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TECH TALK: HYDROEXCAVATION GAINS GROUND ON CONVENTIONAL DIGGING PAGE 20

Mike Hausser Director of Asset Management Cambridge, Ontario

> Yogesh Shah Manager of Asset Management Cambridge, Ontario

Investing in asset management pays significant dividends for Cambridge, Ontario



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Scott Nocero, Assistant Superintendent Franklin Township (NJ) Sewerage Authority

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ON THE COVER:

Mike Hausser, left, director of asset management and support services along with Yogesh Shah, manager of asset management, stand with a crew conducting a CCTV inspection of a sewer system for the City of Cambridge, Ontario Public Works Department. The department has made significant strides in efficiency through its asset management program. (Photography by Jon Evans)



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BEST BANG FOR THE BUCK

Shrinking budgets and aging infrastructure are constant challenges, but don't let them hold you or your system back

fficiency is something we could all use more of. Everyone would like to get more done with less time, energy and money. As managers of municipal water and wastewater systems, you're continually asked to do more with less. Budgets shrink and the workload grows as infrastructure ages. And that aging infrastructure creates a cycle that's tough to break: Lack of funds

puts maintenance on the back burner, infrastructure continues to deteri-

orate, available funds and manpower are shifted increasingly toward emergency repairs, which are more expensive, siphoning even more money away from preventive maintenance, which in turn allows continued degradation and leads to more emergency work.

The three feature profiles in this month's issue of *Municipal Sewer & Water* all have some lessons to share on creating efficiency within your departments. Cambridge, Ontario, is a good example. In 2003, the Cambridge Transportation and Public Works Department altered its approach



As managers of municipal water and wastewater systems, you're continually asked to do more with less.

FROM THE EDITOR

Luke Laggis

from a piecemeal, reactive model to a unified approach focused on asset management.

In 2007 and 2008, the department inspected more than 90 percent of its manholes. In addition to as-needed sewer cleaning, the department has scheduled 25 miles worth of sanitary and 25 miles of storm pipe cleaning and maintenance this year alone. The department is also overseeing the replacement and rehabilitation of 3.5 miles of water mains and

the rehabilitation of 1.5 miles of sewer lines this year. The city's approach to asset management is paying big dividends. Between 2010 and 2012, the city saved \$2.5 million and reduced I&I by almost one billion gallons. Water losses were likewise reduced by 22 percent between 2009 and 2012, which saved

the city 580 million gallons of water and \$1.6 million in revenue from 2010 to 2012. The number of water main breaks peaked at 52 in 2007, dropped to 37 in 2011 and was down to only 27 in 2012.

None of this would have happened if the city had taken a reactive approach, but proactive planning and maintenance, while potentially a bigger cost upfront, has delivered big savings and improved efficiency.

In Coeur d'Alene, Idaho, where Larry Parsons was recently honored as Idaho Collections Operator of the Year, efficiency is also top of mind. When Parsons joined the department in 1989, maintenance work was done on an as-needed basis and emergency calls were routine. He didn't like that approach, and the focus quickly changed to proactive cleaning and inspection of the collections system. The result was a 75 percent reduction in costly emergency calls.

The city began using CIPP about 10 years ago. At the time, open-cut replacement projects were costing roughly \$130 per foot. With the CIPP program, that cost is down to somewhere less than \$30 per foot. It's been a significant savings of time and money for the collections department.

A little further west, in Santa Rosa, Calif., efficiency has been achieved in other ways. The city's Local Utility Operations has had to cut positions and lay off some employees, but new technology, equipment, processes and employee empowerment have enabled the department to accomplish the required work with fewer people. Better prioritization and stronger asset management have also played a role.

Santa Rosa's greatest measure of efficiency, however, may be the Geysers Recharge Project. Each day, millions of gallons of high quality, filtered and UV-treated water are produced at Santa Rosa's subregional Laguna Reclamation Plant. Some of the water is sent to storage ponds for local irrigation, but most is pumped directly to a magma chamber where it is used to make steam, which in turn drives electrical turbines. The electricity produced is enough to meet approximately 60 percent of the power needs of California from San Francisco north to the Oregon border.

The efficiencies employed by all three of these utilities should stand as examples for all water and wastewater departments. Shrinking budgets and aging infrastructure are challenges, but they can be overcome.

I hope the lessons in these stories can help you improve your own operations.

Enjoy this month's issue. \blacklozenge

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EDITOR'S CHOICE

Get more of the information your utility needs at MSWmag.com

By Luke Laggis

e're constantly updating our website. In addition to everything you see on these pages, the site features a wealth of product and industry information, as well as original features you won't find in print. The following are just a few of the items you're missing if you're not visiting www.mswmag.com.



Stormwater Management Basics for Water Utilities

Stormwater management has many critical goals: protect local bodies of water, eliminate soil erosion and damage to structures, return as much water as possible to the aquifer, and eliminate harmful runoff contaminants. Ellen Gilinsky, senior advisor for the U.S. EPA Office of Water, explains the task of stormwater manage-

ment in simple terms: "Whether you're in an urban environment, or an agricultural environment, you need to realize that stormwater runoff isn't just water — there's everything from hydrocarbons to metals in that mix, and you just can't allow that stuff to reach local streams, rivers and lakes."

How To Take Advantage of Infographics

Are you looking for a way to get a message to the public about your utility? Or about the services you provide? Don't forget the old saying — "a picture is worth a thousand words." Infographics can combine the best of both a bright, visual medium and the words it takes to convey a complex message. They're adaptable to the digital age of the World Wide Web, but they're still relevant in the traditional ink-and-paper format as brochures, posters and flyers.



Basic First-Aid Knowledge Goes a Long Way When Accidents Happen

Most of us have been to the emergency room a time or two. We depend on quick access to medical care when faced with emergencies, but what if you're on a remote job site or in the shop by yourself and unable to reach the phone? Knowing the basics of first aid

makes a big difference when proper professional care isn't readily at hand.

BLOG: Larvae Worm Their Way Into Oklahoma Water Plant

As municipal managers and drinking water operators, you're familiar with removing things like contaminants, organics, iron and manganese from the water that enters your plants. But have you ever encountered worms? An Oklahoma water plant found just that. Red worms ranging from a half-inch to an inch long were found in the water supply in Colcord, about 80 miles east of Tulsa.

Don't Shy Away When a Crisis Puts You in the Headlines

"Don't let your response become the story" is a favorite saying among crisis communications experts. What you do after a disaster can go a long way in saving or ruining your company. After the July 6 Lac-Mégantic train derailment that killed about 50 people, the train company CEO didn't visit the community until four days later. As one person told reporters, "I feel like he just doesn't care." That won't happen if you follow these eight basic steps of crisis communication.

