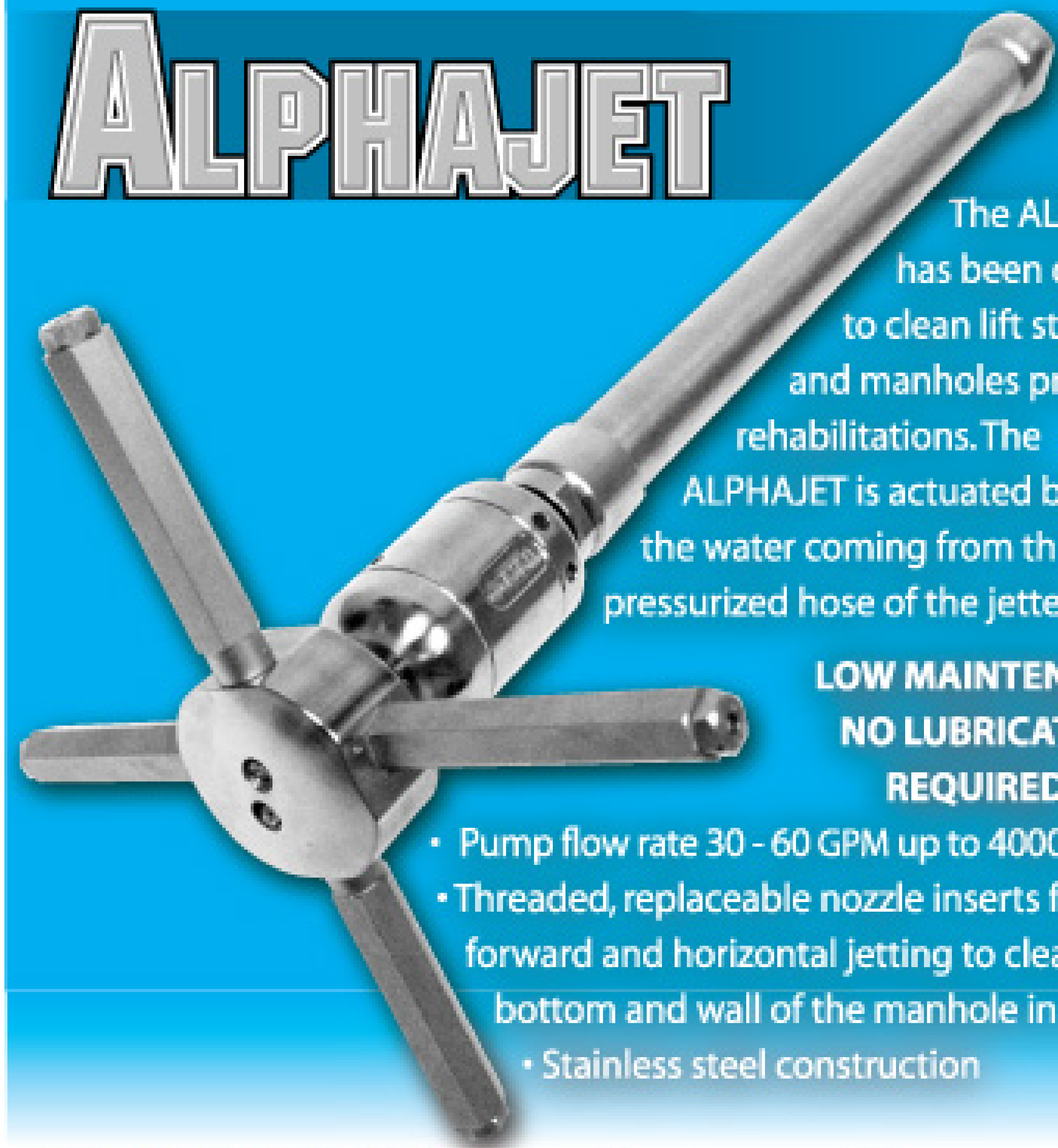
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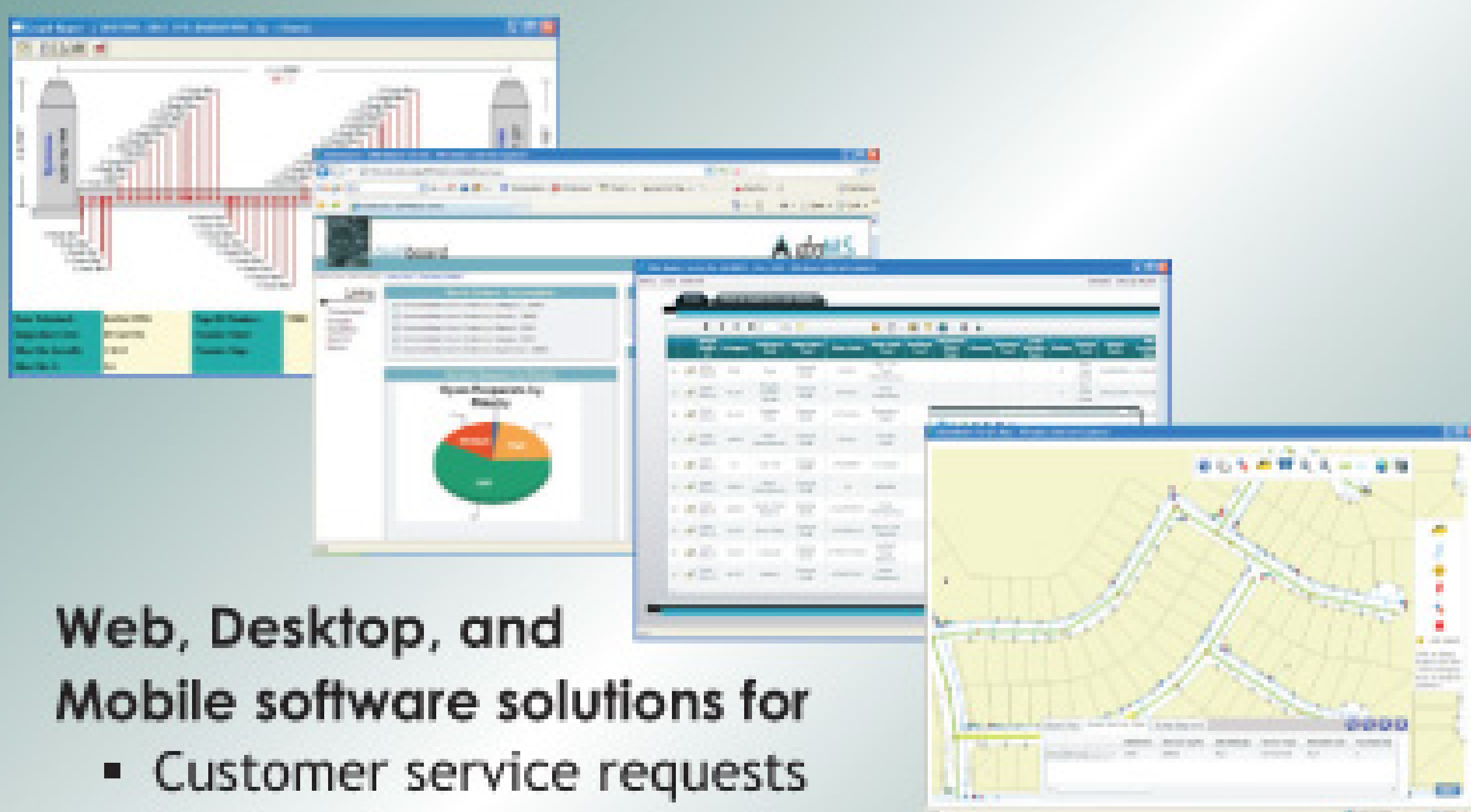
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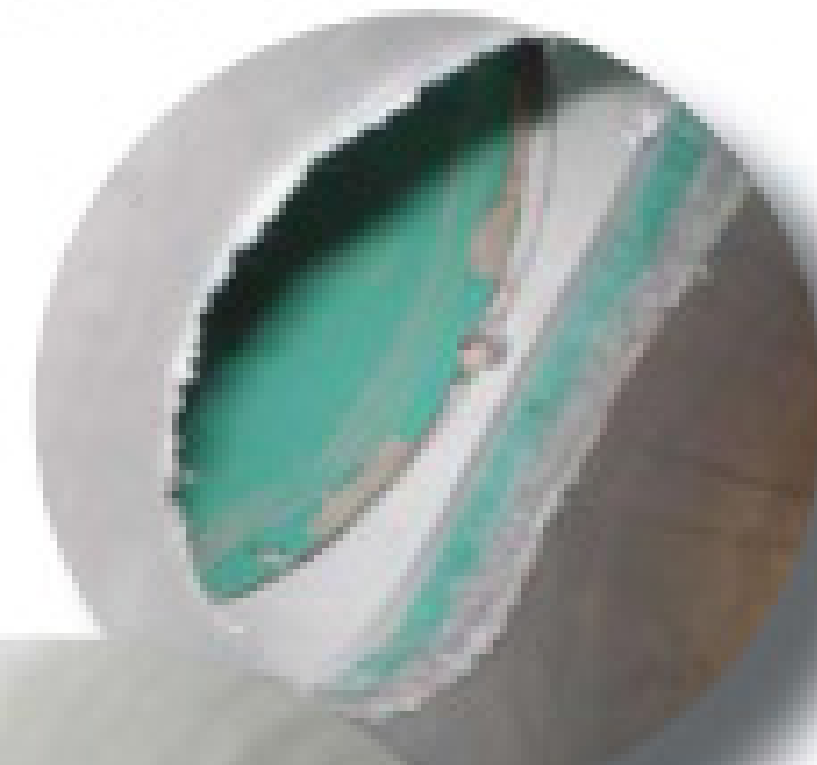
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A CURE FOR (INSTITUTIONAL) MEMORY LOSS

Technology isn't a substitute for the knowledge of experienced people, but it can help raise everyone's performance and offset some effects of a wave of retirements

In this issue's story about the City of Santa Barbara, wastewater collection supervisor Alex Alonzo makes an extremely interesting observation. It has to do with electronic mapping and asset management and how they serve to elevate the capability of an entire team. Here's what he says:

"It's about turning your staff into professionals. Our biggest challenges haven't been funding or lack of equipment ... It's been people resources and finding ways to share experience and knowledge — bringing new people up to speed, getting senior staff to share and document what's in their heads, getting everybody on the same page."

Alonzo and colleague Manuel Romero, wastewater collection superintendent, say they consider it a manager's ultimate duty to create "a common body of knowledge for efficient business continuity." With electronic data, accessible to all, they lessen the gap between the most- and least-experienced people on their team.

Expertise out the door

Now, think of the term "business continuity" and what it can mean as it applies to a major issue affecting municipal departments: The coming wave of retirements. When 30- and 35-year staff members leave, they take with them a lot of experience and knowledge — what's often called institutional memory.

I spoke recently with an industry veteran who described a common scenario. A city crew is out in the street trying to determine the exact location of a pipe in an older part of town. A long-time employee looks around and says, "As I remember, we laid that pipe through there and tied it in somewhere right around here."

Although that's not as good as a GIS map, it's a start. And what happens when all the people like him retire? Then the location of that old pipe becomes anyone's guess.

In many communities, GIS initiatives are gradually backfilling all that knowledge. One thing GIS does is take valuable information out of people's heads and put it where everyone on the team can use it. That way, when people retire, critical information remains behind on a computer hard drive.

Faster learning

None of this is to diminish the value of experienced people. Operating a collection system is partly art and partly science, and long-time team members are sure to know both sides better than people who have only been around for a few years.

But think about how much faster a team can learn, and how much better it can perform, if everyone can share the same information — if critical data is not trapped inside people's memories (or on some dusty maps in a back room). GIS and asset management programs level the playing field, helping less-experienced people function more like seasoned veterans.

This concept is taking hold at wastewater treatment plants, some of which are now using technology to codify standard operating procedures. One such facility is the Littleton/Englewood (Colo.) Wastewater Treatment Plant (featured in the November issue of *Treatment Plant Operator*, a sister publication to *Municipal Sewer & Water*).

There, a system called InfoNet is part of a Knowledge Management Transfer program. It captures and displays all the relevant information about every process and piece of equipment in the plant. The data includes standard operating procedures, equipment specifications, troubleshooting, maintenance history, and more. It's a gigantic electronic operations manual.

A GIS initiative is similar in many ways. We report often on such initiatives on these pages.



FROM THE EDITOR

Ted J. Rulseh

They're underway in communities of all sizes, some using off-the-shelf programs, some relying on help from consultants, some using home-grown systems. There is probably no single best approach — it largely depends on the skill and creativity of in-house staff.

Getting going

The important thing is to begin, or if already begun, to intensify the effort. Every day brings valuable people closer to retirement. The statistics on the aging of workers in the wastewater industry are frightening.

A 2005 study by the American Water Works Association Research Foundation said that an estimated 50 percent of wastewater treatment operators would retire within the next five to seven years.

The sooner a community captures critical information about its infrastructure in permanent and accessible form, the better it can cushion the impact of long-time employees leaving.

One can easily guess that the picture looks much the same in the ranks of wastewater collection system and water distribution system technicians.

The sooner a community captures critical information about its infrastructure in permanent and accessible form, the better it can cushion the impact of long-time employees leaving.

Of course, that's not the only reason to be serious about GIS and asset management technology. The technology simply helps a department function more effectively and deliver better service to the public.

In Romero's words: "You have to add value into what already exists ... The minute you stop adding value, that's the minute your programs begin to lose support ... Create an environment where everyone has an opportunity to achieve their professional objectives and become their personal best." ♦

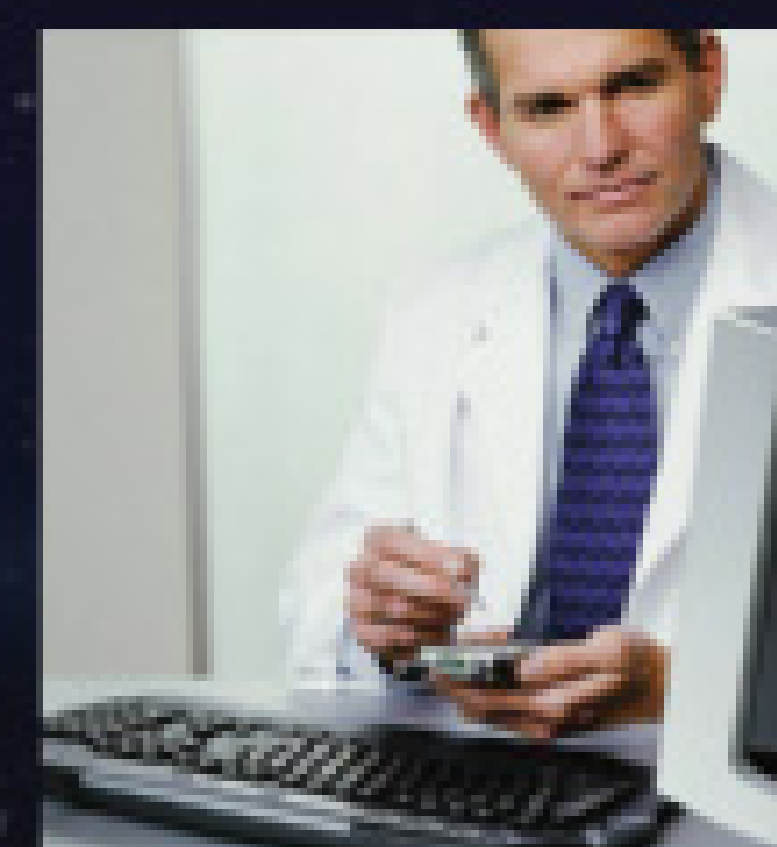
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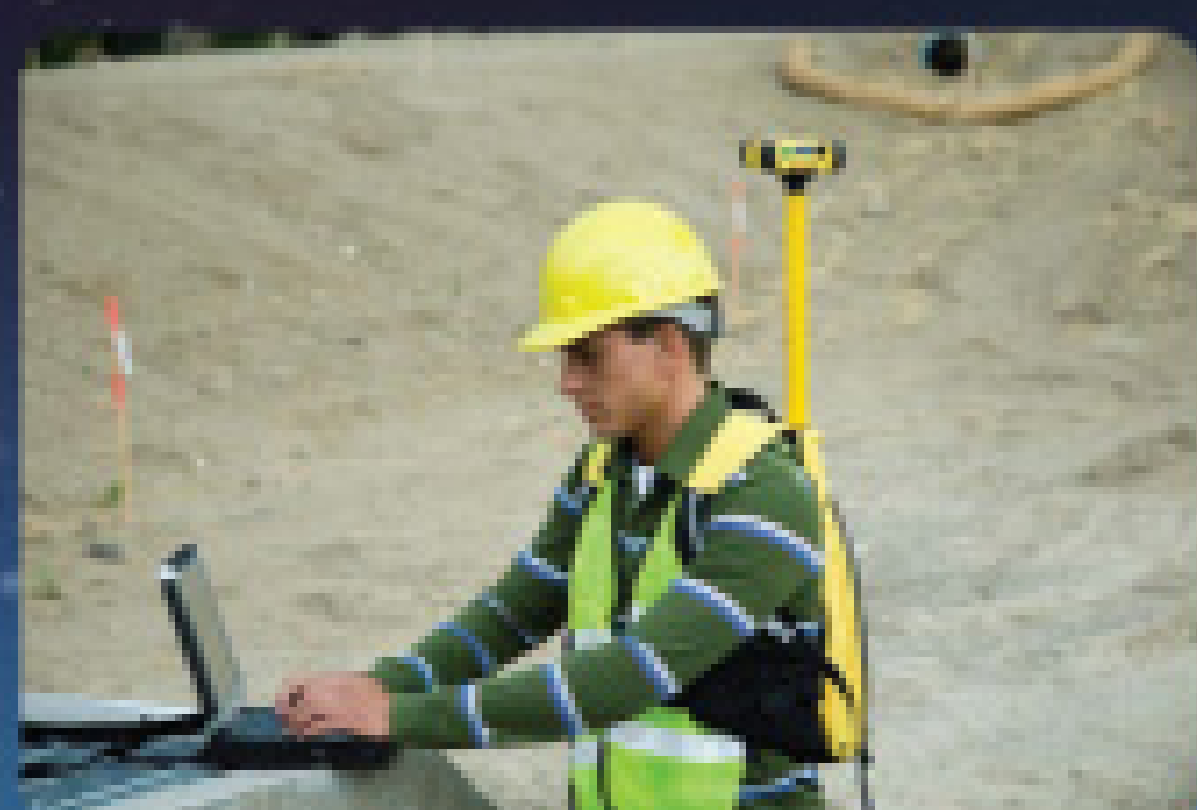
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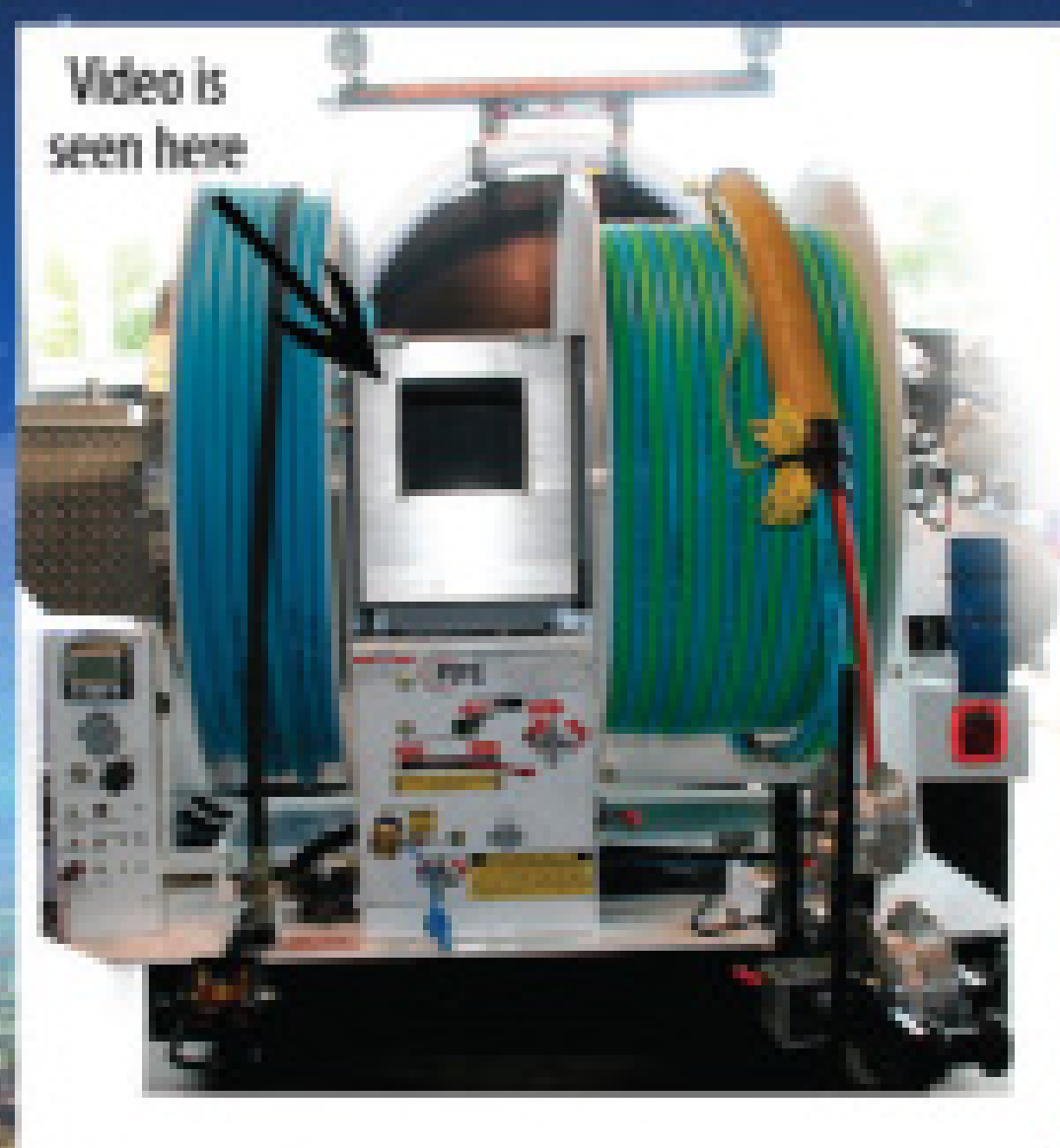


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TRAINING, TECHNOLOGY, TEAMWORK

The City of Santa Barbara creates an exemplary sewer maintenance program by putting the latest tools in the hands of an empowered and highly capable staff

By Suzan Marie Chin



Santa Barbara is a historic coastal California city with underground infrastructure that dates as far back as 1870. Maintaining and rehabilitating the wastewater collection system requires diligence and teamwork.

The Wastewater Section of the city's Water Resources Division sets high goals for itself: clean at least 200 miles of sewer lines per year, CCTV inspect some 35 miles per year, and replace or rehabilitate about 32,000 feet of pipe per year as part of an annual capital improvement program.

To achieve those goals, the city has deployed a collection of software tools, information systems, specialized forms, field data collection processes, quality control and assessment, and a consistent employee-training program.

It's all built around the section leaders' dedication to building a high-functioning team covering every area of responsibility. "You can have all the latest fancy tech-

nology tools, but unless you have truly dedicated team members, they won't be much help," notes Manuel Romero, wastewater collection superintendent.

The result is a model program that is simple and efficient and is quickly becoming an example for other coastal communities.



PROFILE:
**City of
Santa Barbara
(Calif.) Water
Resources Division,
Wastewater Section**

POPULATION SERVED:
95,000

AREA SERVED:
19 square miles

EMPLOYEES:
14

INFRASTRUCTURE:
277 miles of sewer mainlines

ANNUAL BUDGET:
\$2.4 million (collection
system operations)

WEB SITE:
www.santabarbaraca.gov

Steve Corral and Dale Escobar, senior operators, perform routine preventive maintenance with the city's Vactor 2100 Series combination truck in front of the historic Santa Barbara Mission. (Photography by Paul Kiler)



Matt Rico, Joel Lopez and Carlos Trejo review data on the SCADA system.

“You can have all the latest fancy technology tools, but unless you have truly dedicated team members, they won’t be much help.”

Manuel Romero

Making it manageable

Santa Barbara’s wastewater collection system consists mainly of 6- to 8-inch VCP pipe spanning 277 miles and serving about 24,000 accounts. The Wastewater Section is also responsible for the Estero Wastewater Treatment Plant, which treats an average of 9 mgd.

Inflow and infiltration (I&I) is a concern, especially during winter peak wet-weather periods, when demands on the treatment plant can triple. Root intrusion and simple wear and tear from age and seismic activity are also top concerns. Consistent inspection, cleaning and rehabilitation of the entire system is a necessity.

The Wastewater Section breaks its inspection and cleaning program into two categories: annual preventive maintenance and priority preventive maintenance. For example, of the 200 miles the city aims to clean each year, about 100 miles are considered priority main-

tenance — lines scheduled based on analysis of previous CCTV inspection findings.

In 2003, Santa Barbara contracted ADS Environmental Services to conduct a flow-monitoring study. The data helped the city engineering department create a hydraulic flow model of the system using H2OMAP Sewer (MWH Soft Inc.). As part of that, the system was broken down into 43 basins.

Assignment of areas within the basins to be cleaned in the preventive program is based on a 12-month cycle. Some locations are scheduled twice per year based on need. Priority cleaning focuses on response to customer complaints or requests for service, and on responses to problems found during inspections.

The inspection work is performed by the section’s three-person in-house CCTV inspection team, except that within the past six years the city has contracted for inspection of its larger-diameter lines, including mainlines from 10 to 42 inches. The city crew uses a camera truck from RS Technical Services Inc., equipped with a NovaSTAR zoom camera, TranSTAR transporter, Omni III zoom camera, 1530 Mini System, and an onboard computer with POSM pipe survey software.

GETTING THE COMMUNITY ON BOARD

The City of Santa Barbara recently launched an aggressive Sewer Lateral Inspection Program (SLIP) to mitigate sewage spills caused mainly by cracked, broken or root-clogged pipes on private property. Homeowners are required to inspect their laterals when making major renovations, or if the city has seen problems during its mainline CCTV inspections or smoke testing.

To encourage property owners to inspect their laterals proactively, the city offers a rebate of up to \$150 per property when the owner provides a videotape and inspection report by a qualified inspector, and city staff determines that the pipe is in good repair. If repair or replacement is needed, the city offers a rebate of up to \$2,000 per property, or half the cost of repairs, whichever is less.

To make the process easier, permit application and issuance, inspection documentation, and correspondence are handled through the city’s Cart&Graph asset management system in conjunction with Advantage Tidemark permitting software (Accela Inc.). Ultimately, all this data will be connected. That way, as more private assets linked to the city’s collection system are inspected, the city will gain a more comprehensive view of the underground infrastructure, its overall health, its maintenance history, and its future needs.

The city uses the NASSCO Pipeline Assessment and Certification Program (PACP) standard for analysis and assessment of its system. PACP coding provides a scoring system that helps the staff determine which lines throughout the 43 basins will comprise the 100 miles that fall under each year’s priority program.

How are we doing?

Just getting the annual 200 miles

of cleaning footage completed isn’t enough for the Wastewater Section. Follow up and quality assurance are keys to ensuring that the team’s efforts in the field are effective and keep the collection system healthy.

The cleaning and inspection schedule and tasks are closely tied together. Inspection helps the department verify that its cleaning methods, such as selection of nozzles, skids and cleaning pressures, are effective.

"We emphasize a strong quality assurance-quality control program," says Romero. "We perform different types of follow-up, such as sporadic CCTV inspection checks of selected locations on our priority-preventive list. We also do a failure analysis that tracks historical data, inspections, and cleaning history. These things help create a process of individual responsibility — a personal accountability for all team members — so we can truly know how well we're doing."

Those types of follow-up are especially important for Romero, who remembers starting as a temporary employee 28 years ago. The section's field team is young: Six of the 11 field staff have less than three years of experience.

The right tools

Armed with a new CCTV inspection vehicle purchased in early 2009, the latest pipe survey software, a 2009 Vactor 2100 Series combination truck, a Vactor 1,500-gallon jetter truck, and an older Vactor combination unit, the team has what it needs to meet its annual goals. Still, a few prescribed best management practices (BMPs) help the young team members while they gain real-world experience.

"We've had to go back to square one in regard to training and educating our crews," says Alex Alonzo, wastewater collection supervisor. "One method to help our jetting crews with quality-control assurance is the use of request forms

should take. We may also perform a post-cleaning inspection on that same line after the cleaning crew has completed the recommended cleaning steps. This also enables us to verify the quality of the cleaning work being performed."

Jetting crews are typically dispatched in teams of two — a senior wastewater collection system operator and a wastewater collection system operator I or II. On certain locations, such as easements and high-traffic locations, a lead operator with supervisory oversight may be sent to assist.

All crew members are required to obtain California Water Environment Association (CWEA) collection system operator certification. The city also strongly emphasizes leadership and development training. "It's not all about technical training for our staff, or just hands-on field work," says Alonzo. "We want our team members to gain knowledge for dealing with things like emergencies or conflicts. We want them to learn how to communicate and to achieve personal and professional growth."

Ever-evolving technology

To manage its maintenance programs, the Wastewater Section has used a custom-developed Microsoft Access database, built on the city's street names. Each day, information from the field is collected and input by the section's administrative staff to track the crew members, the locations, and the work performed.

many advantages.

Because all city departments will be on the same platform, work between departments and management of the different sections' vehicle and equipment fleets can be streamlined.

ment system. Efforts are in progress to provide administrative support to input all cleaning-related data into the CartêGraph system.

Alonzo, who has been with the city for 25 years, admits that sometimes the old-fashioned paper docu-



Wastewater superintendent Manuel Romero (left) reviews plans and specifications for an upcoming project for system cleaning and inspections with Luke Pico, wastewater operator I; Ramon Bravo, senior wastewater operator and Joel Lopez, wastewater operator I.

"The Access database was very basic," says Alonzo. "With the new system, we are able to look at GIS data and complete historical data on any asset, see its condition, view linked videos — things that can help us determine which assets need to be in our capital improvement schedule, and when."

The data also helps Romero perform benchmark comparisons with other coastal communities whose systems and departments are similar in size, terrain, equipment and staff. He looks at metrics such as the number of sanitary sewer overflows and stoppages, the amounts of preventive maintenance performed, and the number of customer service calls. All data covers what Romero calls a "three-phase process" — identification, analysis, and recommendations.

Of course, data is only as good as what the staff enters. The Wastewater Section works continuously to improve data entry accuracy, as the majority of inspection and maintenance data is still manually entered into the asset manage-

umentation system seems easier. But he also knows that it often led to a "shoot-from-the-hip" response to maintenance.

"Through the course of time, we were able to develop paper methods," he says. "It wasn't until 1998 that we got our first computer, and since then we've definitely magnified our ability to use all the information we collect more effectively. Sometimes the process of data management and data entry does get overwhelming, but it's worth the effort."

Body of common knowledge

Quality control, software technology, continuing education and the right equipment have all helped Santa Barbara manage its system, meet its 200-mile annual preventive maintenance quotas, and meet long-range capital improvement objectives. But also critical to the Wastewater Section's success is its philosophical approach and direction.

"It's about turning your staff into professionals," says Alonzo.

"Be a teacher, a coach, a mentor, an advocate of quality. The minute you stop adding value, that's the minute your programs begin to lose support.

Be committed to your team and they'll be committed to you. Create an environment where everyone has an opportunity to achieve their professional objectives and become their personal best."

Manuel Romero

we've developed for them to fill out when they encounter difficult cleaning areas or an unusual amount of debris in a line.

"That in turn gets turned over to the CCTV crew so they can go and inspect the line to determine what issues may be present and what action the cleaning crew

Things are evolving as the Wastewater Section and all other city departments are migrating to the CartêGraph asset management platform (CartêGraph Systems Inc.) The migration from its simple database to the CartêGraph system has been under way for about two years. The new system offers

"Our biggest challenges haven't been funding or lack of equipment, as in most cities. It's been people resources and finding ways to share experience and knowledge — bringing new people up to speed, getting senior staff to share and document what's in their heads, getting everybody on the same page."

With the software systems now in place, all data that the more seasoned crew members possess can now be input and made accessible to new team members, so that they can learn and grow. In the last few years the team has matured.

Romero considers it his ultimate duty to create "a common body of knowledge for efficient business continuity."

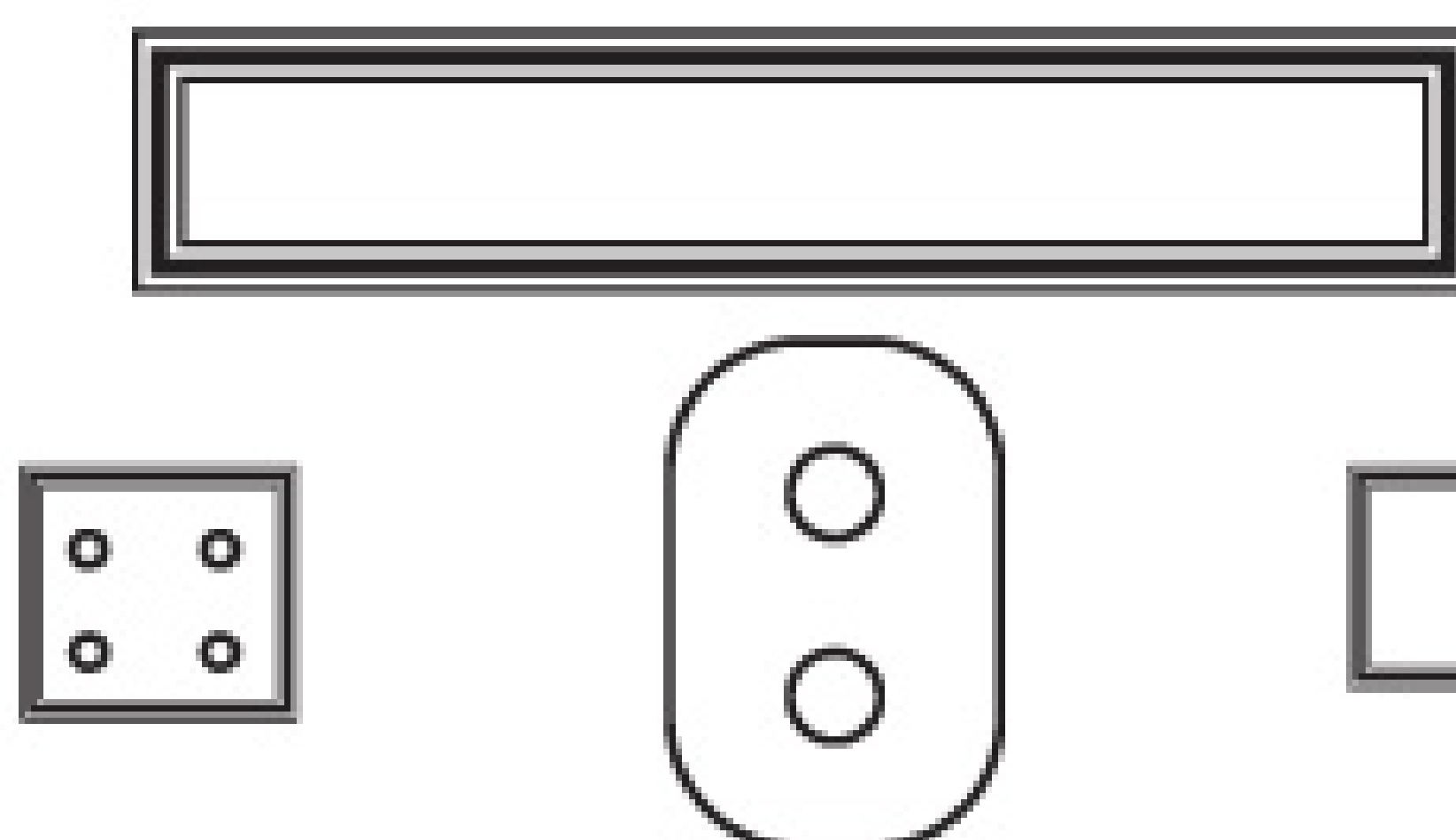
He observes, "This must be kept high on your priority list as a collection system manager. You have to add value into what already exists. Be a teacher, a coach, a mentor, an advocate of quality. The minute you stop adding value, that's the minute your programs begin to lose support. Be committed to your team and they'll be committed to you. Create an envi-

ronment where everyone has an opportunity to achieve their professional objectives and become their personal best." ♦

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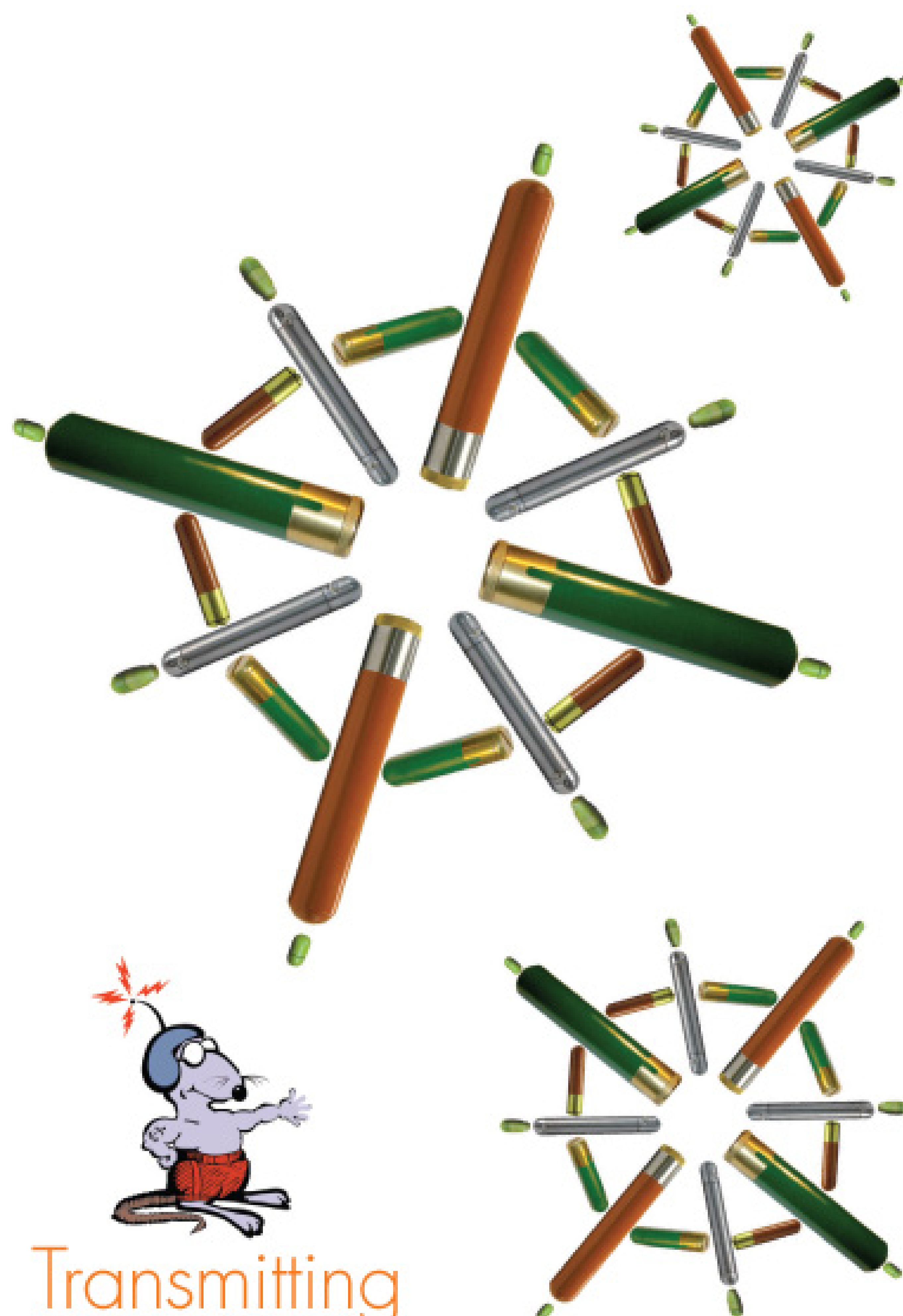


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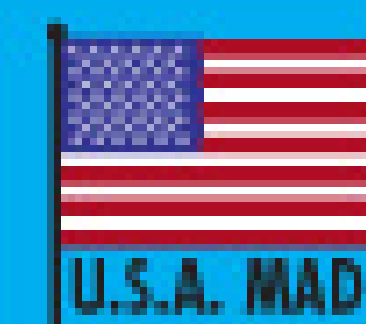
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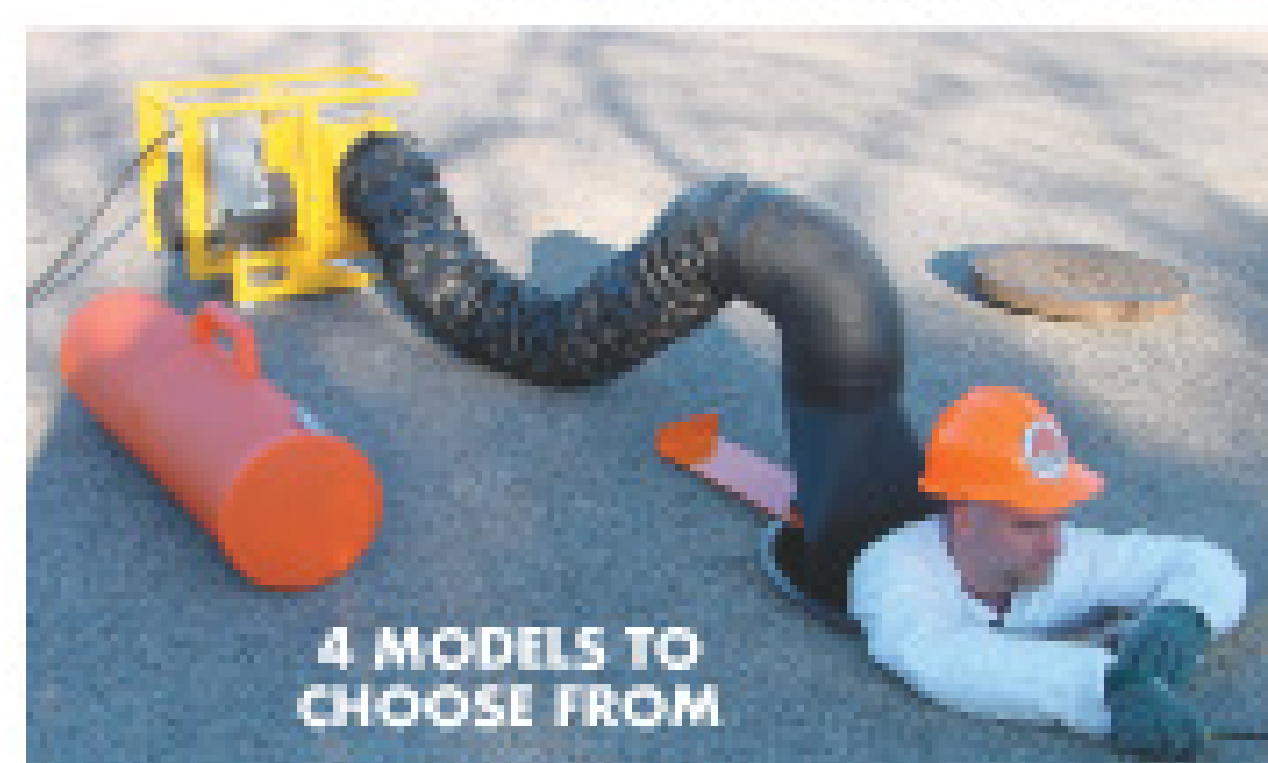


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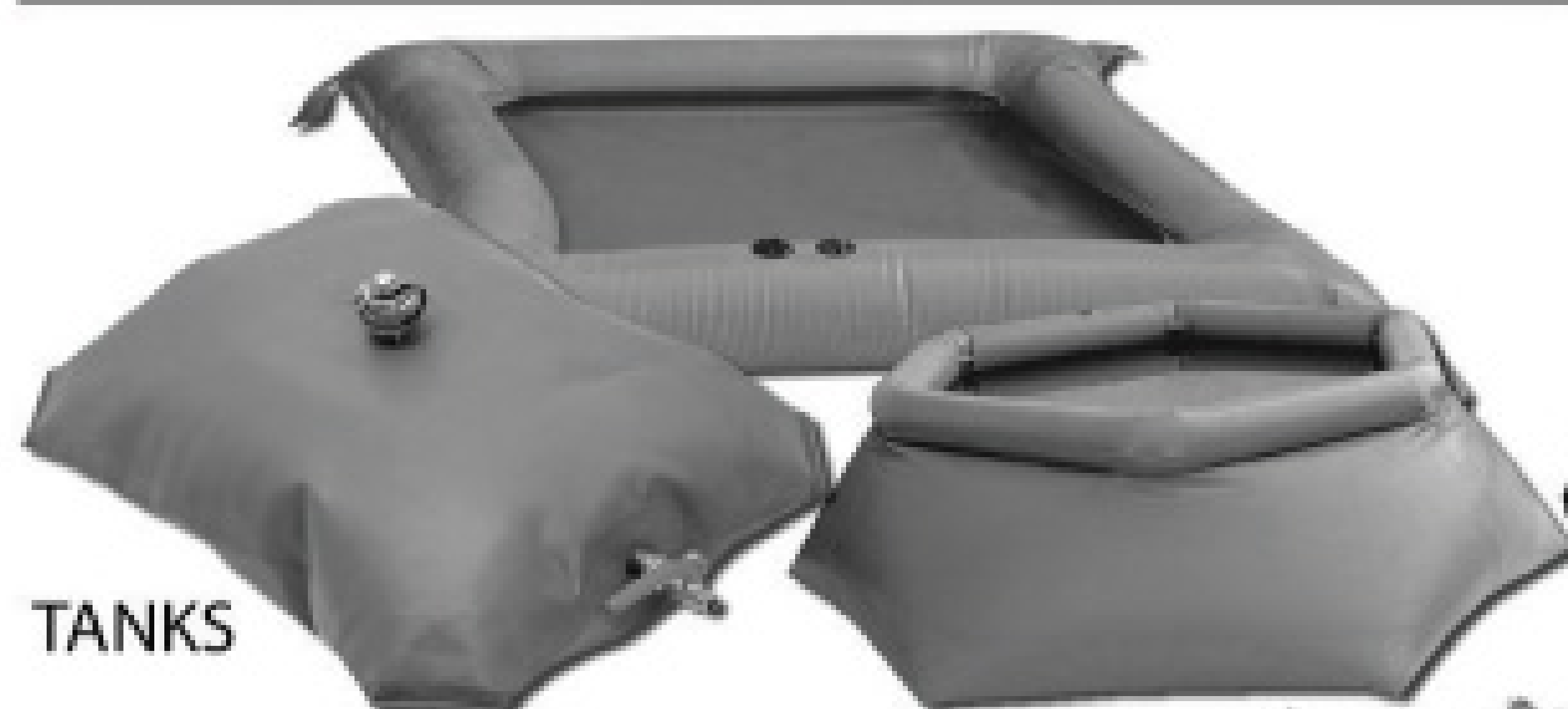
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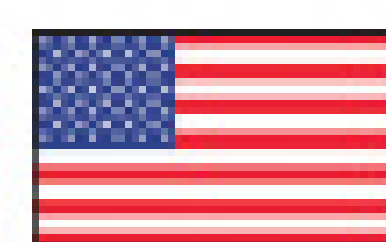
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Engineers apply GIS in planning for capital improvements of potable water, reclaimed water and sewer systems. From left, Isaac Pai, director of engineering/ chief engineer; Wendy Chen, civil engineering assistant. (Photography by Paul Kiler)

FOCUS: WATER/SEWER

MAPPING SUCCESS

GIS and mapping technology help the City of Long Beach chart a course for effective water system maintenance, capital improvement, and community outreach

By Suzan Marie Chin

It's an understatement to say the City of Long Beach Water Department is passionate about Geographic Information Systems (GIS).