Check out all these stories at www.mswmag.com/ec/2013/October

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FOCUS: SEWER/WATER

THE ASSETTES

Cambridge, Ontario gains ground on its infrastructure program through an aggressive asset logging and assessment program

By Peter Kenter

t's a simple rule. You can't maintain what you have unless you know what you have and what shape it's in. The City of Cambridge, Ontario, Can., understands that rule and has discovered that investing in asset management up front pays significant dividends down the line.

Cambridge, located about 60 miles southwest of Toronto, was formed in 1973 from the amalgamation of the communities of Galt, Preston, Hespeler and Blair. The Cambridge Transportation and Public Works Department (TPWD) was formed that same year to unite the separate utility systems. Among its responsibilities: sewer and water infrastructure, roads, sidewalks and street lighting. In 2003, the department altered its approach from a piecemeal, reactive model to a unified approach focused on asset management. An Asset Management System Needs Study conducted by Earth Tech and Applied GeoLogics Inc. was presented to the City Council in early 2005. The council endorsed the report and established the city's Asset Management and Support Services Division in 2005, hiring Mike Hausser as its first director of asset management.

"We're focused on three priorities," says Hausser. "The long-term needs and sustainability of the infrastructure, the capital and revenue requirements to support the current and growing population, and the operational requirements you need to provide today so you can operate the assets effectively through their expected service life."

Instead of articulating lofty ideals, the program relied on a series of real-life program goals with verifiable objectives and timelines.

Asset action

A major inventory of city infrastructure, for example, took place between 2005 and 2008, using asbuilt drawings of sewer and water infrastructure, which were digitized, then compared to real-life assets to determine their accuracy. The department created an asset registry using GIS coordinates with an ESRI Geodatabase on an Oracle platform with a Rolta OnPoint portal for staff.

"We wanted to use standard deterioration curves for our pipe infrastructure, but the real world doesn't always comply," says Hausser. "By the time we work out the curves for some of the material, many of us will have retired or the pipes will have been replaced with pipes made of an entirely new material. We needed to look at actual data involving material, service calls, breakage reports, who installed the pipe, the soil surrounding that pipe and the liquids passing through that pipe. Only by collecting as much information as possible were we able to create models that would determine the probability of a pipe failing. We can see, for example, that there might be two different failure rates for identical installations, based on which contractor installed the pipe. One contractor might have used chains to lift the pipe and that might have damaged the cathodic protection

PHOTO COURTESY OF CITY OF CAMBRIDGE, ONTARIO, PUBLIC WORKS DEPARTMEN

OPPOSITE PAGE: Public Works crew members Dan Larsen and Mark Linton lower a camera (Envirosight) into the sewer system for a CCTV inspection. RIGHT: Crews in Cambridge, Ontario, get the playbook. Hard copy prints are a thing of the past now with the new CCTV inspection equipment. (Photography by Jon Evans)

"We're focused on three priorities.

The long-term needs and sustainability of the infrastructure, the capital and revenue requirements to support the current and growing population, and the operational requirements you need to provide today so you can operate the assets effectively through their expected service life."

Mike Hausser

layer, while the other didn't."

As the information collection process improves, so does the success rate of failure probability analysis.

"As we approach 100 percent, we're now using those predictions to help develop long-term financial plans," says Hausser. "That includes not only repair and maintenance requirements, but also capital budgets."

Leveraging human experience

The department also began to record the expertise of dozens of employees who had amassed significant knowledge about the city's infrastructure.

"These are the people who, if you call them in the middle of the night to deal with a water main break, can tell you the size and material of the pipe, just by its location," says Yogesh Shah, manager of asset management for TPWD. "We captured as much of the important personal information held by these valued employees as possible and added it to our asset database."

The department also became serious about adopting the latest technology.

"We began to attend trade shows and investigate the best possible technologies for each job," says Hausser. "If a piece of technology can be shown to give us a better return on our investment, then we adopt that technology. All of our staff is now equipped with computer tablets, for example, to allow instant access to asset information."

The city has become more proactive in routine system inspection and maintenance. In 2007 and 2008, the department inspected more than 90 percent of its manholes. It runs an acoustic leak detection program for its water system, and operates an Envirosight ROVVER X CCTV camera, lateral push cameras from Envirosight and Pearpoint, and a jetter from Sewer Equipment Company of America. The department also utilizes a Vactor 2100 jet-vac unit.

In addition to as-needed sewer cleaning, the department has scheduled 25 miles worth of sanitary and 25 miles of storm pipe cleaning and maintenance this year alone.

The department is also overseeing the replacement and rehabilitation of 3.5 miles of water mains



ROBOTIC CAMERAS TAKE A DIVE

A thorough inspection of the sewer system in Cambridge, Ontario, hit a snag when it came to nine sewer pipes that crossed the Grand River, which bisects the city.

"The city's sewers operate largely on a gravity system," says Yogesh Shah, manager of asset management with the city's Transportation and Public Works Department. "Five of the lines passing underneath the Grand are siphon lines that need to maintain a level of sewage to keep them functioning properly. While traditional CCTV cameras worked well in the other lines, we knew we would have difficulty in the underwater environment of the siphons."

The lines ranged from 18 to 48 inches in diameter. The city selected a competitive bid from Andrews Infrastructure of Ottawa to provide a CUES crawler outfitted with sonar by Marine Electronics Limited that could accurately provide laser profiling and sonar inspection.

"The equipment employs a proprietary algorithm that compensates for the sewage inside the pipe," says Shah. "We were able to access the pipes from a series of manholes located near the river."

Clogs and debris in several of the lines proved significant enough to prevent the camera from completing its journey across the river.

"We were able to map out those lengths of pipe by sending the crawler camera into the pipe from the opposite bank of the river," says Shah. "That helped us to delineate the extent of the debris deposit."

Despite the wet conditions, the inspection project was a success. The contractor's report indicated that some of the pipes were suffering from corrosion brought on by sewer gas exposure, but their overall condition was reasonable for pipes entering mid-life.

PROFILE: Cambridge (Ontario) Transportation and Public Works Department

YEAR UTILITY ESTABLISHED:

CUSTOMER ACCOUNTS: 39,000 water/sewer connections

AREA SERVED: 271 square miles

DEPARTMENT STAFF: Water 31; Sewer 23

INFRASTRUCTURE: 311 miles of sewer lines, 300 miles of water mains, 44 miles of water transmission lines

ANNUAL BUDGET (2013): Water: \$27.3 million; Wastewater: \$24.1 million

ASSOCIATIONS:

American Water Works Association, Ontario Water Works Association, Canadian Network of Asset Managers, National Water and Wastewater Benchmarking Initiative, Municipal Engineers Association

WEBSITE

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and the rehabilitation of 1.5 miles of sewer lines this year.