The department, responsible for the potable water and reclaimed water distribution and wastewater collection for a California city of 493,000, has incorporated GIS and methods that go well beyond the technology's original purpose. The department has created a dynamic, organization-wide system that helps the staff manage day-to-day maintenance, scheduling, long-range capital improvement planning, and the tracking of all assets' health and performance.

Blazing a trail

The department was quick to jump on board with GIS in its infancy: It began integrating the technology in 1994. Although GIS

was new then, the Engineering Bureau quickly saw its long-range potential and championed its use throughout the organization.

When selecting the GIS platform, the Engineering Bureau found it critical to have as many people as possible from all bureaus involved in developing the needs assessment documentation. Selection criteria included:

- Ease of use.
- Ability to customize.
- Compatibility with other software and operating systems.
- Product reputation and industry acceptance.
- After-sales technical support.
- Overall cost of ownership.

The department chose ESRI Inc. and adopted the ArcMap, ArcView, ArcInfo, ArcIMS, ArcGIS Publisher, SDE, EDN and Spatial Analyst software components and made a major investment in hardware, including servers with 100

networked PCs and 20 field-use computers.

"During the early transition from our paper-based system, many employees were not enthusiastic about using GIS because it was new and complicated," says Albert Lin, GIS officer for the department. "They had been doing their work with a manual, paper-based system for so many years, and it was comfortable. Most had to learn basic computer skills first before even beginning to use the GIS."

"We overcame their objections by getting users involved at every level — motivating them, providing management support, promoting communication, and working together to create a user-friendly application. Because we did this, GIS is now a common tool essential to all employees' daily work."

The department had numerous goals for its GIS and took the



PROFILE:
Water Department,
City of Long Beach,
Calif.

FOUNDED:
1911

POPULATION SERVED:
493,000

EMPLOYEES:
220

INFRASTRUCTURE:
910 miles of water mains,
712 miles of sanitary sewer
mains, 33 miles of reclaimed
water mains

OPERATIONS BUDGET:
\$112 million

WEB SITE:
www.lbwater.org

time necessary to implement them methodically and to convert its paper data accurately to the computerized system. The entire process took about two years to complete, with the assistance of an outside consulting firm, Geonex, which digitized the hard-copy water and sewer system maps with comprehensive attribute databases. About 30 staff members were involved in the GIS database design, as-built record drawings research, and data quality assurance/quality control (QA/QC) during the GIS data conversion.

Evolution of purpose

At present, the department has 80 GIS users — managers, engineers, field crews and administrative analysts. All use the system to query and analyze information such as water and sewer system data,

locations, conditions, trends and patterns. The information helps them to explore alternatives and create strategies for facility management and specific bureau needs.

To help keep the GIS data current, the department draws from an aggressive, ongoing CCTV inspection and cleaning program, which covers the entire wastewater collection system — a five-year cycle for inspection and a two-year cycle for cleaning. Five Pearpoint CCTV inspection vehicles carry onboard computers using flexidata pipe survey software by PipeLogix Inc. The crews perform mainline, lateral and manhole inspection using the NASSCO PACP (Pipeline Assessment and Certification Program), LACP (Lateral Assessment and Certification Program) and MACP (Manhole Assessment and Certification Program) standards.

Each installation of the survey software also includes a GIS module that gives the CCTV operators a visual aid in selecting the pipe to survey and imports the asset details directly from the GIS databases. As the crews progress with inspections, surveyed pipes are auto-selected and highlighted to let team members know which pipes have been completed.

Field crews use GIS to access the latest water and wastewater systems data for routine facility maintenance and emergency response. Shown flushing a hydrant are Vicente Robles (left), water utility mechanic III, and Hans Herchert, water utility supervisor II.

“We overcame their objections by getting users involved at every level — motivating them, providing management support, promoting communication, and working with them to create a user-friendly application. Because we did this, GIS is now a common tool essential to all employees’ daily work.”

Albert Lin



The Long Beach Water Department provides online GIS access to its latest water and sewer mains and lateral services information at its Development Service Counter, which enhances LBWD's excellent customer services. Shown with a customer is Dennis Santos (right), civil engineering assistant.

THE BIG PICTURE

In keeping with its commitment to provide the highest quality of water and wastewater services, the Long Beach Water Department decided to share the benefits of its GIS in an innovative way.

The department has installed a free public access computer in its lobby, equipped with a 48-inch LCD screen connected to the GIS database and a color printer. Customers can use the system to get detailed information about their water services, meters, or sewer laterals and generate paper map printouts in color or black-and-white.

The system can also provide overlay information that shows adjacent utilities, easements and other data customers may need when considering a repair or improvement to their property.

The information helps customers interact with staff easily and understand how their water and sewer services integrate with the city systems.

It helps for homeowners and contractors to see the big picture so that if they need permits for a property improvement or repair, they can get all the required paperwork at the same time. That makes the permitting process more streamlined and efficient.



"Out in the field, having GIS incorporated into the survey process has made my life a lot easier," says Chris Blevins, water utility mechanic III in the CCTV Group, Sewer Operations. "With the map system on the truck, I can go directly to the GIS map through software, highlight the pipe I'm about to televise, and create my survey. It will automatically populate the manhole names, their numbers, the depths, what material it is and any other information that is available."

"Once I've completed the survey, I can download that to our server. Then anybody can take it and, at their fingertips, click to

"There was some resistance to this idea at first, but now that some of the crew have tried it, they really like it, especially not having to refer to the heavy, hard-copy maps in their trucks anymore."

Chris Wilkerson

select that pipe and retrieve my information. Then they can go through and highlight that line as a grease problem, as a root problem, or for cracks and other defects. That helps them create a plan of action for maintenance or rehabilitation."

As the department performs various inspections, maintenance tasks and repairs, all the information is fed to the GIS. This led to a GIS system that contains more than 100 data layers. For its potable water and reclaimed systems, items such as mains, valves, hydrants, meters, cathodic protection and vaults are recorded. Wastewater collection system layers include mains, flow direction, manholes, cleanouts, pump stations, grease traps, as-built drawings, sewer spill history, laterals and others. Other layers, such as lots, assessor parcels, flood zones, gas pipelines, census data and aerial photos, round out the data elements.

Charting the course

All this data helps the Engineering Bureau chart the utility's course

for capital improvements, maintenance scheduling, and operational improvements of the systems.

"The GIS system has created a common platform," says Chris Wilkerson, sewer operations superintendent. "By using standardized coding like PACP and then having all of that data in one area, in a single format and platform, the CCTV crews and Engineering Bureau can review the data together, communicate and have a common understanding of the condition of the system. Then we can work together to prioritize what assets need to be maintained, rehabilitated or replaced, how they should be dealt with and when."

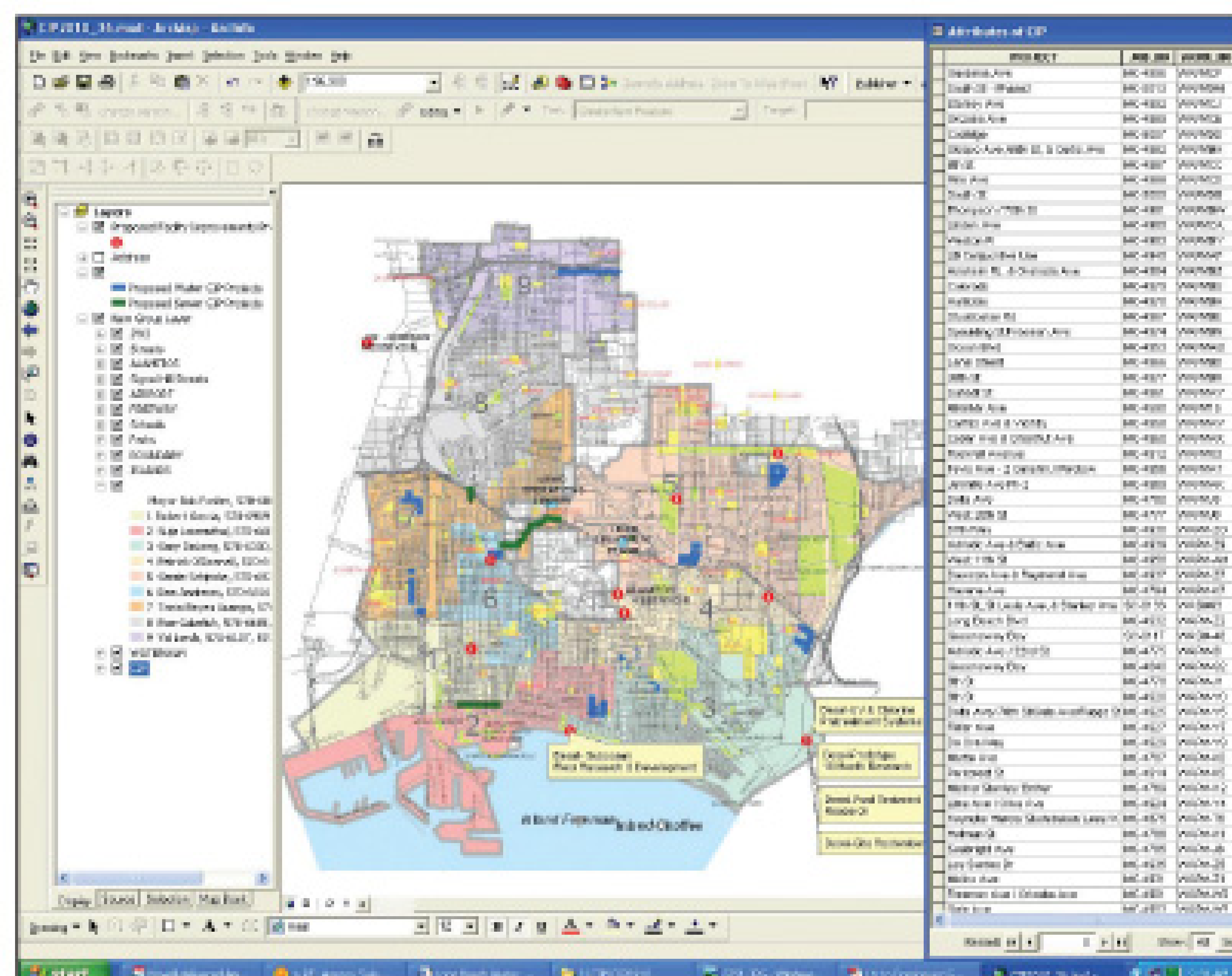
The system also maps preventive maintenance tasks and aids in scheduling. For example, maps are highlighted in special colors from manhole to manhole, indicating which lines have experienced sanitary sewer overflows (SSOs) or need cleaning more frequently. These highlights help in creating 90-, 120- or 180-day repeat lists for the cleaning crews.

Highlights are also created for the system's inverted siphons. "Our crews are able to look up the highlights and go straight to them instead of fumbling around, trying to locate these points on a regular hard map," says Wilkerson. "By being able to get to this information easily, we can extract specific maps, create a 'book' for the crew. Then they can deploy to exactly where they need to be in the city quickly."

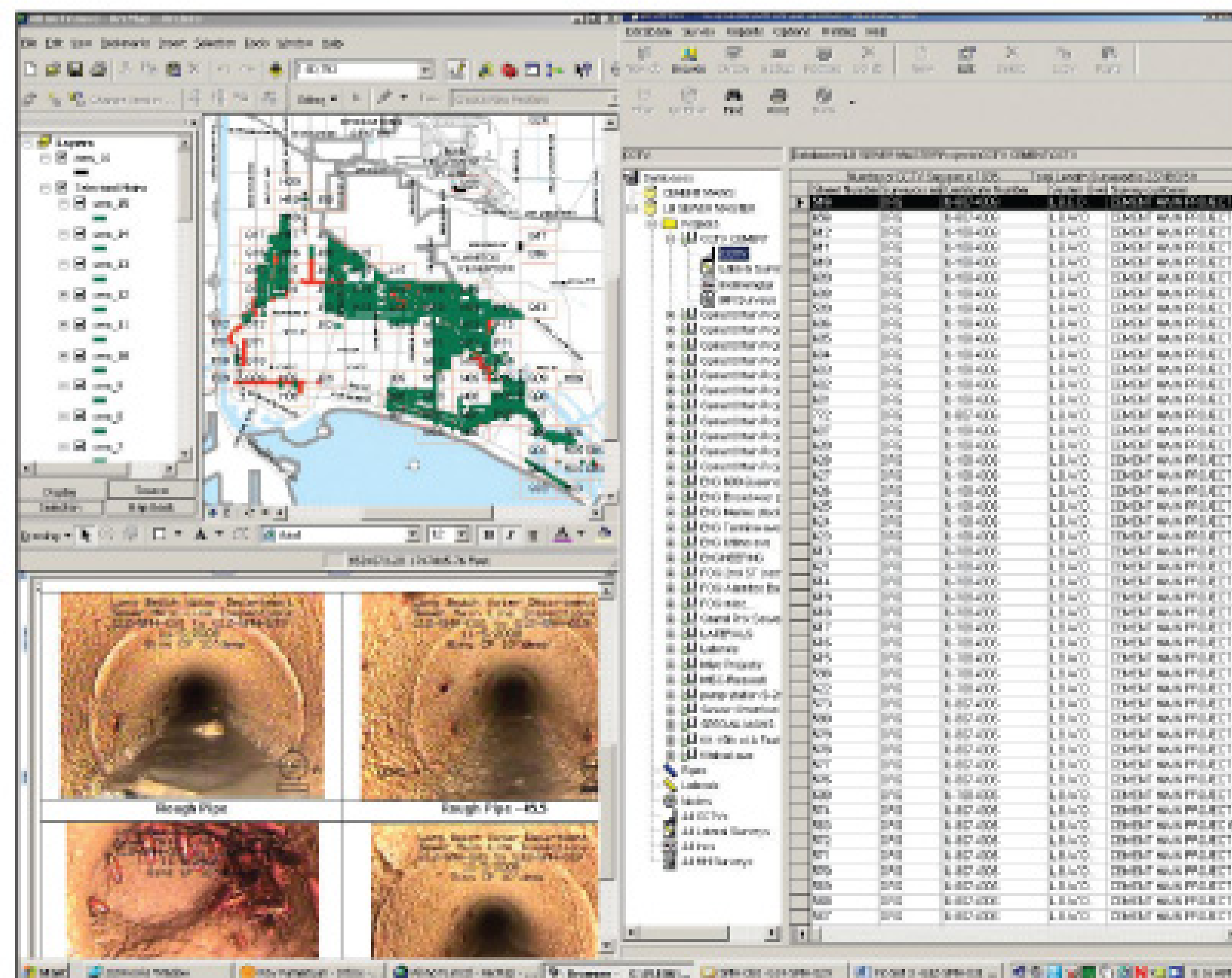
Eventually, all of the field crews and trucks will be equipped with portable computers and the GIS data. The goal is to create a paperless field process. "There was some resistance to this idea at first, but now that some of the crews have tried it, they really like it, especially not having to refer to the heavy, hard-copy maps in their trucks anymore," says Wilkerson.

Special programs and uses

The GIS has made a significant contribution to the success of the department's capital improvement program. During the past 10 years, the department has invested nearly \$90 million to replace its cast-iron water mains (as much as 107,000 linear feet per year) with ductile-iron mains. The Engineering



A map shows Proposed Capital Improvements Program projects (potable water, reclaimed water, sanitary sewer systems and facilities) overlaid on streets and the Council Districts.



GIS to identify all food businesses with or without grease interceptors. After a SSO, the detailed information in the FOG database is available to the CCTV crews so they can use an incident follow-up inspection to pinpoint the source of the FOG that contributed to the overflow. Armed with this detailed information, the department can take the proper enforcement measures and minimize future maintenance costs caused by FOG.

taken the technology beyond its original purpose, eliminating the need for an additional costly program.

The system is constantly being improved and expanded to offer all bureaus ways to increase productivity, improve decision-making, and expand capabilities to perform large tasks previously thought impractical. Like an asset management program, it has also improved records management and accessi-



Field personnel use GIS to plan their work in the Water Operations Service Center. From left, Bobby Jones, water utility supervisor II; Pete Ybarra, water utility supervisor I; Hans Herchert, water utility supervisor II; Vicente Robles, water utility mechanic III; Robert Katzenberger, water operations superintendent; and Travis Colton, water utility mechanic II.

The technology also helps on a more personal level. "GIS is an extremely useful tool for us in new employee training," says Isaac Pai, director of engineering/chief engineer. "When an engineer or field crew member comes on board, we use GIS to help them learn and understand our systems. The simple access and unified visual format provides them an easy way to see the entire water and wastewater systems — how they are laid out and how all the components work together."

Coming full circle

In many cities similar in size to Long Beach, GIS is just one component of a larger asset management system. In Long Beach, GIS is the asset management program. By involving staff from all bureaus and levels of expertise, the Engineering Bureau and GIS staff has

bility, reduced redundant data, and saved time and money.

By being unafraid to push the boundaries of GIS technology, the Long Beach Water Department has created a showcase for GIS professionals around the world and shows how technology can point the way to successful data management and high-performing water and wastewater systems. ♦

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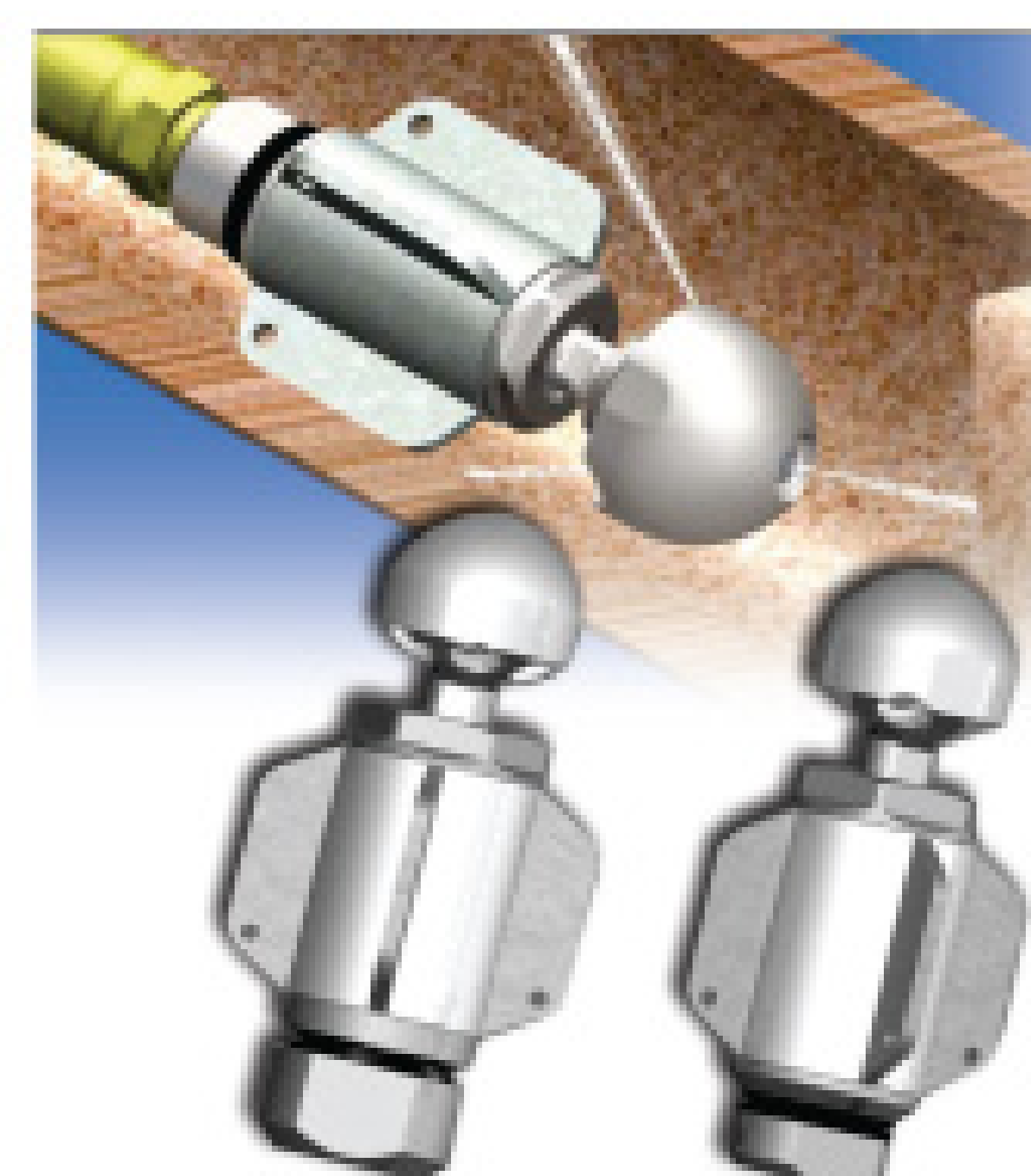
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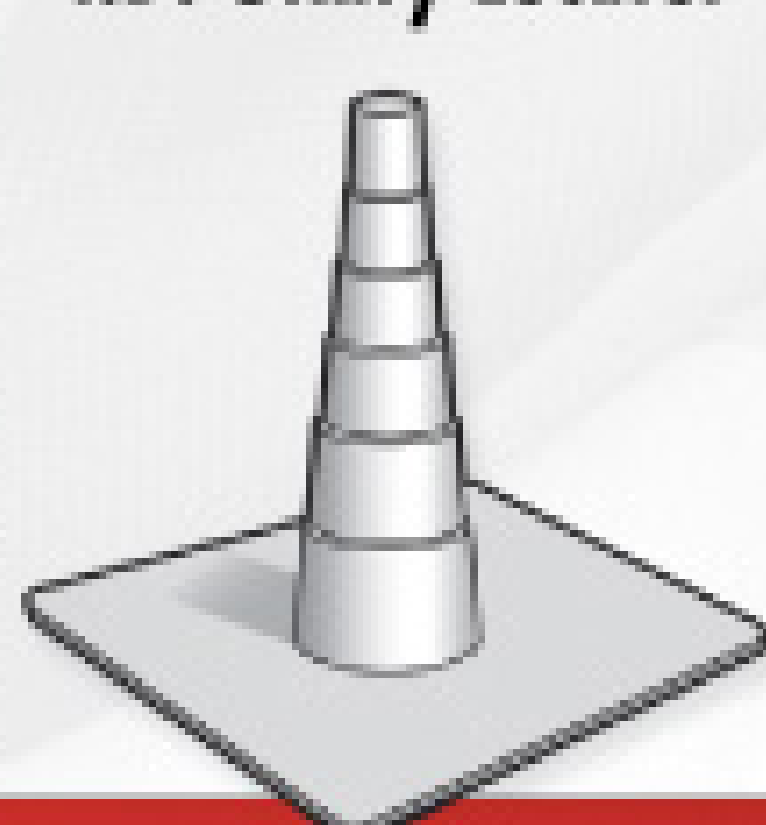
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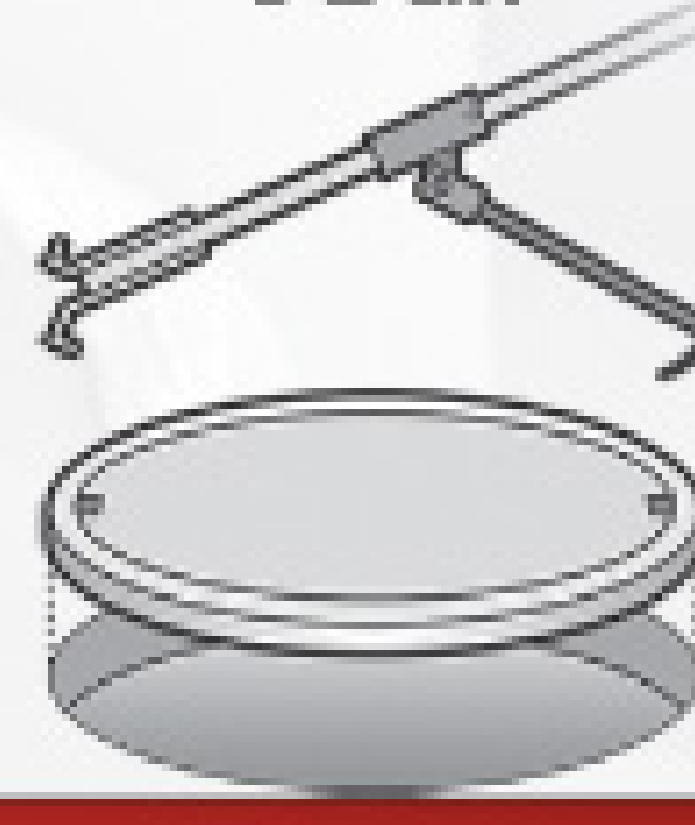
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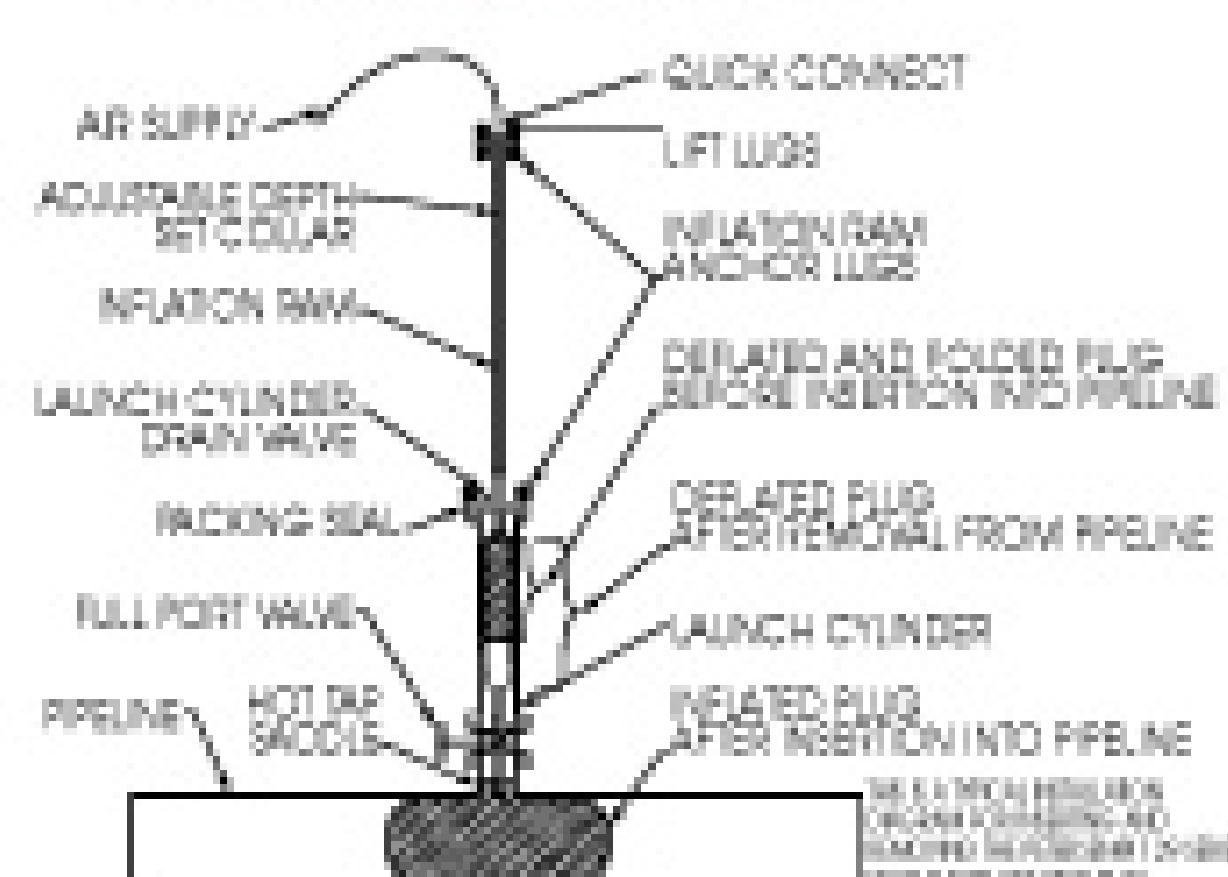
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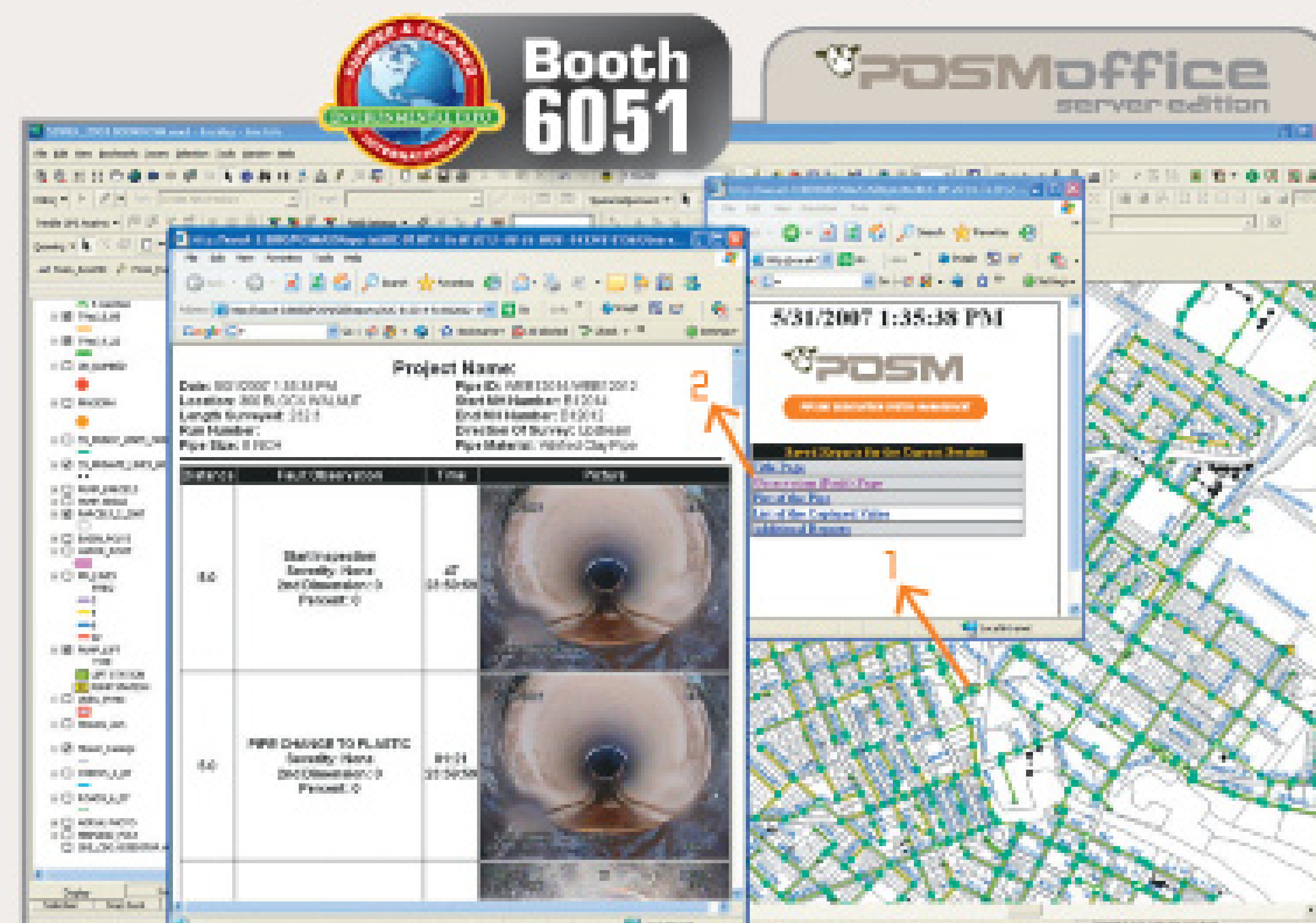


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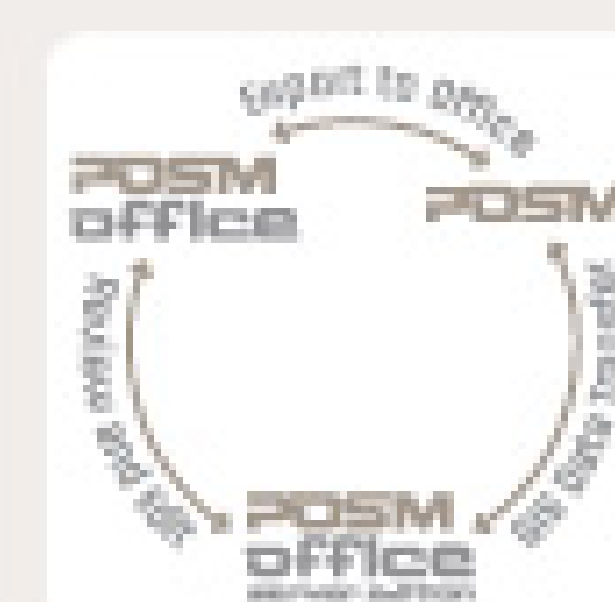


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The exhibit hall at the 2009 Pumper & Cleaner Environmental Expo International in Louisville, Ky.

WORTH CELEBRATING

30th Pumper & Cleaner Environmental Expo International adds a new-product display, interactive floor plan, and Women in the Industry seminar to its proven mix of exhibits and education

By Ted J. Rulseh

The 2010 Pumper & Cleaner Environmental Expo International sticks to a proven formula: Exhibits, education, networking, fun.

But this 30th annual show also breaks ground with new features, including a Women in the Industry seminar, a special display area for new products, and an interactive floor plan.

"We're staying with what has always worked, while adding new attractions that respond to ideas from our exhibitors and attendees," says Julie Gensler, trade show coordinator for COLE Inc., the show sponsor.

Industry's biggest

The Expo, at the Kentucky

Exposition Center in Louisville for the third straight year, starts with Education Day on Wednesday, Feb. 24. Exhibits are open Thursday through Saturday, Feb. 25-27.

As the largest annual show in the industry, the Expo offers more than 500 exhibits of new and proven equipment and technology, plus a total of 70 seminars. Ample space for networking is provided in the COLE Pub food court and cocktail area outside the exhibit hall. Here's a look at a few of the new features at the 30th Annual Expo:

Women in the Industry seminar. Women play a huge role in service companies — some as sole owners, others as partners with their spouses, still others as sup-

port systems, taking care of the home front. All play vital roles. "Here's a chance for women from all sides of the industry to come together, learn about issues they have in common, share ideas, and get acquainted," Gensler says.

helps people connect to their passions and dreams. This Thursday event (9 a.m. to noon) will be followed by a wine and cheese tasting.

New-product display. There is so much to see on the exhibit floor that it can be hard for attendees to

"We're staying with what has always worked, while adding new attractions that respond to ideas from our exhibitors and attendees."

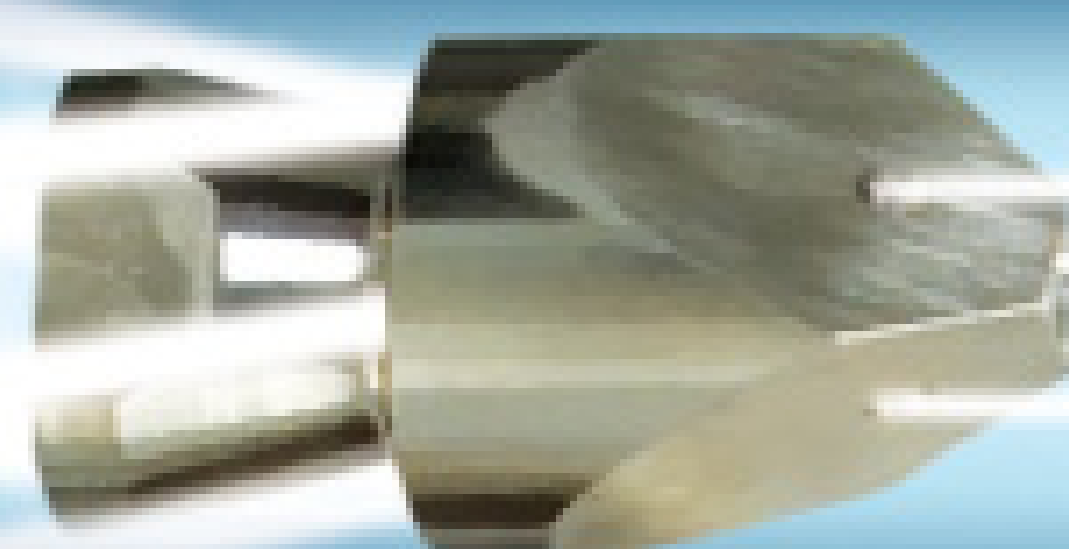
Julie Gensler

Guest speaker Ann Fry will talk about, "The Regeneration Process: How to Re-energize, Re-purpose, Re-invent and Handle Everything!" Fry is an author, professional speaker, executive coach and corporate culture consultant who

find what is new. This year, a sampling of products never seen at the Expo before will be displayed in a dedicated area. This display will be during Education Day (Wednesday) before the exhibits officially open, as well as during regular exhibit

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hours. "Here's a way to get a sneak preview of some of the newest and most innovative tools and technologies," Gensler says.

Interactive floor plan. A virtual floor plan available at www.pumpershow.com will help attendees quickly and easily find exhibits and products of interest. A simple graphic layout shows where companies will exhibit. A click on an exhibit space brings up detailed information about the company, a list of product categories offered, and a panel highlighting the company's featured Expo offering.

Visitors can also search the show by product category: Search results highlight all exhibits on the floor plan that include the chosen category. An agenda planner lets attendees select exhibitors and seminars of interest and create a complete show itinerary, which they can print out and bring to the show to help maximize their time in Louisville.

Quality education

The Education Day program

again includes tracks of seminars given by leading industry associations. Those participating are:

- Southern Section Collection Systems Committee (SSCSC)
- National Environmental Health Association (NEHA)
- National Association of Wastewater Transporters (NAWT)
- National Association of Sewer Service Companies (NASSCO)
- WaterJet Technology Association (WJTA)
- Portable Sanitation Association International (PSAI)
- Leaders Resource Network (LRN)
- National Onsite Wastewater Recycling Association (NOWRA)

Thursday and Friday seminars include tracks covering general business-building topics, sewer and drain cleaning, liquid waste management, portable sanitation, and municipal maintenance and repair. In addition, the SSCSC

will offer seminars in Spanish to accommodate the growing number of Expo visitors from Mexico, Central America, and South America.

Top entertainment

As always, the Expo includes two popular social events. The annual Industry Appreciation Party on Thursday evening features tap beers for 25 cents.

The Saturday Evening Jam Revisited brings back two of the

most popular acts in Expo history: Sawyer Brown (who performed in 2003 and 2004), and Phil Vassar (2005). The show begins at 5 p.m.

In honor of the Expo's 30th Anniversary, early registration costs just \$30 per person (until Jan. 22). At-the-door registration is \$60 for the full program. **To find out more, visit www.pumpershow.com or call 800/257-7222.** ♦

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EDUCATION DAY

Wednesday, February 24th, 2010

SOUTHERN SECTION COLLECTION SYSTEMS COMMITTEE

ROOM C204-C205 - SSCSC

- 8:00 - 9:00 Manhole Inspections 'The Need'
- 9:30 - 10:30 Combination Truck Maintenance and Safety, Sewer Hose Maintenance and Nozzle Technology
- 11:00 - 12:00 Jetting Nozzles - Their Design, Technology and Effective Usage
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Elevating the Quality of Your CCTV Inspection Program
- 2:30 - 3:30 Critical Steps in Prioritizing Sewer Rehabilitation
- 4:00 - 5:00 Traffic Control - The Critical Factor in Pipeline Inspection

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

ROOM C105-C108 - NEHA

- 8:00 - 9:00 Decentralized Systems - The Next Wave in Our Industry
- 9:30 - 10:30 Septic Tanks: A Gift That Keeps on Giving
- 11:00 - 12:00 Selling CLOWTS Certification to Installers and Regulators
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Softeners and Onsite Systems
- 2:30 - 3:30 Advanced Wastewater Treatment Systems
- 4:00 - 5:00 Maximize Efficiency by Working Closely with Regulators and Within the Regulatory System

NATIONAL ASSOCIATION OF WASTEWATER TRANSPORTERS

ROOM B101-B102 - NAWT

- 8:00 - 9:00 Sampling Protocols and Methods for Alternative Technologies
- 9:30 - 10:30 Dealing with Restaurant or High-Strength Waste
- 11:00 - 12:00 O & M for ATUs
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 O & M for Drip Irrigation
- 2:30 - 3:30 What to Expect When the EPA Comes A-Callin'
- 4:00 - 5:00 A Template for Keeping Your Employees Trained

NATIONAL ASSOCIATION OF SEWER SERVICE COMPANIES

ROOM C101-C104 - NASSCO

- 8:00 - 9:00 Pipe Inspections without an Operator?
- 9:30 - 10:30 Ways to Increase Your Daily Sewer Cleaning Production Rates without Increasing Your Costs
- 11:00 - 12:00 Proper Preparation of the Substrate Results in Coating Longevity
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Collection System Asset Management - Getting from Reactive to Proactive
- 2:30 - 3:30 Trenchless Lateral Renewal Technologies - Lessons to be Learned
- 4:00 - 5:00 Zoom Camera Technologies: The Next Level of Infrastructure Inspection

WATERJET TECHNOLOGY ASSOCIATION

ROOM C203 - WJTA

- 8:00 - 9:00 The Impact of OSHA's Combustible Dust National Emphasis Program on Industrial Vacuuming
- 9:30 - 10:30 Waterblast Safety
- 11:00 - 12:00 Waterjet Applications and Business and Financial Considerations

PORTABLE SANITATION ASSOCIATION INTERNATIONAL

ROOM C203 - PSAI

- 1:00 - 2:00 Understanding Your True Cost Analysis to Ensure Profitability - Part 1
- 2:30 - 3:30 Understanding Your True Cost Analysis to Ensure Profitability - Part 2

LEADERS RESOURCE NETWORK

ROOM C201-C202 - LRN

- 8:00 - 9:00 Creating Your Vision for Success
- 9:30 - 10:30 Getting Your Team On Board
- 11:00 - 12:00 Working Effectively in a Family Business Culture
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Creating Your Own Competitive Edge
- 2:30 - 3:30 Winning More Sales
- 4:00 - 5:00 Women in Business: Panel Discussion

NATIONAL ONSITE WASTEWATER RECYCLING ASSOCIATION

ROOM B103-B104 - NOWRA

- 8:00 - 9:00 Wastewater Characteristics
- 9:30 - 10:30 Soils and Site Evaluation Overview
- 11:00 - 12:00 Septic Tank Overview: Function, Design, Construction, Inspection and Troubleshooting
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Seminar on Aerobic Treatment Units
- 2:30 - 3:30 Seminar on Media Filters
- 4:00 - 5:00 Seminar on Pumps and Controls

SCOTT HUNTER

ROOM C109-C112

- 9:30 - 10:30 Relationship is the Key!
- 11:00 - 12:00 The Art of Customer Service
- 12:00 - 1:00 **LUNCH BREAK/BOOK SALES**
- 2:30 - 3:30 Creating an Outrageously Successful Company - Part 1
- 4:00 - 5:00 Creating an Outrageously Successful Company - Part 2

THURSDAY

February 25th, 2010

BUSINESS TRACK

ROOM C101-C104

- 8:00 - 9:00 New 4 P's of Marketing
Jerard Nighorn/Lenzyme Trap-Cleer Inc.
- 9:30 - 10:30 Quit Learning and Start Doing
Bill Raymond/Nexstar Network
- 11:00 - 12:00 5 Secrets of Winners
Kenny Chapman/Nexstar Network

INSTALLER TRACK

ROOM B102

- 8:00 - 9:00 Risk Assessment for Determining SVC Frequency
Colin Bishop/Bord na Mona
- 9:30 - 10:30 From Theory to Reality
Roger Lacasse/Premier Tech
- 11:00 - 12:00 Timed Dosing and Controls
Mark Gross/Orenco

LIQUID WASTE TRACK

ROOM B103

- 8:00 - 9:00 Understanding the Biology and Function of an ATU
Doug Dent
- 9:30 - 10:30 Permit Required Confined Space
Ed Fitzgerald/Jack Doherty Co.
- 11:00 - 12:00 T.B.D.

PORTABLE TOILET TRACK

ROOM B104

- 8:00 - 9:00 Up-Selling: How to Thrive During a Recession
Ray Luden Jr./PolyJohn
- 9:30 - 10:30 Portable Sanitation Business Overview
Deric Boggs, Phil LaRoche/Satellite
- 11:00 - 12:00 T.B.D.

MUNICIPAL TRACK

ROOM C105-C108

- 8:00 - 9:00 Pipe Cleaning Tools
Dana Hicks/ENZ USA Inc.
- 9:30 - 10:30 Increase Revenues through Pipeline Laser & Sonar
Doc Bennet/CUES
- 11:00 - 12:00 How to Prevent I/I in the Manhole Chimney Area
William Goff/Sealing Systems Inc.