Hausser notes that having responsibility for road, water and sewer infrastructure allows the department to combine efficiencies and schedule projects in such a way as to give taxpayers the best bang for their buck.

"We've avoided the silo effect that plagues some cities," he says. "We all learn from each other and benefit from our combined expertise, so we can evolve to a higher state."

IBM calling

The city's growing expertise in asset management has attracted the interest of IBM and its Smarter Cities initiative.

"IBM told us that we had already made significant strides in asset management and the decision-making process that informs that system," says Hausser. "The IBM Research Group offered us a pioneering partnership that would look at the way we do our planning, and replicate many of those steps using a software interface. If successful, the resulting product should be able to help do what we do better, faster and more effectively than what we do internally. That product could then be used by other cities around the world."

The 18-month collaboration period between the city and IBM ended last December. The resulting product is a life cycle management system known as Intelligent City Public Works crew members Dan Larsen, left, and Mark Linton use mobile technology as they prepare for a CCTV inspection that will send images to the crews to evaluate the condition of the infrastructure near their main facility on Bishop Street in Cambridge, Ontario.

Planning and Operations, which provides an integrated approach to infrastructure management, condition assessment and capital planning. The program will work with other technology systems to compile information from all city assets to optimize capital spending across all departments.

"In testing, the product showed that it could do what it aimed to do," says Hausser. "In some cases it does what we've been doing better and faster than we can do it ourselves."

Remaining challenges

One of the department's remaining challenges is to ensure that its capital and maintenance budgets reflect the more accurate financial projections produced by the asset management system. Budget crunches over the past few years, however, led to cuts in preventive maintenance programs to reflect historically low increases in water rates.

"As we are beginning to acknowledge the real cost of the system up front, we're getting buy-in to set water and sewer rates that are sustainable for the system," says Hausser. "While we're not yet 100 percent sustainable, we don't have funding deficits for the next 10 years and we've reinstated all of our inspection and preventive maintenance programs."

The City of Cambridge, Ontario, Public Works Department staff includes the Asset Management and Public Works management teams and crews.



"These are the people who, if you call them in the middle of the night to deal with a water main break, can tell you the size and material of the pipe, just by its location. We captured as much of the important personal information held by these valued employees as possible and added it to our asset database."

Yogesh Shah

Payback time

The city's approach to asset management is paying big dividends. The city reduced inflow and infiltration to the sewer system by 22 percent between 2009 and 2012. Between 2010 and 2012, the city saved \$2.5 million and reduced I&I by almost one billion gallons.

Water losses were likewise reduced by 22 percent between 2009 and 2012, which saved the city 580 million gallons of water and \$1.6 million in revenue from 2010 to 2012. The number of water main breaks peaked at 52 in 2007, dropped to 37 in 2011 and was down to only 27 in 2012.

"Asset management and new technologies help to advance data and information sharing among the team, increase the cooperation and intelligence around renewal and other infrastructure needs, and enhance operations in the field through better work planning processes," says Shah. "That results in better coordination and improved opportunities for proactive maintenance. At the end of day, people are working smarter and more cost-effectively." \blacklozenge



A Public Works crew hydroexcavates a pit along a residential street in Cambridge.

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NO SHOVEL REQUIRED

Hydroexcavation is gaining ground as a safe, precise and efficient alternative to conventional digging

By Doug Day

ydroexcavation has been popular in Canada for 50 years, but it only started gaining traction in the U.S. about 15 years ago. It's still not as widely used as it should be, according to Vac-Con Marketing Director Tom Jody, and there is huge potential for growth.

Ordinances requiring vacuum excavation in certain situations are common in Canada, and Jody says that demonstrates how much growth potential there is in the U.S. "Most communities in Canada require utility location with vacuum excavation or some sort of potholing before you're allowed to excavate," he says. "In some cases, you're not even allowed to excavate with a conventional bucket machine; you have to use vacuum technology to do it."

Many people may view hydroexcavation simply as a method for safely exposing underground utilities, but there are many other uses, especially in confined areas. "There are some situations where it's a necessity because it's impossible to get an excavating machine into a location," says Jody. "Take for example getting behind a home in a residential neighborhood to expose the foundation to repair a utility line or drain tile."

There are also times when hydroexcavation is the easiest method. Besides daylighting (potholing), it is useful for things like excavating for water valve replacements, trenching and cold-weather digging, as well as pipeline locating, identifiof their house," Jody says. "That's something you can do with hydroexcavation that you couldn't do with even the smallest of excavators. The applications are myriad and the equipment is relatively simple."

Karl Lassberg works in sales and marketing for T-Rex Services Hydro Excavation and Industrial Vacuum Services, which owns the largest fleet of hydroexcavators in Texas. T-Rex, founded with one truck in 2001 by former NASCAR driver Bobby Hillin Jr., now has a fleet of more than 38 hydroexcavation and vacuum excavation trucks. with an auger, hydroexcavation can be competitive because the material is sucked straight into the truck and dumped off site," Lassberg says. "You don't have to worry about additional equipment to scoop it up and haul it away."

The advantages are even greater when it comes to utility pole holes, usually 18 inches in diameter and 8 feet deep. Two people with posthole diggers will need about two hours to do a single hole, while it's a 10- or 15-minute job with hydroexcavation.

Lassberg says electro-mechani-

"It would have taken several days to dig and carry out 3.6 cubic yards of dirt by hand. We ran a remote hose down a stairwell and it took us less than three hours. Our bill was much cheaper than a hand dig."

Karl Lassberg

cation and rehabilitation. "It is very precise; think about excavating a trench between someone's prized flower garden and the wall



Locating a pipeline in a boatyard on the Gulf of Mexico required probing 20 feet deep in an area where conventional trenching wasn't possible because of the high water table.

"At the time, there wasn't a lot of hydroexcavation going on in the southern Gulf region," Lassberg says. "He just went out there and hustled, and the popularity of hydroexcavation has grown over the last decade as the awareness of the technology has grown."

Lassberg cites one recent job as a good example of the versatility of hydroexcavation. The excavation was only 4- by 4- by 6-feet but required hand digging because the location was inside a parking garage. "It would have taken several days to dig and carry out 3.6 cubic yards of dirt by hand," he says. "We ran a remote hose down a stairwell and it took us less than three hours. Our bill was much cheaper than a hand dig."

He adds that hydroexcavation is also a good alternative to an auger for digging holes. "If you have only a couple of holes to dig cal work has led to a lot of hydroexcavation work in recent years, such as grounding wire trenches, 6 inches wide and 18 inches deep, that used to be dug by hand. "We can hydroexcavate 300 to 400 feet of that in one day and cover it with a skidsteer instead of putting five guys trying to dig for days at a time."

One such project was at a lighting conduit project at the Galleria Mall in Houston in September 2010 — 700 feet of trench (2 feet wide and 2 feet deep) underneath a sidewalk bordered by a long line of historic oak trees. "With all those tree roots, you have to dig a little differently and more conscientiously," Lassberg says. "If you even skin a tree root you can kill the tree, so digging by hand is very tricky business."

In this case, all the roots crisscrossing through the excavation area made any other sort of exca-



vation impossible. Since tree roots can also be damaged by high-pressure water, the excavators used lower pressure and kept nozzles well way from the roots. The job also had to be done in 48 hours in a high-traffic area of the city. T-Rex brought in five trucks. "We started Friday at 9 p.m., and finished 40 percent ahead of schedule," Lassberg says. "Two years later, the trees are still in great condition."

Consider the options

Lassberg says there are three main issues to think about when considering hydroexcavation. Is there a source of water on site? Can the spoils be dumped on site? And how close can the truck get to the excavation?

"Most trucks require a water source, whether it's a fracking tank, water truck, hydrant or a pond," he says. "Dumping on site usually makes a job much more productive. Dumping offsite means driving to a dump site and back; sometimes there are dumping fees. Access within 15 or 20 feet from the dig site allows for the greatest productivity but we can work 300 to 400 feet away from the truck when necessary."

The key pieces of equipment are a vacuum hose and a line for pressurized water. Compressed air can also be used, in which case it is called vacuum excavation (the generic term for the process). The water or air loosens the soil, and the vacuum removes the soil. "It creates a very accurate excavation and less impact on the surrounding environment with a much neater work space because you're removing the soil into the debris tank," Jody says.

Using air or water greatly reduces the possibility of damage that is common with a metal bucket. "It's very easy to sever a fiber-optic cable with an auger or backhoe," Jody says. "You could be shutting down the transfer of information to and from an entire city."

Such accidents can happen even when underground utilities have been marked or mapped. "We've been on jobs where we had diagrams showing the precise locations of utility lines and after we expose them, they're 3 feet off from where they were supposed to be," he says. "There's a huge amount of wiring and utilities underground in this country, to the point where you see dizzying pictures of all kinds of cables, wires and pipes crisscrossing each other in one excavation." Excavating an II- by 35-foot hole for a lift station in the new Houston Zoo Gorilla Exhibit was accomplished in less than a week with no damage to nearby trees and without disrupting activities at the zoo.

So why hasn't there been a greater shift toward hydroexcavation? Jody isn't sure, but he has several examples of contractors who could have avoided incidents if they had chosen it over conventional techniques. "Part of it is just not knowing that the technology exists, but there are organizations around the country building awareness, including the Common Ground Alliance and local one-call groups that can help contractors become more familiar with it."

With the right tools, hydroexcavation can be used in a myriad of specialized applications, Jody says. "Anywhere you need precision digging is a good application for hydroexcavation." \blacklozenge



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FOCUS: SEWER/WATER

CROSS-TRAINED AND QUALITY-DRIVEN

Santa Rosa Utilities Department focuses on customer service, efficiency and reuse to exceed the needs of its customers

By Jim Force



he goal of the City of Santa Rosa Utilities Department is to maximize resources (water, biosolids, digester gas

and nutrients) while striving to eliminate service interruptions and customer complaints from among its 53,000-plus residential and commercial accounts.

Under normal flow control conditions, the department recycles 100 percent of its treated wastewater, either to the innovative Geyser geothermal project north of the city (see sidebar) or to storage ponds that irrigate over 6,500 acres at local dairies, vineyards, lawns, golf courses and parks. The department is working diligently to replace the remaining old clay pipe in its wastewater collection system. And from Department Director David Guhin down through all employees, customer service is number one.

The department is also coping successfully with a shrinking budget.

City of Santa Rosa Utilities Department Wastewater Treatment Superintendent Joe Schwall on the primary treatment deck of the Laguna Treatment Plant, which is committed to achieving zero discharge. (Photography by Alvin Jornada)



Utilities systems operator Charles Robinson at the controls of an RS **Technical Services Mighty MINI** tractor equipped with a probe camera head, using PIPELOGIX data-collection software.

"The economic downturn hit us just as hard as everyone," explains Mark Powell, deputy department director for Local Utility Operations. "We've had to cut positions and lay off some employees. But our objective has been to keep up a reasonable level of service despite shrinking staff and budgets."

He adds that new technology, equipment, processes and employee empowerment have enabled the department to accomplish required levels of work despite new environmental regulations, which are among the strictest in the region.

Origins

In 1985, Santa Rosa experienced a major discharge of secondary treated wastewater to a local waterway. The community — located in the heart of California's environmentally conscious north coast responded by forming the Santa Rosa Utilities Department, upgrading to entire tertiary treatment at its Subregional Wastewater Reclamation Facility (Laguna Treatment Plant), and committing to reuse as much as possible.

"In the '70s and '80s, there might have been four backups, spills or overflows a week. We've had only one this year, three last year, and only one the prior year. It's a significant improvement."

Mark Powell

"The goal," says Powell, "was to become close to 100 percent reuse, and avoid any kind of a major discharge again."

Today, the department serves over 168,000 residential customers and numerous commercial and other service types including some residents in the county's unincorporated areas. A system of 589 miles of sewer pipes and 17 lift stations collects wastewater and delivers it to the Subregional Laguna Treatment Plant and Reclamation system,



which accepts about 21 million gallons a day from a total of 215,000 customers.

Each of the subregional partners in the Laguna Treatment Plant -Santa Rosa, Rohnert Park, Sebastopol, Cotati and the South Park County Sanitation District - is responsible for its own collection system.

The Laguna Treatment Plant includes biological treatment, tertiary filtration and UV disinfection.

Biosolids are digested, dewatered and either sent directly to an indoor composting facility, stored indoors for composting or used for land application.

Following treatment, the water is pumped directly to the Geysers Recharge Project or to the storage ponds for local irrigation.

"When the department was formed in 1985, the goal was to improve wastewater treatment to the point that we could be 100 percent reuse, with a high quality product that could offset potable irrigation water and other uses," explains Powell.

"Zero discharge is the goal," he says, adding that in 2010 and 2011 there were some discharges due to heavy rains, while 2009, 2012 and 2013 have been discharge free.

He explains that typically, 60 percent of the plant's dewatered biosolids are land-applied, with the remainder used for composting. Very little goes to landfill.

Digester gas fuels generators that produce about one quarter of the treatment plant's dry weather electrical needs. Solar panels located on

some of the department's buildings and properties generate another 466 kW of electricity.