SPANISH TRACK

ROOM C109-C112

- 8:00 - 9:00 Limpieza de Drenajes y Tuberías y la Elección de Boquillas
Jim Aanderud/SSCSC
- 9:30 - 10:30 Formando un Programa Eficaz de Inspecciones CCTV
Jim Aanderud/SSCSC

WOMEN IN THE INDUSTRY

ROOM C203

- 9:00 - 12:00 The Regeneration Process: How to Re-energize, Re-purpose, Re-invent and Handle Everything!
Ann Fry

FRIDAY

February 26th, 2010

MUNICIPAL TRACK

ROOM C105-C108

- 8:00 - 9:00 Identifying Manhole I/I Sources and Cost-Effective Repair Methods
Lee Haessig/Cretex Specialty Products
- 9:30 - 10:30 Jet Up! Taking Science to the Sewer
Scott Paquet/NozzTeq Inc.
- 11:00 - 12:00 Cured in Place Pipe vs. Digging and Replacing
Travis Bohm/Perma-Liner

BUSINESS TRACK

ROOM C101-C104

- 8:00 - 9:00 Quality and the True Cost of Ownership
Matt Sutton/Rapid View
- 9:30 - 10:30 Vision and Direction: Leading your Service Company to Prosperity
Victoria Finley/One Biotechnology
- 11:00 - 12:00 How to Shop Your Insurance Effectively
Mark Herring/Heffernan Insurance

INSTALLER TRACK

ROOM C109-C112

- 8:00 - 9:00 Safety in Excavation
Gary Hooks/Safety Corporation of America
- 9:30 - 10:30 Comprehensive Control Panel Training
Joe Zimmerman, Scott Rietsema/SJE Rhombus
- 11:00 - 12:00 Onsite Wastewater Effluent Disinfection
Jim Cruver/Salcor

LIQUID WASTE TRACK

ROOM B103

- 8:00 - 9:00 Dewatering Alternatives
Kelly Brown/BDP Industries
- 9:30 - 10:30 Convert a Liability to an Asset
Emily Landsburg/Black Gold Biofuels
- 11:00 - 12:00 The Role of Bacteria and Bioaugmentation in Grease Traps and Septic Systems
Dr. Clarence Baugh/Custom Biologicals

SEWER & DRAIN TRACK

ROOM B102

- 8:00 - 9:00 Drain Cable Technology and Their Real World Applications
Keith Nesky/Spartan Tool
- 9:30 - 10:30 OSHA Procedures Regarding Confined Space
Chris Cira/M Tech
- 11:00 - 12:00 Sonde and Utility Line Locating Techniques
Rob Trefz/RIDGID

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► Call 1-866-933-2653 to register or to get detailed information about the 2010 Expo!



EXHIBITOR LIST

Current list of exhibiting companies as of November 10th, 2009.
List subject to change without notice.

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A Global Chemical Co.
A.R. North America
A.W. Cook Cement Products
Abbott Rubber Company
Accent Manufacturing
Acro Trailer
Adler Tank Rental
Advance Pump & Equipment
Advanced Biological Marketing
Advanced Containment Systems Inc.
Advanced Drainage Systems
Advanced Infrastructure
Advanced Pressure Systems
Advanced Tank Systems
Advanced Treatment Inc.
Aero-Stream®, LLC
Aero-Tech
AGCO-Ag Chem Division
AK Industries
All Star Equipment Sales, Inc.
Allan J. Coleman
Allied Forward Motion LLC
Allied Graphics
Allied Tank Co.
Alpha Mobile Solutions
Alpine Leasing, Inc.
AlumaMats
Ameri-Can Engineering
Amerik Engineering
Anchor Graphics, Inc.
AP/M Permaform
Aqua Ben Corporation
Aqua Blast Corporation
Aqua Mole Technologies
Aqua Sales, LLC
Aqua-Zyme Disposal Systems Inc.
Arcan Enterprises Inc.
Aries Industries Inc.
Armal, Inc.
Arthur Products
Ashland Trap Distribution, Co.
Atlanta Rubber & Hydraulics Inc.
Avanti International
Bad Dog Tools
Badger Truck Center/Badger VACS
BakerCorp
Bandlock Corporation
BASE Engineering
BB & T Insurance Svc. Inc.
BDP Industries
Benjamin Franklin Franchising
Best Enterprises Inc.
Betts Industries
Big Fish Environmental, LLC
Bio Clean
Bio-Microbics Inc.
BioFuelBox Corporation
Black Tie Manufacturing
BlackGold Biofuels
Blasters, Inc.
Blue Angel Pumps
Boatman Industries
Boerger LLC
Bord na Mona
Bowman Tool Co.
Brenlin Co., Inc.
Bright Dyes/Division Kingscote Chemicals
Bright Technologies
BW Technologies by Honeywell
Cam Spray
Cape Cod Biochemical Co.

Capital Partners
Capital Rubber Corp.
CAT PUMPS
Center Capital Corporation
Century Chemical Corporation
Champion Pump Company, Inc.
Chandler Equipment Inc.
Chelsea Products/Div. of Parker
Chempace Corporation
Chempure Products Corp.
Cherne Industries Inc.
Clear Computing
Clearstream Waste Water Systems Inc.
Cloverleaf Tool Co.
Cobra Technologies
Comforts of Home
Consolidated Treatment
Containment Solutions Inc.
Cook Compression
Coon Manufacturing, Inc.
Cosmic Tophat LLC
Cough Industries Inc.
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Coxreels
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Frontier Technology, Inc.
Fruitland Tool & Manufacturing
Gamajet Cleaning Systems
GapVax Inc.
Gardner Denver Waterjet. Sys. Inc.
GEA Houle Inc.
General Pipe Cleaners
General Pump
Giant Industries Inc.
Go For Digger
Godwin Pumps of America Inc.
Goldak Inc.
Gorlitz Sewer & Drain, Inc.
Goulds Pumps/ITT Industries
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Green Leaf Inc.
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Hedstrom Plastics
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Heritage Truck Equipment Inc.
Hi-Yac Corporation
Hibon, Inc./Div. of Ingersoll Rand
High Pressure Equipment Company
Highland Tank & Manufacturing
Horizon Information Systems, Inc.
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FOCUS: STORM

GETTING AGGRESSIVE

Jason Peek, engineering administrator and manager of the Athens-Clarke County stormwater program, checks out a pedestrian walkway over an enhanced swale. (Photography by Terry Allen)

Athens-Clarke County Stormwater makes inroads against pollution by building public support for innovative water-quality and flood-control features

By Scottie Dayton

Managing stormwater was the last thing developers in Athens, Ga., considered. During the past nine years, the community saw 11 percent population growth, stressing the undersized or failing infrastructure in the central business district and suburban areas.

The Athens-Clarke County (ACC) Department of Transportation and Public Works had done piecemeal drainage and flood control projects for years, but without a capital improvement program.

Once developed in 2000, the program identified 203 flooding problems and 57 Level 1 (top-priority) problems. The county's aggressive response earned them the



PROFILE:

Athens-Clarke County (Ga.)
Stormwater Department

FOUNDED:
2003

POPULATION:
112,760

COUNTY AREA:
122 square miles

EMPLOYEES:
52

ANNUAL RAINFALL:
48 inches

INFRASTRUCTURE:
160 miles of stormwater collection and conveyance, 15,000 catch basins, 1,700 outfalls

ANNUAL BUDGET:
\$3.5 million operating, \$2.3 million capital

WEB SITE:
www.accstormwater.com

An inlet pipe from a roadway empties into a bioretention area that collects trash to keep it out of streams.

2003 Georgia Water & Pollution Control Association Stormwater Program of the Year award.

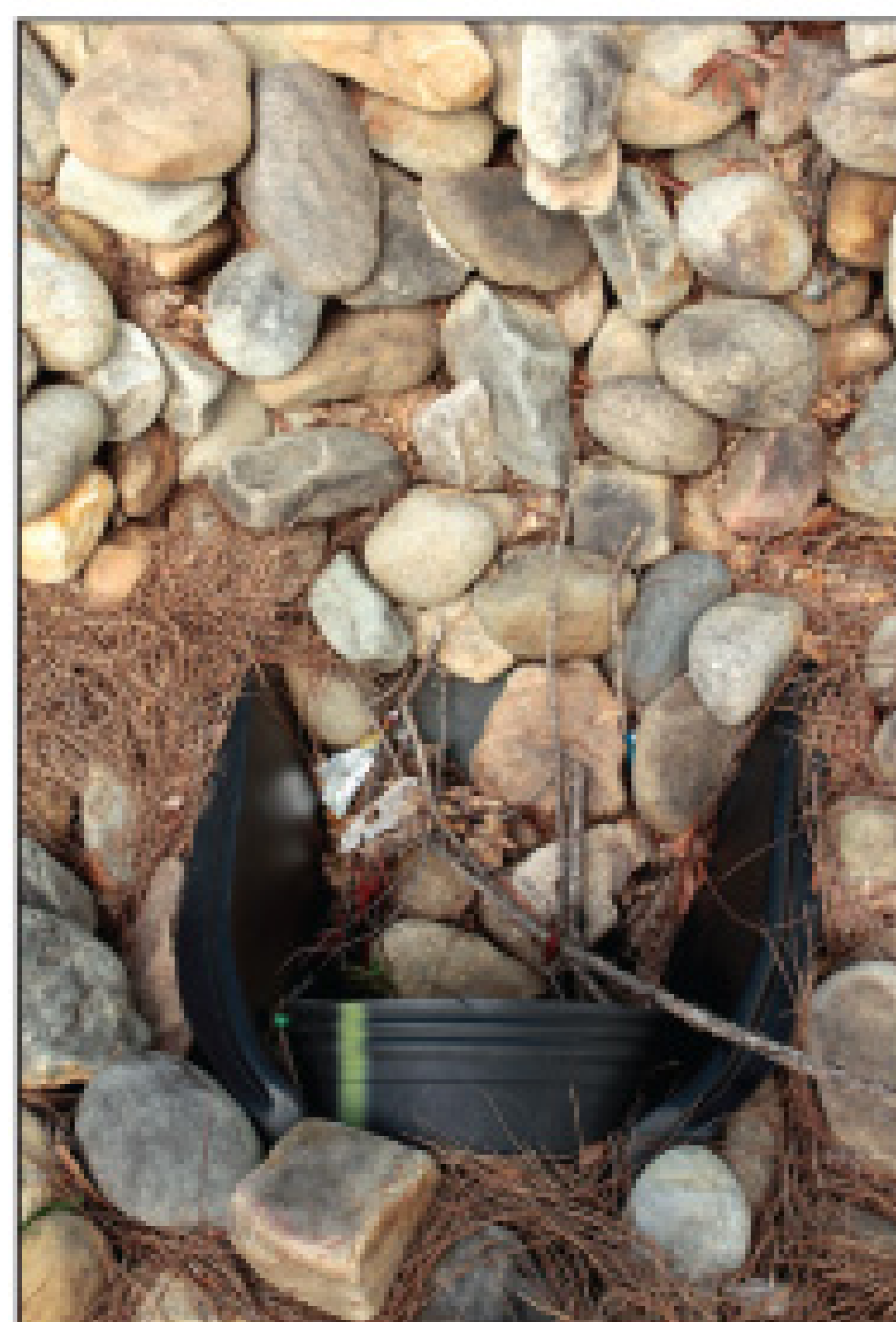
That year, stormwater management also received separate recognition and became ACC Stormwater. Within two years, community response to the stormwater education outreach program was so strong that voters approved a sales tax referendum raising \$2.3 million annually for related projects.

Elected officials heard the message and continued supporting management plans containing water-quality features and flood control. With 70 percent of Level 1 problems solved, Athens can develop without threat of diminishing the community's quality of life.

Making it bigger

Many Level 1 problems stemmed from a collection and conveyance system too small to handle the runoff from even minor storms. When it rained, highways in the gently rolling hills had ponds one-to-two feet deep in low areas, forcing road closures. Some affected areas were major collector routes serving hospitals, schools, and fire departments.

The Lumpkin Street corridor is one of two high-profile projects completed in recent years. This 1.2-mile collector-conveyance system connects to the central business district and to another commercial node. It is bordered by homes and



the University of Georgia. The discharge end was upsized to 60-inch reinforced concrete pipe, and the upstream segment was enhanced by rain gardens, bioretention areas, and swales.

"Stormwater runoff from Lumpkin Street was conveyed to Tanyard Creek through pipes and small, square concrete culverts," says Jason Peek, P.E., engineering administrator and manager of the stormwater program. "That segment of creek drains the heart of downtown Athens, and was impaired."

Lumpkin Woods, the University of Georgia's neglected arboretum, was the largest green space available for stormwater facilities. Peek, associates, and design consultant ARCADIS from Atlanta approached the university's landscape architect staff to help plan their designs. They became so supportive that the university donated



Tanyard Creek is a highly urbanized stream of the kind the county stormwater program is working to protect.

the property and now maintains the facilities.

Rain gardens

Water at the downstream end of

the stormwater treatment train is detained in a micropool wetland with decorative granite retention walls and v-notch weir. A vegetative swale upstream promotes infiltra-

BUTT OUT!

After the City of Athens adopted an indoor smoking ban, the downtown area saw an increase in cigarette litter. As the butts soaked in the stormwater system, they released the tobacco's toxic compounds.

"We worried that tobacco compounds would affect stream chemistry, and the quality of other people's drinking water downstream," says Athens-Clarke County stormwater education coordinator Natalie White. "Prevention was our only cure."

To study the problem's severity, White and helpers sampled two small areas on Lumpkin Street near the University of Georgia, counting 3,476 butts on sidewalks and in gutters. White collaborated with other organizations to research cigarette litter disposal options.

"They were budget benders, so we asked Athens Design Development, a group of local artists, to produce some prototypes," she says. The cigarette

litter receptacles had to be eye-catching, easy for staff to empty, and reasonably tamper-proof.

Last April, the county installed 34 receptacles on parking meters and light poles in the pilot area. Six weeks later, the survey team counted 1,473 butts on the streets — a 58-percent reduction in litter. "We had a problem, however, with college students pulling the locking pin and dumping receptacles," says White. "They also filled bottles with tobacco spit, then poured the goo into the containers."

The department planned to add 100 receptacles to other downtown areas in fall 2009, but first a more tamper-resistant unit has to be designed. The new version locks with a standard key, and canisters pull out instead of tipping on a central pivot. This enables technicians to pop in a fresh receptacle and bring dirty ones back for cleaning. The program has reduced street maintenance costs because cigarette butts no longer help clog storm drains.

tion. A rock-lined swale farther upstream mimics a dry streambed to continue infiltration and reduce velocity.

Rain gardens were constructed at the intersection of Lumpkin and Baxter Streets, which have the second highest pedestrian count in the county. "We wanted the features to be highly visible and have an aesthetic, landscaped appearance," says Peek. "The project showcased how we could handle stormwater issues and create something of value for the community. It built a lot of support for the program."

Stormwater from the street flows through hood-and-grade inlets into sequential rain gardens constructed of permeable soil and lined with decorative stones to slow the flow. They also collect floating trash. Runoff then enters a brick overflow structure discharging to the underground stormwater system. The outfalls are in Tanyard Creek.

Since completion in 2005, university professors use the project to show landscape architecture students real-world examples of what

"We wanted the features to be highly visible and have an aesthetic, landscaped appearance. The project showcased how we could handle stormwater issues and create something of value for the community. It built a lot of support for the program."

Jason Peek

they teach. Some environmental students monitor the effectiveness of the systems. Studies show an 80 percent reduction of TSS in contributing drainage.

Informing the public

The Lumpkin Street project involved major construction lasting more than two-and-a-half years. It reduced travel lanes, occasionally closed roads, and occurred next to commercial and small businesses. Handling its effect on the community was a major challenge. "We held three open forums and numerous one-on-one meetings



Noah Westmoreland and Jason Peek inspect an elliptical drainage pipe at a culvert excavation.



Travis Newsome (at level) and Peek check the grade on a culvert excavation as Noah Westmoreland holds the survey rod.

with residents even before we were authorized to bid the project," Peek says. "However, by building public support, elected officials felt that their constituents were satisfied with it."

Peek's construction progress updates enabled field employees to answer questions about traffic control changes or when construction would reach residents' driveways or businesses. "The department published the cell phone numbers of project inspectors, but it was the one-on-one relationships we built that helped resolve issues before they grew into bigger problems," he says.

Employees went door-to-door

notifying residents the week before construction started in their neighborhood, then checked on them periodically. They worked with businesses two weeks in advance of construction, learning their delivery schedules and coordinating driveway closures. "We always emphasized the importance of stormwater management to control flooding and improve the environment," says Peek. "Most citizens supported our efforts and tolerated the inconveniences."

Baxter Street became the department's second high-profile venture. Frequent flooding along that street blocked emergency

vehicle access to a hospital, damaged commercial property, and closed the thoroughfare to traffic several times a year.

The major challenge was acquiring land for two detention ponds. "We had to make property owners understand how the final product would look and how it would control flooding," says Peek. One method was using mockup drawings.

"We identified and replaced an undersized culvert, the primary cause of our flooding problems," says Peek. "We also installed two Stormceptor systems (Imbrium Systems Corp.) to remove suspended solids and hydrocarbons."

Stormwater ABCs

The county's education outreach efforts range from K-12 school programs to workshops that help homeowners restore stream banks. A donation of plastic syrup containers from a soft drink maker launched the rain barrel program. "We supplemented the cost of the conversion fixtures and gave away the rain barrels," says Peek.

Demand soon outstripped supply. "My staff bought wheeled and round trash cans, then created rain barrel models using our \$10 conversion kit," says Peek. "If residents bring in their trash can and buy the kit, we'll install it." Master Gardeners showed people how to attach the rain barrels to their houses and educated them on stormwater issues and the management program.

Scientific projects include monthly water chemistry, storm flow, and macroinvertebrate sampling at three watersheds to establish baselines and help develop management plans. "We have 17 urban, suburban and transitional watersheds," says Peek. "Our goal is to build modeling conditions of the three representative types that we can replicate on other watersheds to avoid such intensive surveys."

The staff developed a walking tour map highlighting different stormwater practices. An interactive Web page allows visitors to report flooding, illegal dumping, or other stormwater problems anonymously and pinpoint the location on the map. The action creates a work order that is e-mailed to the appropriate person.

"The state is presently okay with us inspecting the ponds, but we want to be ahead of the curve. We have inventoried all of them, analyzed the situations, and are developing recommendations to present to our elected officials. We prefer that they set policy, rather than it become a compliance issue."

Jason Peek

Who's responsible?

Beyond taking care of public infrastructure, ACC Stormwater is about to tackle issues on private property. From the late 1980s to 2004, development added more than 250 residential stormwater ponds. Many lack legal documentation identifying who maintains them. In those cases, the county will have to develop a pond maintenance system or form a new crew within the stormwater department to handle it.

Regular pond inspections reveal some with vegetation overgrowing the dam or primary spillway pipe. Others, filled with sedimentation, no longer function as flood controls. Aging galvanized spillway pipes and joints leak. Some ponds need retrofitting to reflect current engineering and design practices.

"The state is presently okay with us inspecting the ponds, but we want to be ahead of the curve," says Peek. "We have inventoried all of them and analyzed the situations, and we are developing recommendations to present to our elected officials."

Three dedicated crews maintain the collection-conveyance system. Each is assigned two zones. They identify and submit work orders for repairs and use two Vactor combination trucks to clean catch basin sumps and remove

debris in clogged pipes. One-third of the system is cleaned every year.

A pilot project arose when Peek's staff asked developers to incorporate more innovative stormwater features. They said the approach didn't work; The county responded by building demonstration projects. Besides rain gardens, three public buildings have cisterns to reduce potable water use and porous concrete parking lots.

"We explained how pipe size reductions affect development costs, and how stormwater pollution limits our wastewater discharge capacity and ability to grow," says Peek. "It's starting to pay off. Some developers are using the techniques."

Once most residents understood that twofold nature of stormwater projects, they appreciated the department's accomplishments. Its aggressive approach to nonpoint source issues has ensured Athens-Clarke County's future development for decades. ♦

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The Grundoburst 800G 80-ton static pipe-bursting machine pulls the new HDPE pipe through the host pipe. (Photos courtesy of SKE Construction, Alvin, Texas)

BETTER MOUSETRAPS

PRODUCT:

Grundoburst 800G 80-ton static pipe-bursting system

MANUFACTURER:

TT Technologies Inc.
www.tttechnologies.com

APPLICATION:

Pipe burst 27,110 feet of 6- to 12-inch water mains

BENEFITS:

Replaces pipe faster than open-cut method and with less disruption

USER:

City of Big Spring, Texas

CLEAN AS A WHISTLE

Pipe bursting with prechlorinated HDPE pipe replaces 27,110 feet of water mains in Big Spring, Texas, with minimal disruption to property or businesses

By Scottie Dayton

“The bladed wheel system requires less power than other static systems and helps prevent potential damage to the product pipe.”

Matt McAfee

Water leaks, as many as five per week, made life hectic for the Public Works crews in Big Spring, Texas. They also consumed too much of the city's small budget.

Most repairs or replacements of the 50- to 75-year-old cast-iron pipes were open-cut. Contractors used pipe bursting or CIPP lining only when traffic disruption was an issue.

The department's in-house construction replacement program began in 1993. “Our goal was to

replace at least five miles of pipeline per year,” says Todd Darden, Public Works director and assistant city manager. “We’ve seen a reduction in leaks from 325 in 1993 to 165 in 2008.”

That year, the Texas Department of Transportation resurfaced U.S. 87, one of four arteries bisecting the heart of the old downtown district. As part of the restoration-revitalization project, utilities upgraded their services.

“Ten contractors were working on these projects consecutively in

conjunction with all the street rehabilitation,” says Darden. “We had construction going in every direction within a four-block area.” The last thing he wanted was to dig up the new road to repair future leaks. Voters approved a bond to replace the water pipes.

To stay ahead of the road-surfacing crews without inconveniencing homeowners for more than one day, Stephen Bennett, a consulting engineer from Parkhill, Smith and Cooper Inc. in Lubbock, proposed pipe bursting with pre-

chlorinated pipe. "It's a new, highly efficient, fast process that we love," says Darden.

Phase 1, completed in November 2008 replaced 17,550 feet of 2- to 12-inch pipe with size-on-size and some upsized pipe. Phase 2, completed in August 2009, replaced 9,560 feet of 6- to 12-inch pipe. The average pull was 450 feet per day, and the most pipe replaced in one week was 2,600 feet.

Mr. Clean

Shelly Eberhart, owner of SKE Construction in Alvin, Texas, won the pipe-bursting bid. "The lines were so badly tuberculated that my fist wouldn't fit inside the 8-inch pipes," she says. Eberhart divided her 12 men into crews to excavate entry and exit pits, dig up services, and chlorinate and fuse 40-foot sticks of HDPE pipe. This crew worked in a yard close to the bursting points.

Many pipes had severe tuberculation, as seen in this 8-inch section of cast iron pipe.



"I highly recommend this approach to entities looking to replace their water lines, especially in areas where they want to minimize delays and keep traffic moving for the convenience for the traveling public."

Todd Darden

The men averaged one pull a day, usually 450 feet between valve boxes, enabling the fusing and prechlorination team to stay two days ahead of the bursting schedule. The assembly crew welded three or four pulls together using a McElroy 412 fusing machine, then began the chlorination process per Bennett's specifications.

"Each burst has a number that we write on the pipe and in a log," says Eberhart. "The log also records the hydrostatic and chlorination tests." Tests are run simultaneously on the fused pipe.

After inserting a styrofoam pig in one end of the pipe and pouring 25 mg/l of powdered chlorine behind the swab, the men welded on the bursting head. They injected water and air through the head, and hydrostatic and pneumatic pressures pushed the swab through the pipe.

"Pressurization also lets us check the welds for leaks, while the swab pushes out any remaining materials," says Eberhart. "Once the swab pops out, we pour in fresh water and take a sample." The samples are driven daily to an independent laboratory 50 miles away to analyze the

water for bacterial contamination.

Meanwhile, the pipes are flanged, capped, and held under 150-psi pressure for 24 hours. The sampling process is then repeated. If the pipes pass the second biological test, they are drained, capped, and dragged with a backhoe or excavator over 2-inch HDPE rollers to the bursting site.