PROFILE: Santa Rosa, Calif., Utilities Department

FOUNDED: The utilities department was separated from another department and formed in 1985

POPULATION SERVED: 170,000 plus

CUSTOMERS:

53,000 sewer connections; 52,663 water customers

WASTEWATER SYSTEM: 589 miles of sewer mains, 17 lift stations, Subregional Laguna Wastewater Treatment Plant (21 mgd)

WATER SYSTEM:

620 miles of water mains, 20 water pump stations, 24 reservoirs, 52,663 water meters, well treatment plant for two major production wells plus the water purchased from a water agency

EMPLOYEES:

Administration: 42; water & wastewater: 78; subregional treatment plant: 120

ANNUAL BUDGETS: Wastewater: O&M \$7.4 million Sewer: CIP \$11.9 million Water O&M (without water purchase): \$9.3 million

Water CIP: \$8.3 million Laguna Treatment Plant O&M: \$16.2 million Laguna Treatment Plant CIP: \$1,000,000

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THE GEYSER PROJECT

Each day, millions of gallons of high-quality, filtered and UV-treated water are produced at Santa Rosa's subregional Laguna Reclamation Plant. But rather than let this resource go to waste, most of it is routed to a unique geothermal project called Geysers, where it is used to make steam, which in turn drives turbines that generate electricity. The rest of it is used for agricultural or urban irrigation.

"The water meets or exceeds the highest levels in California's stringent water recycling regulations," explains Mark Powell, Santa Rosa utility deputy operations director.

In the Geysers project, a magma chamber estimated to be eight miles in diameter lies about four miles below the surface in the Mayacamas Mountains north of Santa Rosa. Through some 350 production wells — mostly owned and operated by the power company Calpine Corp. — water is pumped onto the magma formation (generally between 800 and 1,000 degrees F) to form steam.

The steam then travels through insulated pipelines and drives generators that produce a significant amount of electricity — enough to meet approximately 60 percent of the power needs of California from San Francisco north to the Oregon border.

Many of the homes served by this geothermal plant — the largest of its kind in the world — are the source of the wastewater which is treated and then used to make the steam, making this a unique closed loop waste-to-energy system.

A diligent environmental compliance section within the department supports the wastewater collection system and Laguna Treatment Plant. Area restaurants and businesses are all under permit and have regular inspections to prevent toxic releases and the buildup of fats, oils and grease (FOG) or other products. The department's environmental compliance division also initiated an over-the-counter and prescription drug take-back program that has collected around 19 tons of pills since 2008. Powell calls the program "outstanding."

Pipe problems

While the department has taken advantage of numerous cutting edge technologies and management practices, its sewer system needs updating. Powell explains that over 40 miles of the city's sewer lines are constructed of clay pipe — some of it 60-80 years old. The system as a whole has 46 miles of main exceeding its estimated service life (50 years), although some has been shown to be in excellent physical condition.

"We started replacing it several years ago," Powell explains, noting that the department would like to replace 1 to 2 percent of the entire older system every year. "It's a range of sizes [4 to 66 inches] and materials. A lot of the joints and pipe are old, but age is only one criteria used for recommended replacement.

"Hydraulic deficiency, grade, risk, maintenance frequency and CCTV inspection results all play a part in replacement decisions," he adds.

Santa Rosa is using a variety of replacement methods, including cut and cover, cured-in-place pipe (CIPP), pipe bursting and sliplining. CIPP is usually the department's choice for larger pipe diameters.

"The department's employees do the smaller pipe repairs, patching and pipe bursting jobs in-house, and contract out the larger projects," says Powell. "No one method is good for every application."

To maintain their systems, the

department has a fleet of four combination cleaning trucks, an easement machine, one mechanical rodding truck and two CCTV camera trucks on the street every day along with their repair crews with

"It's understood throughout the department and from each employee's first day that customer service is our number one goal."

Mark Powell

required to be licensed by the California Department of Public Health as water distribution operators. Some employees have water treatment certification and all are required to have a California Water Environ-

three hydroexcavators and backhoes. They also use chemical root control. The objective is to televise and clean all pipes 36-inches in diameter and smaller within five years or less.

Crews also smoke test the collection system to identify inflow and infiltration and illegal connections. The goal is to smoke test the entire collection system at least once every seven years.

Staffing

In order to have a well-trained and balanced staff, the department practices cross-training by rotating the utility system's

grade I and II operators annually. The operators spend one year in a collections system section, then rotate into the water distribution section of the division.

"Our cross-trained utility system senior operators and the system supervisors remain in their sections to maintain continuity and provide additional training," explains Powell. "There are also two fully experienced and cross-trained superintendents who have been promoted within the organization and have full expertise in both our water and sewer systems."

In addition to variety, Powell says the approach gives the crew members better opportunities for future advancement. "They are well diversified, experienced and able to protect customers and the department in most emergencies," he says.

Santa Rosa takes the same approach with staffing schedules. "We use a 9-80 workweek," says Powell, explaining that crew members work nine-hour days, 80 hours in any two-week period (eight-hour Fridays). "Half the division works four days and has one Friday off while the other half has the following Friday off.

"We also have a dedicated weekend crew which works Wednesday through Sunday. This way we have seven-days-a-week coverage for nine hours a day, and the staff here can do just about anything water or wastewater related wherever they're needed.

"The entire department works as a team," he says, adding that communication (face-to-face, emails or a simple phone call) is the key to success.

As a minimum, all of the local water/wastewater division's utility systems managers and operators are



Santa Rosa has adopted equipment which includes automated meter reading and updated SCADA systems (meter from Sensus).

ment Association (CWEA) Collection System Maintenance certificate for wastewater. All operators are also required to maintain a California Class A commercial driver's license.

Asset management

A better handle on asset information has helped Santa Rosa clean, repair or replace its water, wastewater and reclamation systems, as well as equipment at the treatment plant.

"We started implementing an asset management system 14 years ago,"



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explains Powell. "Getting or sharing correct up-to-date information was a problem before. Now we're getting much better information, much faster, and have a better work order system.

"Our local division has reduced overflows through better and faster information, tracking and improved cleaning," he explains.

"In the '70s and '80s, there might have been four backups, spills or overflows a week. We've had only one this year, three last year, and only one the prior year," Powell says. "It's a significant improvement."

The department employs a dedicated team to manage the data and coordinate with operations, and the capital improvement and engineering groups. "The team tracks every asset pipe, valve, pump, etc., which helps to manage our budgets," Powell says.

"Every TV image and log goes into the system," he continues. "Anyone can pull up that information, look at hot spots, check anything that looks abnormal and keep an eye on FOG and pretreatment issues."

As a result, commercial and industrial customers have been very cooperative.

Customer service

"Customer service is number one from the top down and the bottom up," Powell says. "It starts with the phone call or contact to our Utilities Administrative Service Center



The Santa Rosa Utilities Department supervisors include, from left, utilities systems supervisors David Ward, Tony Llamas and Ron Marincic, utilities systems superintendents Rick Santarini and Jim Montenegro, utilities systems supervisor Jason Tibbals, Deputy Director of Operations Mark Powell, and utilities systems supervisors Greg D'Ambrosi and Mike Pieraccini.

(UASC), and ends with the team's response to our customers, external as well as internal.

"It's understood throughout the department and from each employee's first day that customer service is our number one goal."

Actions back up the statements. "Our employees are at your house responding to a call within a half hour during regular work hours, and by our standby employee within an hour after the regular work day ends," Powell says.

No matter if it's a backed-up or

broken sewer or water line or a failed shut-off valve on a residence, the Santa Rosa team responds. "Good or bad, we try to go over and above customer expectations," Powell says. "It's instilled in our employees during training."

Budget battles

Foreclosed homes and shuttered businesses resulting from the recent recession have reduced revenue to water and sewer departments like Santa Rosa.

Nonetheless, says Powell, the department has been able to maintain a high level of service because of its dedicated employees — especially the financial/budget section — plus the use of new technologies, even as tightening regulations have actually raised the cost of collecting, treating and recycling treated wastewater.

Santa Rosa has had to lay off staff, but has successfully compensated by adopting technology that has enabled the department's employees to accomplish most of the work with fewer people. Better equipment, smartphones, laptop computers, automated meter reading and updated SCADA systems are some of the tools being used.

Prioritization has been the other key. "We are making do by prioritizing," says Powell, noting that the most significant and cost-effective projects are the ones that are done first.

"We could spend millions on

capital improvement projects right now," he says. Instead, the department has phased and prioritized its CIP every year as funds allow, averaging about \$11.3 million in just sewer collection system projects each year.

"Our biggest challenges are new and changing regulations, shrinking budgets, employee retention and succession planning," concludes Powell.

"Our employees are our most important asset and vital to the public health, safety and the welfare of all our community. Without them, and the support of our city manager, Board of Public Utilities, City Council and our rate payers, we would not or cannot be successful." ◆

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Utilities systems operators Jason Luchini, left, and Fabian Palacios use a Mud Dog Hydroexcavator (Super Products) to fix a ruptured 2-inch water service line.

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The City of Coeur d'Alene Collection System department takes a proactive role with pipe inspection to stay ahead of any problems that may arise. (Photography by Sheena Dunn)

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ng:5

FOCUS: OPERATOR

OPERATING AT A HIGHER LEVEL

Coeur d'Alene's Larry Parsons guides his collection department to greater efficiency and stronger operating standards

By Cory Dellenbach

efore Larry Parsons arrived at the City of Coeur d'Alene (Idaho) Collection System department, maintenance work was done only when needed — mainly in emergency cases.

"We were reactive when I came to work here; we had a lot of emergency call-outs for sewer backups and lift station backups," Parsons says.

Parsons, the collection system supervisor, joined the department in 1989 as a collection operator after working first in the construction business for eight years in Seattle and working for two years for King County, Wash. at one of their water and sewer districts.

Parsons says he was working on a subdivision in a district near Seattle when the City of Coeur d'Alene offered him a job as an equipment operator. "I had a wife and one young child at that time and realized that it was time for something more secure, and I really liked doing the work. I don't think I worked for them for more than a month when they moved me over into full-time inspection."

Focus on maintenance

The first thing he changed was how maintenance was handled. He didn't enjoy going to customers' houses and helping them with sewer backups in their basements, so he focused on preventing those situations.

"We got very aggressive and got ahead of the game, so to speak, and did a lot of jetting and TVing and we've cut the emergency calls per year by 75 percent," Parsons says. "We used to have a lot of emergency calls."

Parsons notes that the utility has two jetting trucks — a 2006 Vac-Con combo unit with a 1,200-gallon water tank and 9-cubic-yard debris tank, and a 2012 AquaTech (Hi-Vac Corporation). The AquaTech truck is out nearly every day doing maintenance work. "It's our workhorse, we have it running all the time."

Other equipment includes: a Sreco rodding truck, a 2,000-gallon tanker truck built by Erickson Co.

of Washington, and a CCTV truck built on a Ford 450 chassis with equipment from Marathon and software from POSM.

Parsons says he generally works with five technicians on a rotating schedule where one man moves to the treatment plant every week for two days.

"We try to make this routine around here, but I hate using the word routine because it's never routine," Parsons says. "We try to stay ahead of maintenance on equipment and lift stations."

The city is fortunate in that it only has 10 lift stations — some neighboring communities have upwards of 30 to 40, according to Parsons.

"Our treatment plant was built in 1939. It was the first treatment plant on the Spokane River and it was built at that time in the lowest part of the city, right on the river, which made a lot of sense," says Sid Fredrickson, wastewater superintendent for the city. "Unfortunately, our neighboring community of Post Falls built their treatment plant in the 1970s and the only land available was the highest point in town, so everything has to be pumped to get there."



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Larry Parsons, collection

system supervisor for the City of Coeur d'Alene

Wastewater Collection

department.

The City of Coeur d'Alene Wastewater Collection department staff includes, from left, Brad Callihan, collection operator I; Darrel Castleberry, collection operator III; Sid Fredrickson, wastewater superintendent; Larry Parsons, collection system supervisor; Rob Grytness, collection operator I and Tom Steeley, collection operator III. Not pictured: Scott Schrempp, collection operator III.



POSITION: Collection System Supervisor

EXPERIENCE: 24 years with Coeur d'Alene

MEMBERSHIPS: Pacific Northwest Clean Water Association (states of Idaho, Washington and Oregon)

CERTIFICATIONS: Idaho State Wastewater Collection Operator 4

AWARDS:

2011 PNCWA Collection Operator of the year; 2011 State of Idaho Collection Operator of the Year

GOALS:

Keep technicians motivated and educated and stay on top of maintenance work



GROWING OPERATORS

City of Coeur d'Alene Wastewater Collection department Superintendent Sid Fredrickson and Larry Parsons, collection system supervisor, both know how important it is to have experience within their department, but they also understand the value of youth. The youth will be the ones taking over the department as the older operators begin to retire in the coming years.

"Our industry is faced with recruiting experienced operators and retaining them," Fredrickson says. "Recruiting experienced operators isn't the problem. The problem is getting the ones who aren't ready to retire."

To help with that, Fredrickson has been working with the University of Idaho and the local community college, North Idaho College, in developing an apprentice program.