Look who's coming

Before a scheduled burst, another SKE worker hangs notification flyers on residents' doors and knocks to let them know that the city will turn off the water at 8 a.m. the next day. "It's a lot of leg work, but the citizens are happy," says Eberhart. "We even bring cases of bottled water to the elderly. If businesses or nursing homes must have water, we will bypass it to their building," says Eberhart. Most people, however, are at work and unaffected.

Many valve boxes were a block apart, or 450 feet. The average depth of the bursts was four to six feet. Eberhart's team used a self-contained, hydraulic/static Grundoburst 800G 80-ton static pipe-bursting system with Quicklock rods from TT Technologies Inc. Once the machine was in the exit pit, workers shuttled the rods through the old line to the launch pit, hooked the rods to

the bursting head, and pulled in the new line.

The bursting blade has vertical and horizontal cutting wheels that split the top and sides of host pipes without ripping or tearing them. "The bladed wheel system requires less power than other static systems and helps prevent potential damage to the product pipe," says Matt McAfee, project manager. An expander attached behind the cutting blade spread and displaced the split pipe into the soil during the pull.

Once the crew cut off the bursting head, they pigged the line, added water, and took another sample to ensure that the pipe had not become contaminated during installation. When residents returned home from work that day, they found their service restored and their doorways accessible.

"We are certainly happy and excited with the results," says Darden. "I highly recommend this approach to entities looking to replace their water lines, especially in areas where they want to minimize delays and keep traffic moving for the convenience for the traveling public." ♦

MORE INFO:

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Workers prepare to connect the new HDPE pipe to the Quicklock rods before beginning the pull.

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PEOPLE / AWARDS

Laura Christianson, Iowa State University, received the 2009 Richard A. Herbert Memorial Scholarship, Graduate Student Award, from the American Water Resources Association.

DC Water and Sewer Authority received the Research and Technology Award, and the Gold Peak Performance Award from the National Association of Clean Water Agencies.

Meadville Area Water Authority (Pennsylvania) received the U.S. EPA's 2009 Region 3 Source Water Protection Award.

Linda Macpherson of CH2M HILL in Englewood, Colo., and **Eric Rosenblum** of the City of San Jose, Calif., received 2009 Person of the Year Awards from the WaterReuse Association.

The **Clovis (Calif.) Water Reuse Facility** received the 2009 Award of Merit from the WaterReuse Association.

LEARNING OPPORTUNITIES

American Water Works Association

The AWWA is offering the following courses:

- Dec. 9 – Backflow Prevention and Cross-Connection Control (Webcast)
- Dec. 16 – Hot Topics In Water: What Do They Mean To Me As An Operator? (Webcast)
- Jan. 14 – Los Angeles Water Sustainability and Management Forum, Los Angeles

Visit www.awwa.org.

CALENDAR

Dec. 2

National Utility Contractors Association Safety Directors Forum, New York New York Hotel, Las Vegas, Nev. Call 518/885-2560 or visit www.nuca.com.

Dec. 2-4

Florida Stormwater Association Winter Conference, Hyatt Regency, Tampa, Fla. Visit www.florida-stormwater.org.

Jan. 10-13

National Utility Contractors Association Utility Construction Expo 2010, Walt Disney World Dolphin Hotel, Orlando, Fla. Call 703/358-9300 or visit www.nuca.com.

Kansas Water Environment Association

The KWEA is offering the following courses:

- Dec. 2 – Safety, Dodge City
- Dec. 2 – Small Systems Water Operations, Hays
- Dec. 2-5 – Cross Connection/Backflow, Salina
- Dec. 9-10 – Cross Connection Informational, Lawrence
- Dec. 9-12 – Cross Connection 4-Day Course, Lawrence
- Dec. 9-12 – Cross Connection Recertification, Lawrence
- Dec. 16 – Ethics, Hays
- Dec. 16 – Advanced Water, Yates Center
- Dec. 16-17 – Installation of Mains and Appurtenances, Colby
- Dec. 17-18 – Motors and Drives, Olathe
- Dec. 23 – Small Systems Water, Dodge City
- Jan. 6 – Urban Water Demand, Dodge City
- Jan. 6 – Small Systems Water, Garden City
- Jan. 13 – Small Water Systems, Clearwater

Visit www.kwea.net.

University of Wisconsin

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

- Dec. 7-8 – Using Bio/Infiltration to Improve Stormwater Management
- Jan. 5-7 – Cross-Connection Control and Backflow Prevention

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

Wisconsin Department of Natural Resources

The Wisconsin DNR has this course in Sun Prairie:

- Dec. 8-9 – Utility Management

Visit www.dnr.state.wi.us/org/cs/science/opcert/training.htm.

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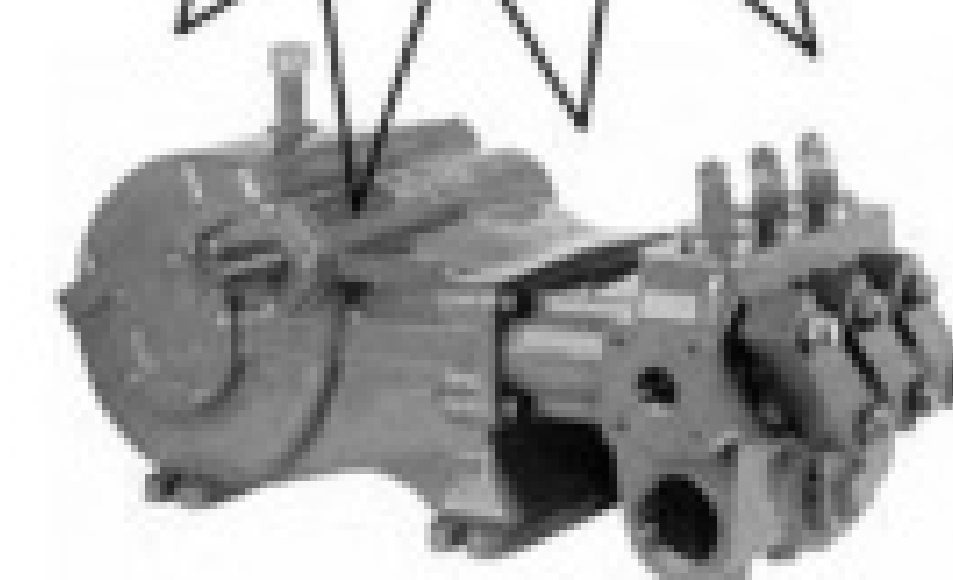
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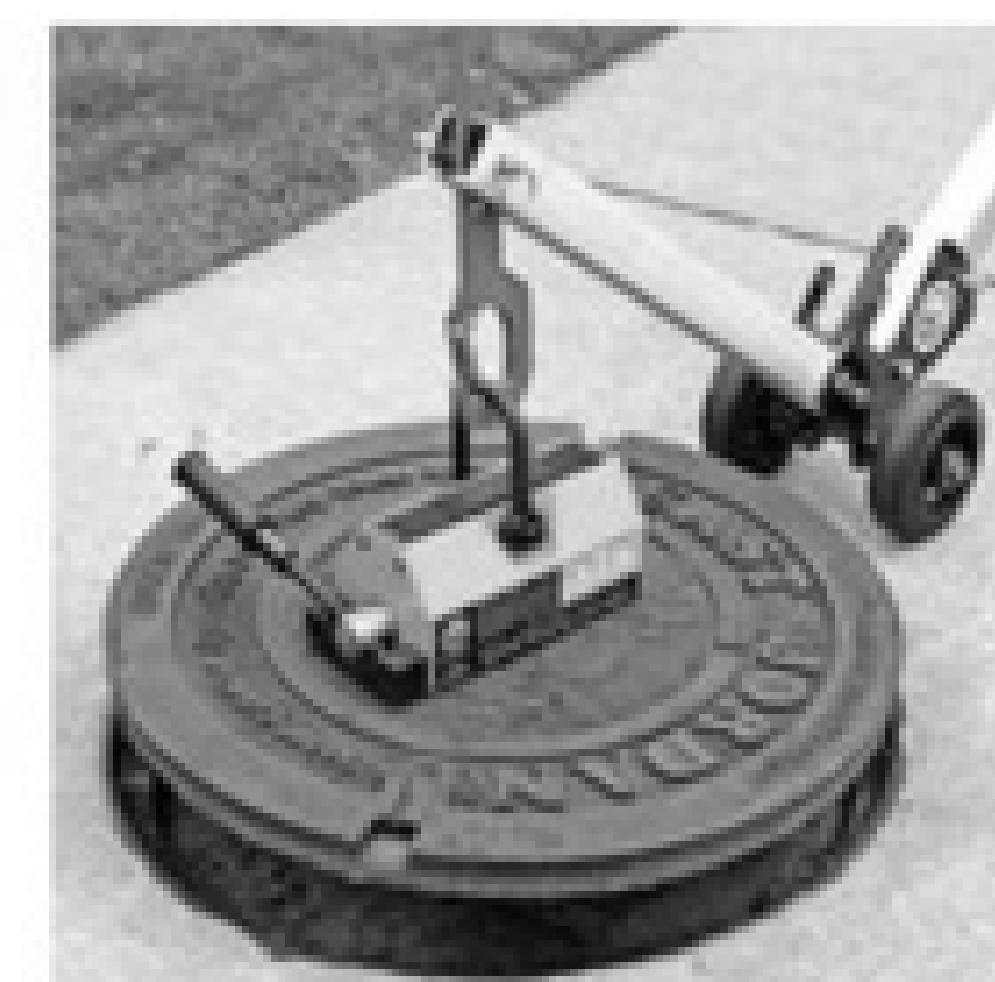
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LEAP FORWARD

The Vactor 2100Plus combination truck brings current technology and operator-friendly design to pipe cleaning and hydroexcavation

By Erik Gunn

As technology advances, combination trucks get more sophisticated. The Vactor 2100Plus from the Vactor Manufacturing subsidiary of Federal Signal Corp. is the company's newest iteration of the machine.

Improvements range from simple, like built-in clamps to hold vacuum extension pipes in place on the side of the truck for storage, to highly complex, like a redesigned, hydraulically controlled pump that can deliver water at very low flows and conserve energy, extensive computerization in system controls, and a wireless remote unit.

Representatives of Vactor and of its Wisconsin/Illinois distributor, Bruce Municipal Equipment of Menomonee Falls, Wis., demonstrated the truck for employees of the City of Muskego, a suburb southwest of Milwaukee, on June 5.

Participants included project manager Mike Rose, product manager Jared Dippel, and sales technician and demonstrator Myles McGonigle, all of Federal Signal; Vactor specialist Mike McNulty and Jim Weedman, both of Bruce Municipal Equipment; and Scott Kloskowski, superintendent, and employees of the city Public Utilities Department.



Complete machine controls are mounted at the front of the Vactor 2100Plus. (Photography by Erik Gunn)

TECHNOLOGY TEST DRIVE

EQUIPMENT:
Vactor 2100Plus
Combination Truck

MANUFACTURER:
Vactor Manufacturing
800/627-3171
www.vactor.com

LOCATION OF DEMO:
Muskego, Wis.

DEMONSTRATED BY:
Mike Rose, Myles McGonigle,
Jared Dippel, Vactor Mfg.;
Jim Weedman, Mike McNulty,
Bruce Municipal Equipment

LIST PRICE:
\$374,000 as demonstrated

Walk-around

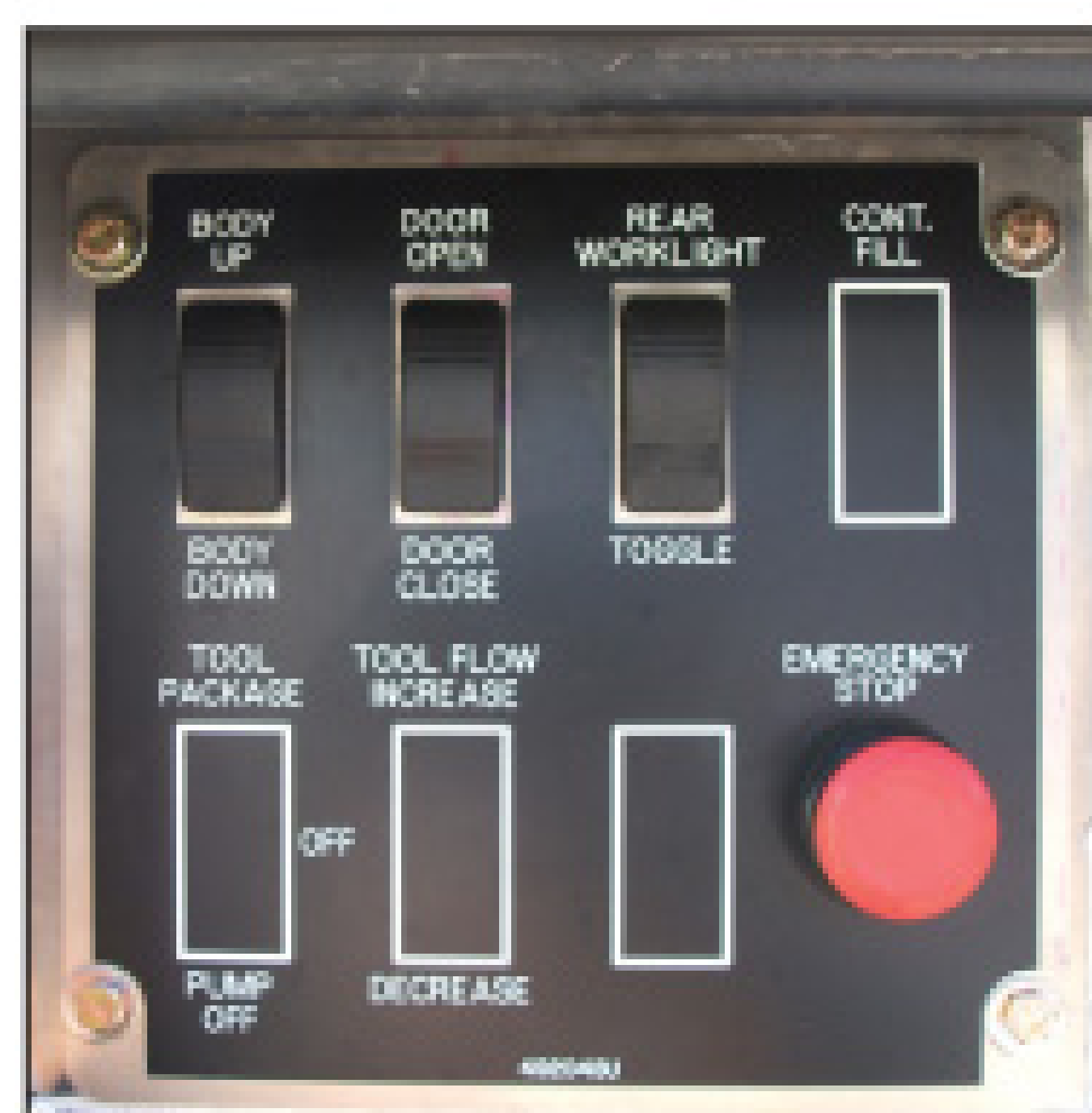
The Vactor 2100Plus can be built on a number of truck platforms. While built higher from the ground for undercarriage clearance, it carries a lower overall profile than previous Vactor models. The debris tank has a high-dump configuration with the spill plate about five feet off the ground. Debris filters on the driver's side are accessible and easy to clean.

Two storage brackets for pipe extensions to the vacuum hose are placed low on the truck frame, at about 30 inches and five feet from the ground, within easy reach. Spring-loaded clamps hold the pipes in place. Additional pipe storage is mounted higher on the side of the debris tank.

The primary jetter hose reel is front-mounted and carries up to 1,000 feet of 1-inch hose. The system is sized for up to 100 gpm, although the unit demonstrated was configured for 80 gpm.

A pair of control panels mounted on the front of the reel operate the jetter, hydroexcavation and vacuuming functions. Once the operator engages the vacuum unit from the truck's cab controls, a switch on the front panel can be used to turn the blower on and off during operations.

"If you're rodding and you're ready to start vacuuming, all you have to do is turn your blower on," says Rose. "The blower will sync up,



Far left: The IntelliView screen, which relays a wide range of information on system diagnostics and performance to the operator. Near left: A side control panel includes controls for the hydraulics and pumping system.



The Vactor 2100Plus combination truck is the result of a major redesign completed in 2008.



The truck's high-dump configuration allows it to dump debris into a roll-off container without a ramp.

and then you're ready to vacuum. You don't have to do a lot of in-and-out of the cab stuff."

The panel includes two joysticks, one for playing the jetter hose in and out and the other to

manipulate the vacuum boom. The truck as demonstrated was equipped with a 5-by-5 boom, which can extend out five feet and down five feet, and with a single 6-foot pipe attachment can reach

down 11 feet. That is useful for catch basin cleaning without further attachments.

Above the left front panel a 3.5-inch IntelliView screen reports on a wide range of operating conditions, functions, and diagnostics along with mechanical system performance for troubleshooting. Users can switch from displays showing water flow, the length of hose extended into the manhole during jetting, hydraulic oil temperature, chassis RPM, PD blower or auxiliary engine rpm, vacuum mode, and which of the machine's two power take-off units are active.

The vehicle uses the same sort of CAN-bus electronic engine control and diagnostic systems that have been standard in automobiles for 15 years. Such systems allow a mechanic to troubleshoot if electronic modules in the engine and system components are communicating properly, and if not, to quickly diagnose the problem. The electronic system can transmit fault or error codes to the IntelliView screen. The screen also can display error messages if the operator is put into an unsafe condition.

Along the right side of the vehicle is another pair of control panels in an aluminum cabinet. One includes controls for dumping debris as well as controlling

water and air, and the other has electrical controls for the hydraulic system. Electrical hydraulic control reduces the number of levers and valves required. The panel is easily accessible for truck maintenance. "We don't have any valves buried underneath the truck," Rose noted.

Both the side panels and the front control panels include a bright-red emergency stop button. Another emergency-stop button is found on the wireless remote unit that is available for the machine.

The truck uses Vactor's single-piston pump, refined for true multi-flow capability. The water pump switch offers three flow settings, all capable of pressures up to 2,500 psi: Low (1,200 rpm, up to 37 gpm), mid-flow (1,200 rpm, up to 60 gpm) and high (1,800 rpm, up to 80 gpm). A rheostat enables variable flow at each setting.

"If you're rodding and you're ready to start vacuuming, all you have to do is turn your blower on. The blower will sync up, and then you're ready to vacuum. You don't have to do a lot of in-and-out of the cab stuff."

Mike Rose

The vehicle is equipped with two power takeoffs. Advances in engine design enable better torque ratings at lower engine speeds that make it possible to limit the pump flow to what the operator desires.

The water pump is on the side of the truck, rather than the back, to better distribute weight across the vehicle's length and to reduce the distance hydraulic oil and water must travel. "Instead of plumbing oil to the back and then water all the way to the front of the



Mike Rose of Vactor Mfg. shows the filter housing opened to provide access for cleaning.

truck, everything is only flowing right here, so we've got less pressure drop throughout the system," Rose said. The water fill has been lowered for easier access.

Certain specifications can be customized. The demonstrated model included a Roots 824 pump with an 18-inch blower, a 15-cubic-yard debris tank, and a 1,500-gallon aluminum fresh-water tank.

In addition to the primary hose reel on the front of the vehicle, the truck carries two side reels, one for hydroexcavation and the other for the handgun washdown system.

A wireless remote control unit includes all the functions offered on the front control panels: throttle, boom joysticks, hose reel control, pump control, water flow control, vacuum relief, emergency stop, and others. "Everything I need to run that truck is here in my hand," Rose said. The control can be worn slung around the body with a strap for near-hands-free operation.

Operation

The demonstration began with a quick display of the emergency-stop button. With systems turned on although not in actual use, Rose used the button to disengage the vacuum system and the hydraulics and idle the engine without killing it. He noted that would allow workers to relieve a hazard without having to restart the engine.

The remainder of the demonstration focused on hydroexcavation and jetting. McGonigle drove the vehicle to a cul-de-sac in an industrial park where the Public Utilities Department is located and backed it up to a manhole. Crew members opened the manhole, and McGonigle used the controls on the front of the jetter hose reel to send the jetter nozzle and hose into the sewer. The IntelliView

A wireless remote unit includes all functions located on the front control panels.

screen was switched to display the hose footage as it extended to 234.4 feet, then was pulled back in by the operator.

Muskego employees Jim Bourdo and Steve Ludwig were among those who took turns operating the jetter, using the controls on the front-reel panel.

the remote unit to maneuver the vacuum hose and collect the soil slurry. He also used the remote unit to control water flow through the hydroexcavation wand.

As the hydroexcavation proceeded, the IntelliView screen indicated the water output was at 7.4 gpm, the pump rpm at just over 1,800 and the blower and chassis rpm at about 1,400. All three values were displayed at the same time.

The multiflow pump can run at

The vehicle uses the same sort of CAN-bus electronic engine control and diagnostic systems that have been standard in automobiles for 15 years. Such systems allow a mechanic to troubleshoot if electronic modules in the engine and system components are communicating properly, and if not, to quickly diagnose the problem.

After the jetting demonstration, the vehicle was driven back to the municipal garage and set up for hydroexcavation.

To release an extension pipe for the vacuum boom, McGonigle pulled on the T-shaped handle for one of the two clamps holding the pipe in place in brackets on the side of the truck. He twisted it a quarter-turn from vertical to horizontal, then repeated the maneuver with the second clamp to release the pipe.

While McGonigle used the hydroexcavation wand to dig a three-foot hole in a grassy area next to the garage, Ludwig used

very high pressures with very low flows — as little as 2 gpm at 2,500 psi. The hydraulic system moves one gallon of oil for every gallon of water. "We're only producing the amount of energy it takes to create the flow you're asking for," Rose said. Pumps lacking this capability must run at much higher flows; if the operator wants a lower flow, the rest of the water is recirculated, using more energy.

The hydraulic machinery uses what Vactor calls load-sense or on-demand hydraulics, meaning that oil in the hydraulic system is not moving unless it is actually being operated. An automatic shutdown



is triggered if the oil temperature rises above a certain threshold.

The pump multiflow feature is made possible in part by the use of two power takeoffs on the truck. There are also energy-conserving features associated with the configuration.

For example, explained Dippel, if the pump is being run on the "high flow" setting, both PTOs will operate. But if the system isn't demanding high flow, despite the setting — for example, if the operator has mistakenly selected a water nozzle not capable of producing a high flow, or if the truck is being run in combination mode with both vacuum and water pump engaged, but the pump isn't actually needed at the moment — the system can detect that high-flow water is not being demanded. Then it will automatically disengage the second PTO, saving fuel, and send a message to the IntelliView screen to alert the operator.

The hydroexcavation demonstration concluded at three feet down. The original plan was to dig six feet down, but the crew encountered a rock three feet below ground, and Kloskowski was sufficiently satisfied with the demonstration to stop there.

When the digging was ended Ludwig raised the boom with the remote and McGonigle cleaned the inside and outside of the extension tube with the hydroexcavation wand. McGonigle then detached the extension pipe from the boom, returned it to its mounting bracket on the side of the truck, then used the control panel on the front of the reel to maneuver the boom onto a protruding boom rest on the vehicle's front bumper.

Observer comments

Bourdo and Ludwig reported that because of the multi-flow capability of the pump, machine noise was considerably less than from other machines. Bourdo said the joystick control for the jetter

hose was easy to use and responsive, and he especially liked getting a count on hose footage from the IntelliView screen.

Ludwig noted that a rheostat dial to adjust the water pressure during jetting was much easier to use than mechanical linkages on the city's earlier model.