"We're leaning more and more towards growing our own," Fredrickson says. "We understand we have an aging crew. I'm sitting here two years beyond my retirement age. One of these days [the department] is going to lose me and a whole bunch of others."

Parsons says the key is staying ahead of any problems that may arise.

"After 24 years here, I know the system pretty well. We pretty much have the problem areas nailed down so we know where those are," Parsons says. "If you don't see our name in the local paper, it means we're doing our job."

Big projects

With about 210 miles of piping ranging from vitrified clay tile to unreinforced concrete to PVC, it was important for Coeur d'Alene to have an accurate map of the collection system.

The city just completed a longrange master plan study of the sys-



tem, which included three main focuses: integrating a GIS mapping system for the collection system, hydraulic modeling for system capacity and developing a capital improvement plan.

Fredrickson says consultants graded the city's collection system at a B-, which is impressive with the wide-ranging age of the pipes.

"It's like Johnny Cash's 'One Piece at a Time' song," Fredrickson says. "The pipes range from 1906 to present day. 1906 is when the first sewer lines were put into the city."

The GIS mapping project was just completed recently, and it was a significant step for the city.

"When Larry and I started here, we had an 11 by 17 map, handdrawn, that had not been updated for at least 20 years," says Fredrickson. "It was not done on a coordinate, geometry basis and it was all basically cartoon drawings, if you will. It was way out of date and very incorrect, so we've come a heck of a long ways."

The GIS project started in the mid-1990s, but it wasn't pursued aggressively until 1996. When Parsons started with the city, he was the technician out in the field doing the manhole dipping and manhole-type assessment work.

"I got first-hand knowledge of the first half of the city and then I took over as supervisor, so I didn't have time for it after that," Parsons says. "We brought on a couple of interns to finish that project."

While doing the mapping, the

capacity — and more. "I'm pleased to say that our forefathers were smart enough to put in the right size pipes."

Fredrickson notes that there is some old 6-inch piping in the city, but the smallest they now install is 8 inches.

With the GIS mapping project now complete — as well as the master plan — the next step is to not

"After 24 years here, I know the system pretty well. We pretty much have the problem areas nailed down so we know where those are. If you don't see our name in the local paper, it means we're doing our job."

Larry Parsons

city also hired a consultant to come in with survey-grade GPS mapping equipment. They were able to horizontally fix each manhole to within a quarter of an inch and run the vertical to within one-tenth of a foot.

"That finally gave us a database where we could reliably do some hydraulic modeling," Fredrickson said. "We didn't know if we had capacity then or if we would in the future. We had no clue."

After the modeling, the city found out they did have sufficient

let it sit and gather dust, according to Fredrickson.

"What we're going to be doing over time is updating our GIS mapping system," Fredrickson says. "We're also in the process of developing a methodology to look at areas that are going to be potentially annexed and probably coming in at higher densities than we have experienced in the past."

Fredrickson said the city is seeing a trend towards high-density multi-family development and knows that will stress the system in time, but he believes they've come up with a way to help with that.

"We're going to develop local area capitalization fee surcharges," Fredrickson explains. "In other words, we're going to charge those developments that come in at higher densities a premium to hook up to the system, so that we are establishing a fund balance that will allow us to be able to do any corrective action to the system in the future."

Lining up

Parsons has also played a key role in establishing the city's curedin-place pipe lining program.

"When we first started that lining program, open-cut replacement projects were costing roughly \$130 per foot, and 50 percent of that was asphalt replacement," Fredrickson says. "Now we've gotten that cost to somewhere less than \$30 per foot. You can't get much more efficient than that."

The city began using CIPP between 2003 and 2004. Fredrickson said Parsons has been instrumental in developing the CIPP program and determining which





"When we first started that lining program, open-cut replacement projects were costing roughly \$130 per foot, and 50 percent of that was asphalt replacement. Now we've gotten that cost to somewhere less than \$30 per foot. You can't get much more efficient than that."

Sid Fredrickson

lines are good candidates for it.

"If we're going to come up with a list of candidate sections of pipe to be lined, that requires a considerable effort on our part to go out there and clean those sections and TV them and determine if these are really good candidates for lining," Fredrickson says. "Anything that's not going to make that a candidate, we need to know that well in advance of setting up the contract documents."

Close-knit family

Hearing the banter between Parsons and Fredrickson, you can tell this is a group that has worked many years together and knows each other like family.

Parsons has been with the city for 24 years, Fredrickson for 27 years, and the chief operator of the treatment plant is pushing 30 years.

"It's a godsend, having this experience," Fredrickson says. "It's only recently for various reasons that we've had two turnovers in the collection system and one in the plant; that's very rare. Most of our guys have been here in the double-digits."

Parsons was named the 2011 Idaho Collections System Operator of the Year by the Pacific Northwest Clean Water Association after being nominated by Fredrickson.

"Larry is very conscientious and very professional about his job," Fredrickson says. "He is a strong advocate for the city as far as the utility is concerned. I don't have to sit out here and say 'Larry, you need to get out there and maintain the system; Larry, you need to get out there and clean lines.' He's a very strong field supervisor."



Parsons currently has only three operators who work under him; one of them has been with the city longer than he has and the other two have been with the city for about 20 years. The crews do their own CCTV inspections, as well as cleaning and flushing.

"We've been very fortunate having a good crew that's really, for the most part, good self-starters and good hard workers," Parsons says. "I try to keep a positive attitude and keep them informed and involved in what we do. I'm very proactive in letting them make decisions on what, when and how we do things."

In total, the collection system has five regularly assigned operators, but Parsons and the department's field inspector are also licensed Class IV operators who can be used as backups if needed.

"I think what mainly sets Larry apart is his experience and his drive, his desire to get the job done," Fredrickson says.

Parsons responded in jest: "He's being polite, what he means is I usually bug him to death until we get what we want."

Parsons said the key to the continued success of his team and the utility is to stay motivated and educated. "When you get ahead of the game, the tendency is to get relaxed and let things fall off. It can get very routine and you can't let that happen," Parsons says. "My guys do work in the plant, so that helps. That'll keep them motivated. I try to keep things mixed up for them so they don't get complacent." ◆

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ON THE LEVEL

Super Products' load sensor technology for vacuum and hydroexcavation trucks excites Expo visitors

By Ed Wodalski

xpo visitors looking for an accurate way to measure industrial vacuum and hydroexcavating waste found it in the Acculevel load sensor system from Super Products. "A lot of visitors came in excited about the technology," says Mike Vanden Heuvel, president and chief executive officer for Super Products. "We have several subsequent follow-ups with customers who want to utilize the system, not necessarily to go with our truck but as a standalone system that they could incorporate in their own design. And we had some conversations with other companies that want to investigate if it was appropriate for them."