While using the wireless remote requires "a little bit of a learning curve," Ludwig said it was relatively easy. "It was a little slow — you've got to hold it for a couple of seconds," he said. But he also found the unit attractive in that it allows the operator to work out of reach of the reel-mounted control panel.

Kloskowski said crew members who took part in the demonstration found the new vehicle more user-friendly in many ways, including the access to the filters for cleaning and the ease of access to the vacuum extension pipes. He said the wireless remote would be especially helpful when working on an easement.

Manufacturer comments

Dippel noted that the vehicle is built using Vactor's module flex approach, which allows customers to have the unit easily customized.


In demonstrating access to debris filters on the demonstration model, Rose removed a series of nuts from a cover plate. That is being changed for the production model to a single, central fastener for easier opening and closing.

The prototype demonstrated was a standard tandem-axle model. Rose and Dippel noted that a single-axle design is available as well as a fan machine in both single- and dual-stage configurations. ♦


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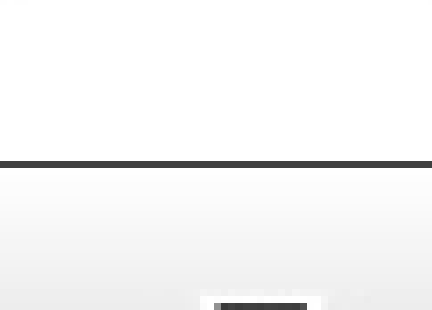
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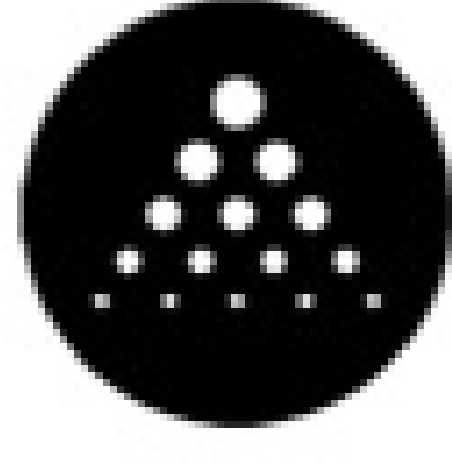
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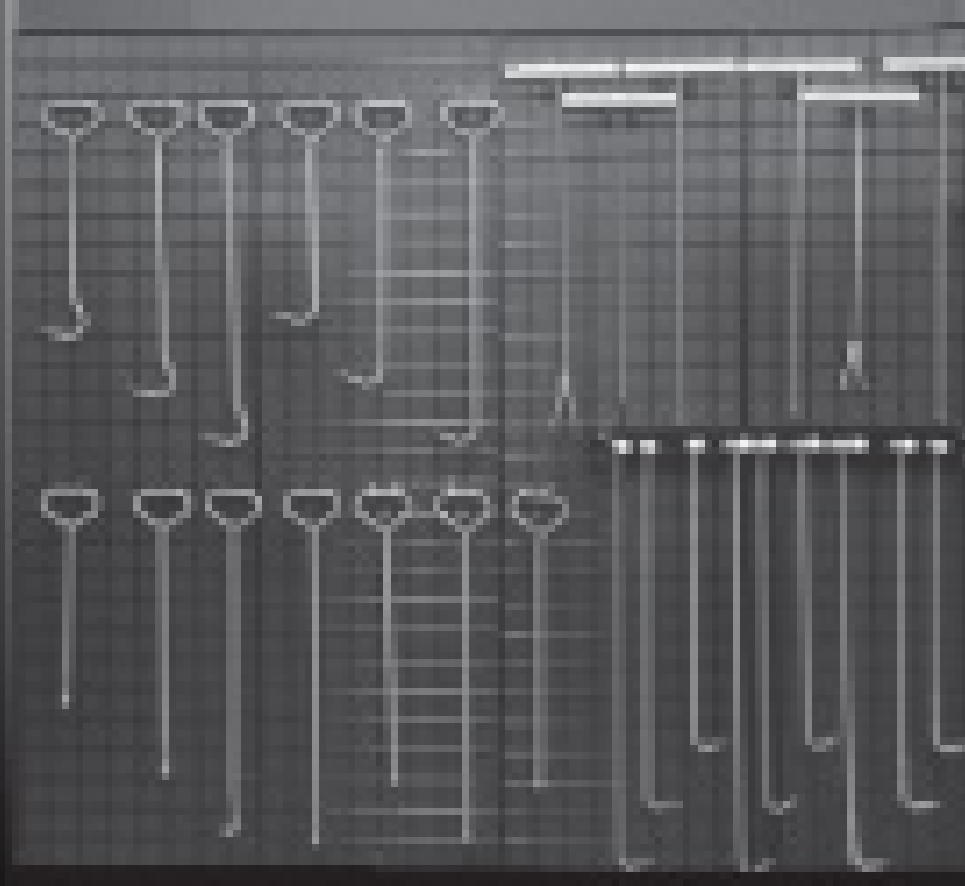
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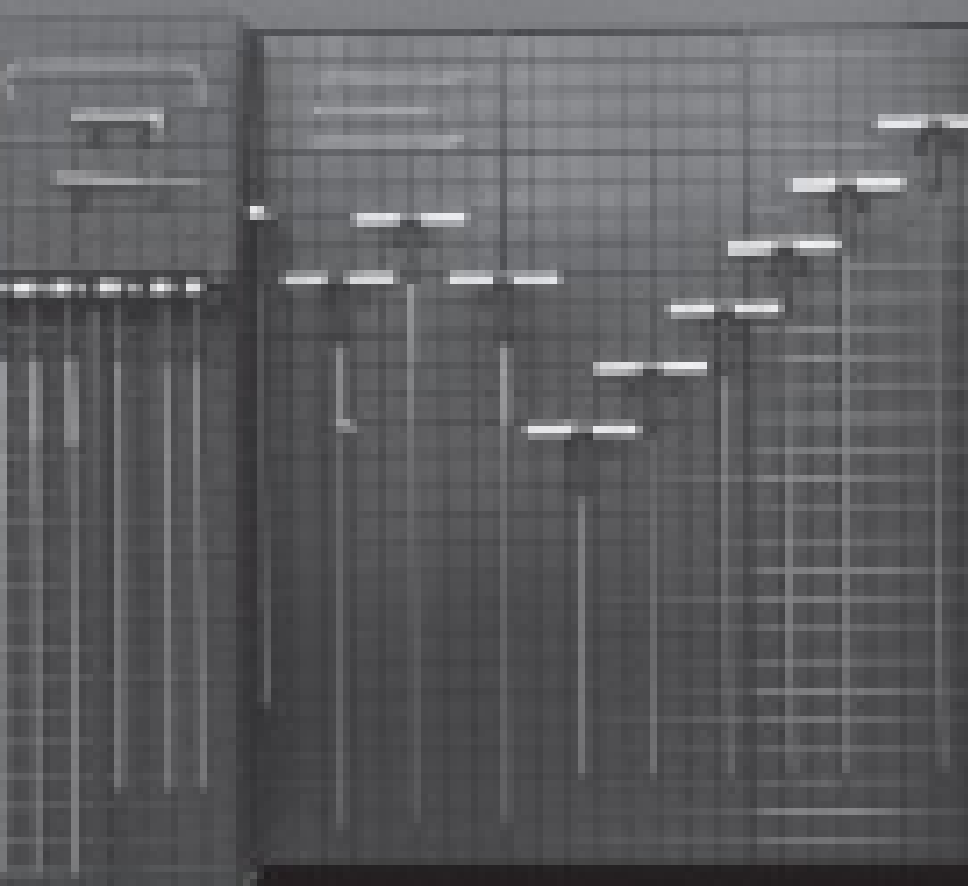
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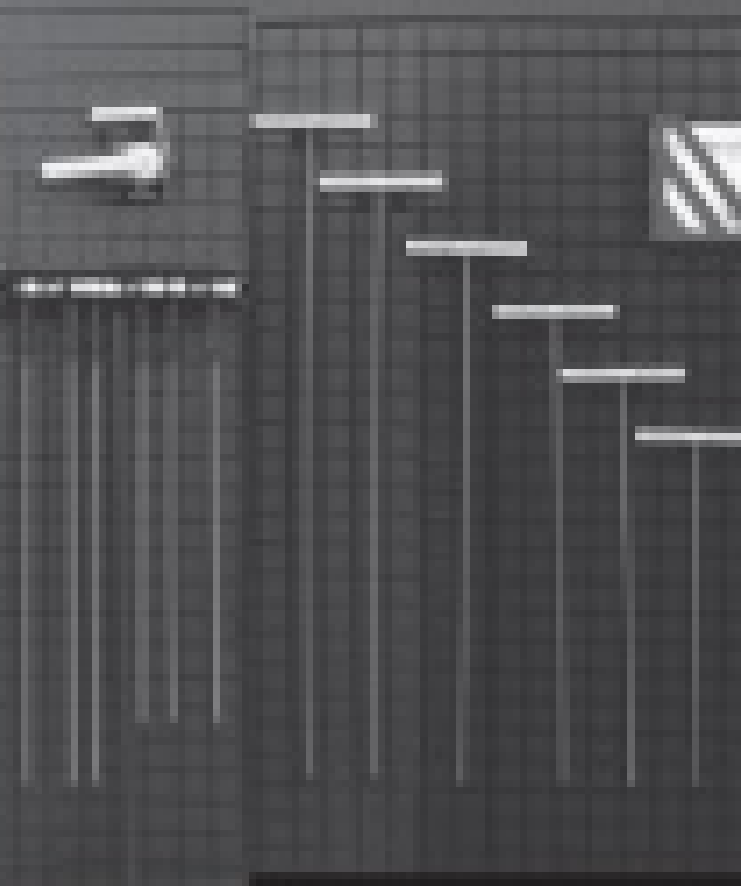
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EARN LOYALTY FOR LIFE

Here is how you can protect your personal leadership brand by avoiding five behaviors that can damage you in the eyes of your team members

By Brenda Bence

All you have to do is look around to know that brands are powerful. In fact, most people are so loyal to certain brands that they stick with them for life.

If brand-name products can evoke that kind of loyalty, why can't people? Well, they can! The truth is that we all have a personal brand, whether we like it or not. Simply by being ourselves in the workplace, others perceive, think, and feel about us in a certain way. The question is whether we have created the personal brand we want.

This is especially important for those who hold leadership positions. If you lead others, the way they perceive, think, and feel about you as a leader, in relation to other leaders, can make or break your short-term and long-term success. These others might be your subordinates, colleagues, superiors, or even an entire department.

Your personal leadership brand affects your image, your reputation, your relationships, and your performance. As a result, it will also impact your overall career and your finances. So, unless you create your desired personal leadership brand consciously, negative perceptions can undermine your best efforts.

There are many mistakes that leaders commonly make which can damage their personal brands. Let's take a look at five of the most potentially damaging:

1. Not taking risks or accepting tough challenges. When you reach

a leadership position, it can be much too easy to rest on your laurels. If you have a lot of experience, you might be inclined to stick with what you know has worked in the past, rather than try something new. But this keeps you in a static place, without the opportunity for you, or your team, to grow. Everyone needs challenges. As a leader, your job is to find them and lead your team through them.

2. Not speaking up when you disagree with top management.

A good leader is both liked and respected. It's a difficult balance, but it's important. If you worry too much about being liked, you probably aren't making enough tough decisions to lead others effectively.

Even leaders have a difficult time speaking up to superiors. It's natural to worry about the reactions of managers when you disagree with their decisions, but it also hurts your personal leadership brand to hold back and keep your opinions to yourself. Most of the time, if you're diplomatic about it, your input will be appreciated, even if management's decision stays the same. Most leaders are expected to offer ideas about how to solve problems or improve operations. You will be respected for making your views known.

3. Worrying about being liked, not respected. A good leader is both liked and respected. It's a difficult balance, but it's important. If you worry too much about being

liked, you probably aren't making enough tough decisions to lead others effectively. If, on the other hand, you worry too much about being respected and don't care about being liked, chances are you won't be able to garner the support you need from your team to succeed. They may even begin to feel victimized by your leadership style, making it hard to retain employees. The best personal leadership brand is one that straddles these two poles in as balanced a way as possible.

4. Fearing feedback, both giving and receiving. A lot of leaders come to a place where they stop moving up the ladder either because they aren't good at coaching others or they've stopped being coachable themselves. The best leaders are good at coaching their teams and also at accepting regular feedback, no matter how high up in the organization they are. It's essential to keep an open mind and recognize that there is always room to improve yourself. On the flip side, giving your team feedback is the best way to make sure your people are growing, too. So, strengthen your leadership brand by getting comfortable with being on both sides of feedback, and everybody wins.

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.

5. Using destructive language on the job. Too many leaders fail to pay attention to the way they speak. Destructive language, even if it's intended as 'funny,' has an impact on everyone, including yourself. It's a bit of an epidemic in modern society to speak negatively and to complain. It presents a very poor personal brand, particularly for leaders. It can lower morale in the work environment and undermine the success of your team. If you don't believe in yourself or your people, how can they believe in themselves? If they are derided for past failures, they may become so afraid of making mistakes that they stop moving forward at all. So, begin to notice how you speak, and if talking negatively is a habit you've developed, start to break it. Figure out how to turn negatives into positives. It will make a world of difference.

Leaders are in a position to inspire and motivate others, and one of the best ways to become a truly extraordinary leader is to create a successful personal leadership brand. ♦

Brenda Bence, branding expert and certified executive coach, is the author of *How You Are Like Shampoo*, a book for defining, communicating, and taking control of your personal brand at work. For information, visit: www.BrendaBence.com.



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SEALS OF APPROVAL

NASSCO certification programs are key components of QA/QC programs that ensure proper performance in pipeline rehabilitation projects

By Irvin Gemora

The best practices model for any rehabilitation project begins with a thorough Quality Assurance/Quality Control (QA/QC) program. As the name implies, such a program will help ensure that a rehabilitation project is completed with the highest standards, minimizing risk for all parties involved.

In many ways a QA/QC program is a like a checks and balances system, ensuring that work is sourced, performed and reviewed to meet a stringent set of industry standards.

One of many standards in an effective QA/QC program is NASSCO's Pipeline Assessment and Certification Program (PACP), the industry standard for the evaluation, coding and management of sewer pipes. With PACP, a compre-

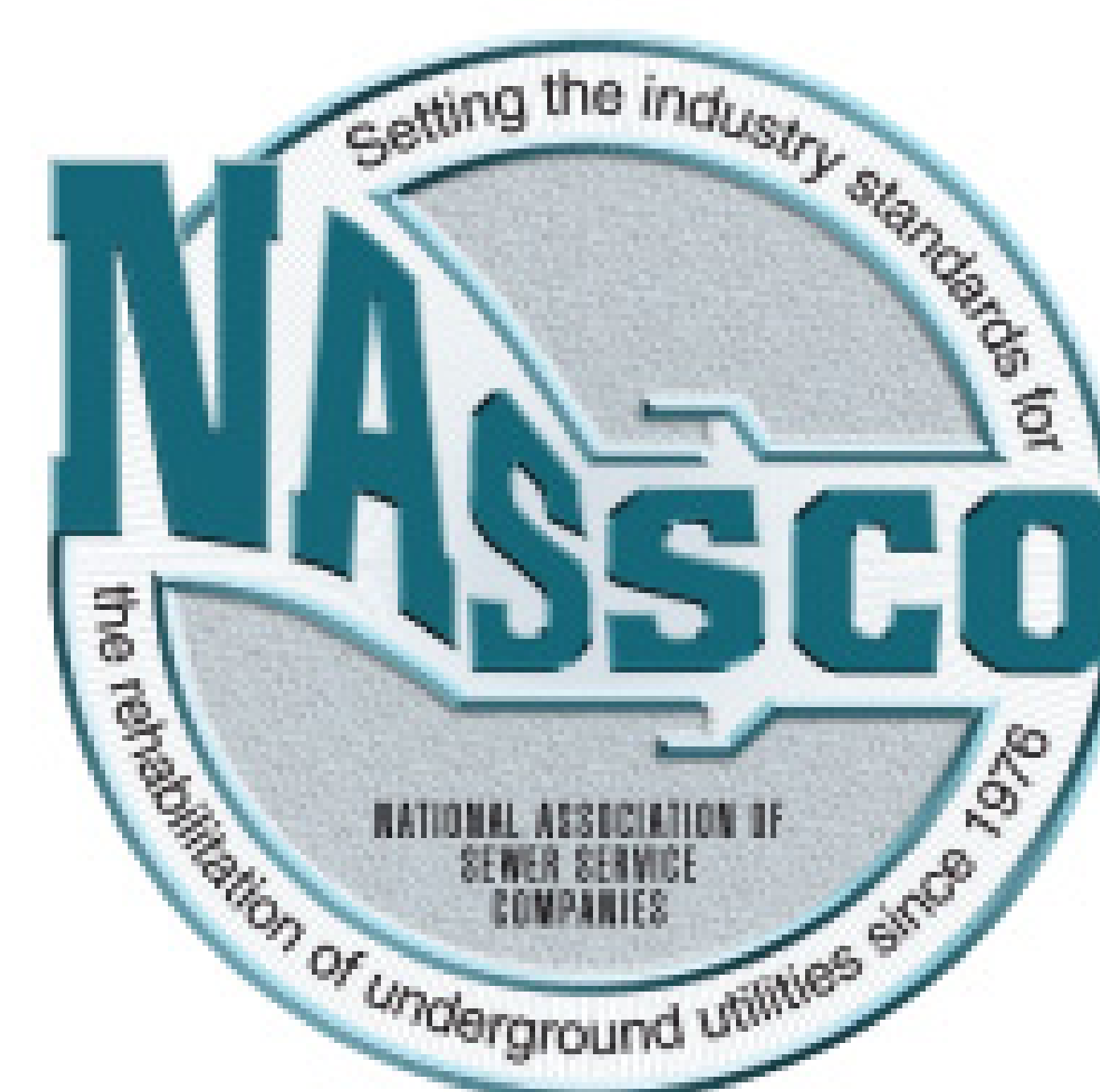
hensive and reliable reservoir of data is created to describe the sewer pipe. That information then can be used to help prioritize and plan renovation of wastewater collection systems.

In addition to PACP, NASSCO offers assessment certification for manholes (MACP) and laterals (LACP), providing to the industry a standard for the entire collection system. In addition, the Inspector Training and Certification Program for cured-in-place pipe (CIPP) was added last year and is growing in interest.

This training program will continue to expand to include other technologies for pipe rehabilitation. Pipe bursting will be the subject of the next Inspector Training and Certification Program. It will be followed by a program on manhole rehabilitation.

Over the years, NASSCO certifications have grown to be recognized as industry seals of approval, verifying that a certified professional has the knowledge and skills to perform high-quality inspection work. It is a level of quality control that is necessary for our industry to ensure that rehabilitation of underground utilities is conducted effectively and with long-lasting results. An effective Quality Assurance/Quality Control program should address, at a minimum:

- Are the installation and inspection team members fully educated, trained, expe-



rienced and certified in the technology to be installed?

- Have the teams been trained in other aspects of a project, including terminology and customer relations?
- Have the teams been trained in project evaluation, and are they able to assess the best technology applications?

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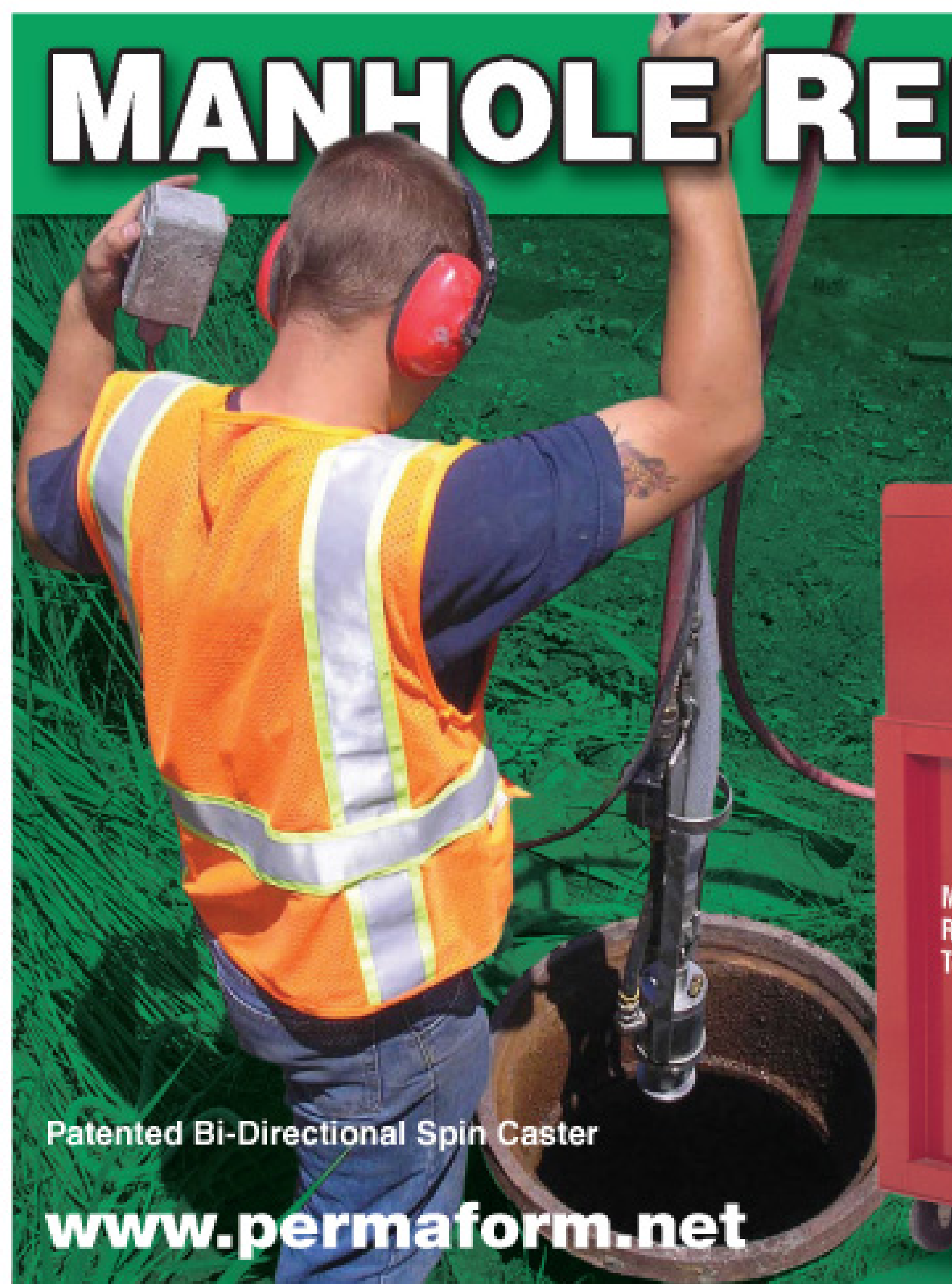


- Are the teams trained in all aspects of safety for the specific project, including confined-space entry and OSHA requirements?
- Are the teams certified to recognize and verify the key elements of a rehabilitation project that will ensure that the final installation meets the contract requirements?

These questions are just a sample of what a thorough QA/QC program should include. NASSCO offers a wealth of information on establishing an effective QA/QC program. To learn more, visit www.nassco.org. ♦

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

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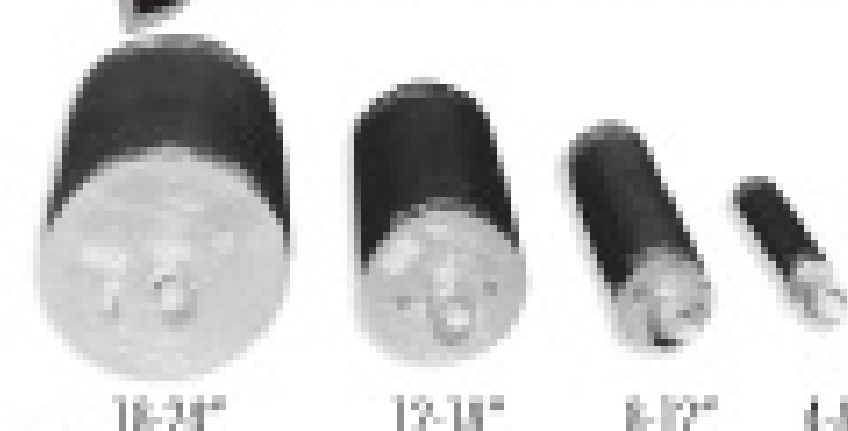
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COMPLETE LINE OF SEWER MAINTENANCE TOOLS



Product Spotlight

Integrated System Provides Complete Pipe Condition Data

By Ken Wysocky

Through a combination of laser profiling, sonar technology and high-resolution CCTV camera imaging, the FLYEYE pipeline inspection system from CUES Inc. collects detailed data about pipeline conditions without multiple individual surveys and without dewatering.

The floating unit is designed to inspect pipes from 24 to 100 inches and from 25 to 75 percent full. It uses sonar to "see" below the flow. For pipe erosion measurements and visual wall inspections, the unit uses a four-camera laser profiling and measurement system and a 3-megapixel, high-resolution (2048 x 1536) digital video camera.

"If the pipe is partially full, the system uses all three technologies," says Doc Bennett, international sales manager. "If the pipe is fully charged, it uses only the sonar." For maximum accuracy, the laser system's four cameras capture a laser-ring image 30 times a second. The surface profiling measurements are accurate within 0.06 inch in a 100-inch pipe.

Software then converts the laser-ring images into detailed, high-resolution, color-coded flat displays of the pipe or color-coded, three-dimensional displays. The inspection provides complete data that confirms minimum and maximum pipe diameter, ovality, wall erosion, line capacity, holes, obstructions, multiple defects, and quantity of debris.

"You can compare each profile image with the original pipe image for size and shape to determine how much pipe wall is left, and to project future life before repair or replacement," Bennett says. "This also provides the necessary data to determine the best and most economical repair method."

Because the cameras and sonar do not use a power/signal cable, the system can inspect miles of pipe on a single-pipe entry. Battery and data pods can provide up to eight hours of onboard data storage. "The power pods are on board the float, and all data is collected on board," Bennett says. "You can put the float in on one entry and, say, three miles down the pipe, pick up the hardware at another entry and download the data."

The FLYEYE lets municipalities perform complete pipe inspections without interrupting or diverting sewage flow. This avoids the risk of ruptured lines and leaks during a bypass that could require a hazardous-material cleanup operation, Bennett says. **For information:** www.cuesinc.com; 800/327-7791.



FLYEYE pipeline inspection system from CUES Inc.



RS Technical Offers TranSTAR Steerable Tractor

The TranSTAR steerable tractor for video pipeline inspection from RS Technical Services Inc.

is designed to work with Omni III, NovaSTAR and TrakSTAR cameras. Equipped with two 90-watt rare earth permanent motors, the tractor can inspect sanitary or storm lines from 6 to 30 inches in diameter and up to 3,000 feet long. It can turn on its own axis and travel up to 60 feet per minute with three forward speeds, reverse and freewheel. Options include rearview camera, manual elevator system and multiple tire options. 800/767-1974; www.rstechserv.com.

Road Smoothie Introduces At-Grade Cover

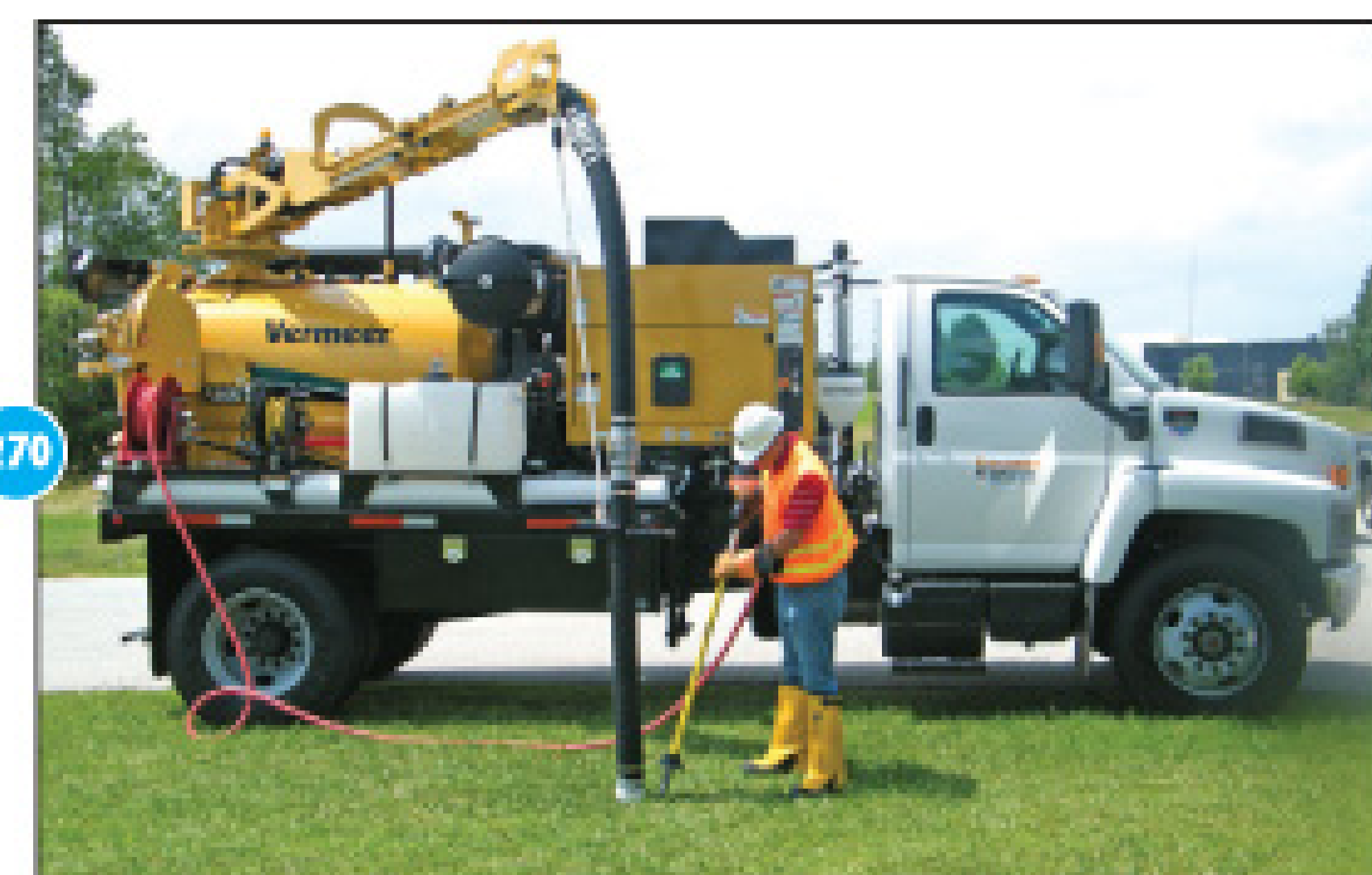
The Road Smoothie at-grade cover attaches to the top of existing manholes, water meters or other frames that are below original grade due to settling or repaving. Made of vulcanized rubber and 50 percent recycled tire material, the

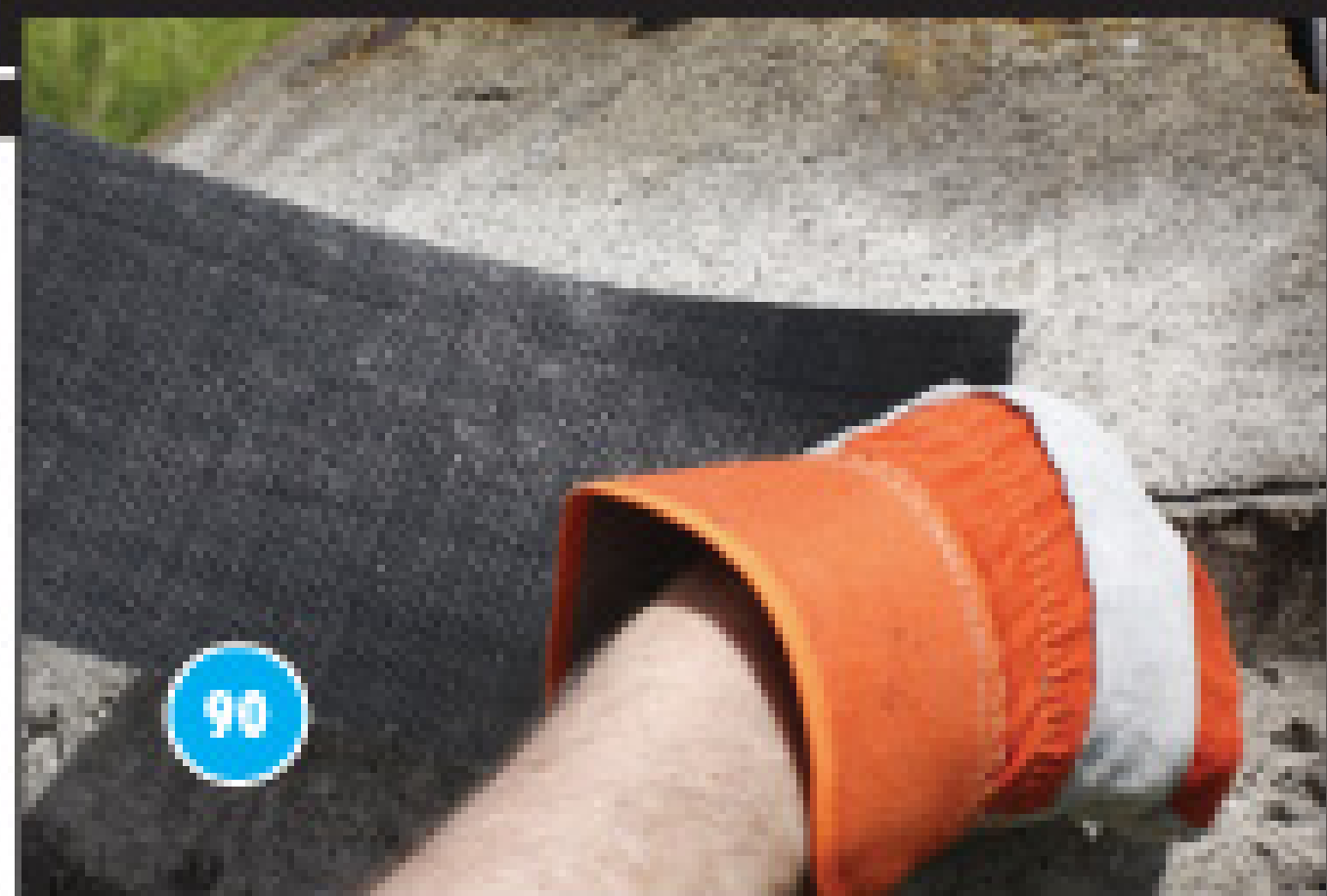


cover can be cut to any depth. The covers are available in traditional black with an identifying stamp for water or sewer, and can be personalized with logos. Snowplow, street sweeper and chemical safe, the covers are rated from -40 degrees to 180 degrees F. 801/414-3220; www.roadsmoothie.com.

McLaughlin Launches Xtreme Line of Vacuum Loaders

The Xtreme line of combination air/water vacuum excavators from McLaughlin offers a 1,200-cfm positive displacement blower and 99-hp Kubota diesel engine that produces up to 15-inches Hg and 3,000 psi of water pressure. Units are available with 500-, 800- or 1,200-gallon spoil tanks and can be set up in either a trailer or skid-mounted configuration. A three-stage filtration system provides for both wet and dry excavation. 800/435-9340; www.mightymole.com.





PSI Introduces Boa-Tape Infiltration Sealing System

Boa-Tape infiltration heat-shrink sealing system from Pipeline Seal & Insulator Inc. requires no torch or primer. The pressure-

sensitive woven polypropylene tape seals concrete, steel and polyethylene structures. Designed to seal joints against groundwater infiltration, the tape is made for new construction as well as for rehab where grout has failed. 800/423-2410; www.boatape.com. ♦

INDUSTRY NEWS

DECEMBER 2009

Study Confirms 100-year Life Expectancy for PE Pipe

An interim study by Jana Laboratories confirms a 100-year life expectancy for pipe made from polyethylene when used in municipal potable water systems, according to the Plastics Pipe Institute Inc., which commissioned the study. A final report is anticipated in 2010. The interim report can be viewed at www.plasticpipe.org or www.janalab.com.

Mr. Manhole Chosen to Replace 1,033 Chimneys

The City of Ironton, Ohio, has chosen the Mr. Manhole Standardized Chimney Replacement System for a one-year, \$12 million project to replace 1,033 manhole chimneys. ♦



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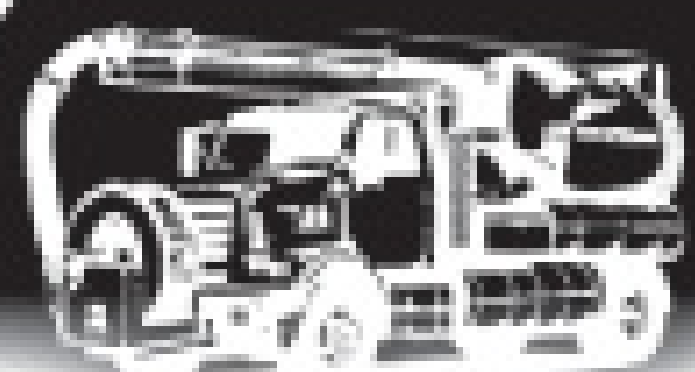
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fax: 518.747.5490

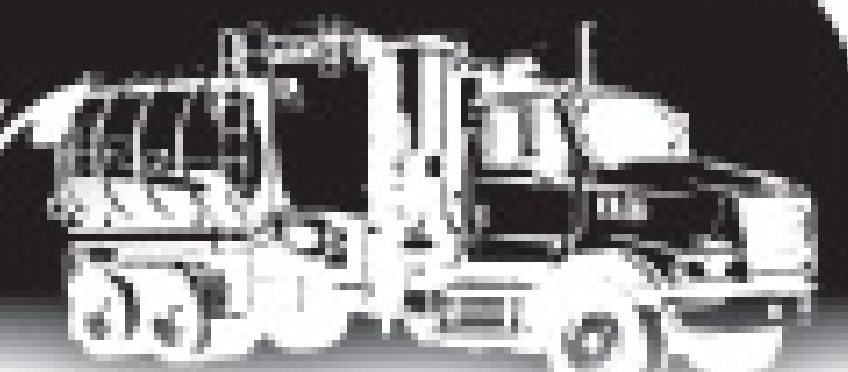
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www.municipalsales.net

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Pipeline Cleaning & Maintenance Equipment

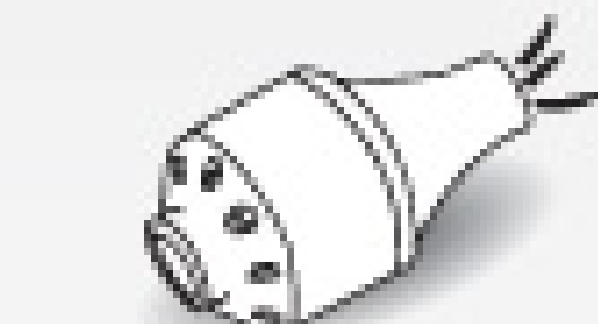


JETTERS & JET VACS



Penetrators

1/4"-15°	\$24.00
3/8"-15°	\$33.00
1/2"-25°	\$46.00
1/2"-25°LT	\$49.00
3/4"-12°	\$55.00
3/4"-12°LT	\$65.00
1"-12°	\$69.00
1"-12°LT	\$81.00



Aluminum Sand

3/4"-24°	\$139.00
1"-17°/24°	\$153.00
1"-24°	\$139.00



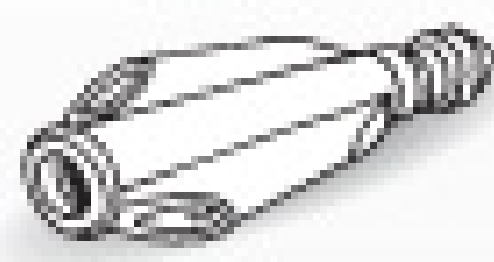
Swivel Joints

T-M® Style	
90° or Straight, 6000 psi	
3/4" & 1"	\$175.00
1-1/4"	\$179.00
1-1/2"	\$453.00
2"	\$570.00



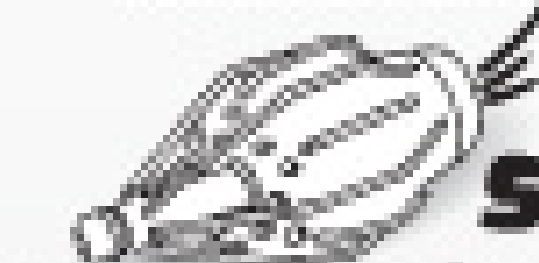
Aluminum Grease

3/4" or 1"-17°	\$122.00
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Truder

1"	\$345.00
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Shark

1"	\$480.00
1" Big Shark	\$595.00

Stainless Steel Nozzles

1/8"	\$30.00
1/4"	\$33.00
3/8"	\$39.00
1/2"	\$54.00
3/4"	\$59.00
1"	\$105.00



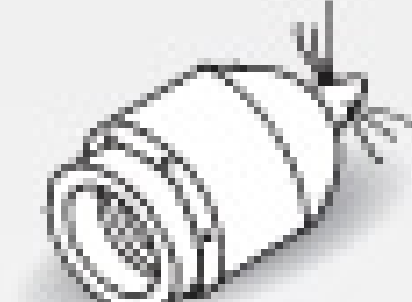
Ball Valves

Dyna Quip® Style	
3000 psi	
1"	\$227.00
1-1/4"	\$243.00



Radial Bullet

3/4"-18° or 35°	\$50.00
3/4"-18°/24°	\$53.00
1"-18° or 30°	\$66.00
1"-15° or 30°	\$68.00
1-1/4"-18 or 35°	\$85.00



Steel Sand

1"-12°	\$70.00
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NEW Storm/Culvert Floor Cleaner Nozzles

Parker & Piranha Jetter Hose

1/8"-1-1/4"	
-------------	--



Saw Blades

NEW Chain Root Cutters
4"-48", All Stainless Steel, No Lubrication



Root Cutter Assemblies

Skid Mounted	
w/flat blades	\$868.00
w/concave blades	\$910.00
w/spiral blades	\$910.00
Donut Mounted	
w/flat blades	\$847.00
w/concave blades	\$889.00
w/spiral blades	\$889.00
Lateral Mounted	
w/flat blades	\$825.00
w/concave blades	\$895.00
Assemblies come with one ea. of 6, 8, 10 and 12" blades, saw blades, hub, skids, etc.	

Sewer Hose Guides

TigerTail™ Style	
3" x 36"	\$40.00
2" x 36"	\$34.00
with 24' rope	



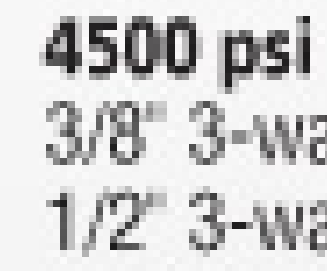
Clamps

Power Clamps	
8"	\$13.00
3"-6" available	
King Clamps	
8"	\$29.75
4"-6" available	
Bandlock® Clamps	
8"	\$24.00
3"-6" available	
Quick Clamps	
8"	\$26.50
3"-6" available	

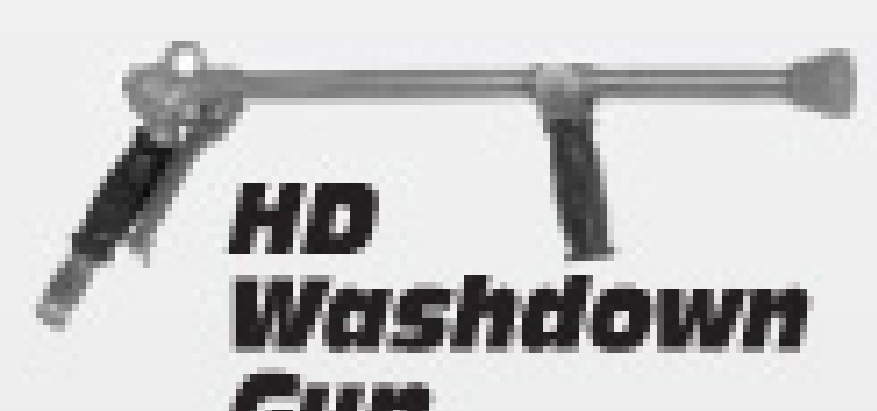


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1/2" 2-way	\$65.00
3/4" 2-way	\$89.00
1" 2-way	\$119.00
1-1/4" 2-way	\$226.00



4500 psi	
3/8" 3-way	\$115.00
1/2" 3-way	\$160.00
3/4" 3-way	\$180.00
1" 3-way	\$190.00
1-1/4" 3-way	\$440.00



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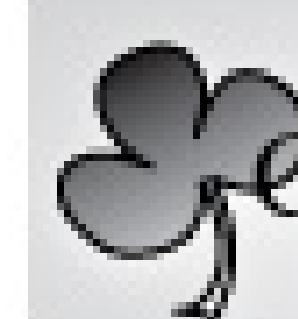


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Call Bruce @ 506-672-9143 C12



2005 Vac-Con Sterling Truck: 9-yd body, 3-stage hydrostatic blower, articulating hose reel. Tri plex 6 gpm @ 3000 psi, in excellent condition. 10,005 miles. Must sell!Asking price \$97,500
Contact Barry at 305-206-4473 or 305-635-3002
Email: allpross@bellsouth.net M12



2003 Vac-Con V390SHA on Sterling: 9-yd. body, 3-stage vac compressor w/hydrostatic drive, hydrostatic blower, articulating hose reel, Tri-plex 50 gpm @ 3000 psi, hydro-excavation pkg., rear arrowboard, 10,950 mi., 828 hrs. (Stk. 1596)
Call Joe 312-208-6373 C12



2001 Acterra: 12/23 axles, Cat 250 hp, automatic, air brakes, 300 gal. fresh, 1500 gal. waste, code tank, Masport 400XL vac pump.Asking \$49,500
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2001 Vac-Con: 80 gpm/ 2000 psi water pump, 3-stage fan, hydrostatic blower drive, 11 yard debris body. Unit mtd. on IH 2554 chassis, MD3060, auto. trans., 27K miles. Ex-city unit. Well maintained.
Mike 800-294-0149 C12



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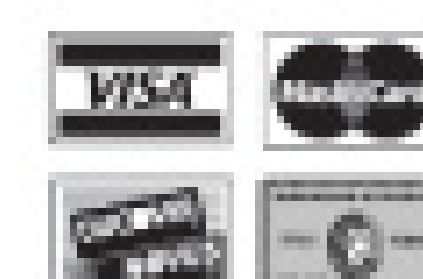
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• **FAX** this completed form to: **715.546.3786** and **E-MAIL** photo to:
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