Vanden Heuvel says Expo interest came from industrial cleaning and hauling contractors as well as tanker owners.

"We have to go through a state of discovery and find out exactly how the system can interface with their electronics and controls," he says. "It's overflows, shutdowns, those kinds of things - was high."

The sensor system continuously monitors and displays the debris levels of





Mike Vanden Heuvel, president and chief executive officer for Super Products, describes the features of the Acculevel load sensor system to an Expo visitor.

both liquid and solids on Mud Dog hydroexcavators and the Supersucker HDX, performing in vac-

uum pressures up to 28 inches Hg and temperatures from -40 to 176 degrees F.

"One of the industry's largest problems is carryover, whether it's dry vacuuming or slurry; it's difficult to tell," Vanden Heuvel says. "Most trucks have visual indicators when the debris body is full, and that works to a degree. But lesser experienced operators can fill the truck too much and have carryover into your bags and ultimately into your blower, which you certainly want to protect."

Vanden Heuvel says that while there are many visual indicators available — float balls and such — if the operator is 200 feet away from the truck, it's difficult to see the arrow or indicator that's attached to the debris body.

"People are more often vacuuming a distance away from the truck," he says. "When you're vacuuming, your attention is on your work. You don't want your attention divided where you have to be checking the truck for too many things too often because there's safety involved. This way you can continue to focus on your work and not have to worry about overfilling the debris tank."

The radar-sensing system, in development for two years, tells the operator when the truck is one-quarter full, half full and three-quarters full. Unaffected by air flow, noises, vibration, dust and humidity, a warning light flashes when the truck is 90 percent full to allow time to finish working and clear the hose prior to automatic vacuum shutoff at full capacity. This alert helps with preventing whatever debris is in the hose from falling back out.

"The vent doors open and the vacuum is broken," Vanden Heuvel says. "You cannot vacuum any more material in the debris body; therefore you cannot have carryover."

The sensor can be wired into the truck's electronic control system during manufacture or retrofitted later. 800/837-9711; www.superproducts llc.com. +



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Puma Hydraulic Root Cutter Motor. This motor provides up to 215 lbs. of torque. Able to be used in 4" lines and up. Here it is pictured with adjustable wheeled skids from 8" to 10" and a concave saw in front. This motor is available in kits that can be adjusted to fit your size requirements.

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Debris Grit Catcher Baskets. These are almost a must on every jetter. Don't let the debris flow down the line to cause a problem elsewhere. These Grit Catchers not only catch debris but also the fine sand and grit since they have covered bottom and half-moon back. Here is seen using our fiberglass pole system in any length you need.

Drop Manhole Bridge Kit. The kit include the Drop Bridge that bridges the gap for your nozzle or camera over the drop hole. It comes with 24' of fiberglass poles that connect up easily. The bridge has a 25' rope to lift in into the pipe. Comes in widths of 5" or 6" and is 48" long.

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ATTENTION ON RETENTION

Employee turnover plagues many organizations, and the questions you're not asking in job interviews may be a primary culprit

By Ken Wysocky

he next time you conduct a job interview, keep in mind this startling — and sobering statistic from a recent U.S. Labor Department survey: About half of all employees quit within their first six months on the job. Moreover, about two million Americans a month are leaving their jobs, even with unemployment hovering near 8 percent, according to the U.S. Bureau of Labor Statistics.

The reasons are complex, but best-selling author and corporate consultant Beverly Flaxington (www. the-collaborative.com) believes the typical questions posed to job candidates contribute largely to the problem. In short, you're too often hiring the proverbial round pegs to fill the ever-resistant square holes.

"I saw it all the time when I worked as a headhunter," says Flaxington, whose most recent book was *Make Your SHIFT: The Five Most Powerful Moves You Can Make to Get Where YOU Want to Go.* "Managers just look at the job requirements and see if the person has the abilities to match them.

"Companies generally don't really think about other important factors," she continues. "They don't look at who succeeds and who doesn't, and figure out why they do or do not. They don't even define the attributes of what success looks like in their organizations. In fact, most hiring decisions are based on nothing more than whether or not the manager likes the job candidate. And 'clicking' with someone during an interview is usually the worst reason to hire someone."

Flaxington faults managers who ask the same old tired and clichéd questions during job interviews that prompt sweaty-palmed job candidates to regurgitate by rote the same old rehearsed answers: What are your strengths? ("I'm very organized and good at meeting deadlines.") What are your weaknesses? ("Well, my boss tells me I'm too detail-oriented and focus too much on quality.") And then there's that favorite old chestnut about where the job candidate sees themselves working five or 10 years from now. Given the level of thought-provoking questions being posed, the answer is anywhere but your organization, no doubt.

Why is it like this? The reasons are myriad. There's the time-honored culprit — the that's-how-we'vealways-done-job-interviews mentality. Or managers argue that there's not enough time to do it any other way. Or they simply haven't been shown any other method. "If organizations stopped and recognized how much it costs them, they might change the process," Flaxington notes. "But it's not a hard cost, so it's harder to quantify. It's not like reams of copy paper — the costs aren't staring you in the face."

New hiring paradigms

So what should a manager/ human resources director do to stop the turnover/bad-interview madness? First of all, it requires careful consideration about the job itself. What should it entail - what problem is the position supposed to solve? Think beyond just handling the spillover work of your current staffers, she suggests. In addition, consider things such as who would be the best person to supervise the new hire; what would define success in the new position; what kind of people succeed and fail in your organization; and who should be involved in the interviewing/hiring process.

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

organization. But investing time on the front end will save you time and money in the long run, Flaxington says.

"If a candidate's values center around helping people and doing the right thing, and they're interviewing for a job at a company that's most concerned about profitability, the candidate might feel like a fish out of water," Flaxington explains. "You have to make sure they care about the same things the company values."

Here are some examples of probing behavioral questions:

- What was the worst work environment you've ever experienced? The best?
- Have you ever worked with a difficult person and, if so, how did you handle it?
- What would be a perfect workplace culture for you?
- Talk about a time you went home at the end of a day and

"Companies generally don't really think about other important factors. They don't look at who succeeds and who doesn't, and figure out why they do or do not. They don't even define the attributes of what success looks like in their organizations."

Beverly Flaxington

Whatever the reason, the costs of high employee turnover are enormous. Conservative estimates put it at two or three times an employee's salary. On the other end of the spectrum, author Brad Smart, who wrote *Topgrading: How Leading Companies Win by Hiring, Coaching and Keeping the Best People*, suggests it may be as high as 27 times an employee's salary if it involves the loss of a top-tier employee. During the interview, interviewers need to ask behavior-oriented questions that will actually determine if the job candidate is a good fit for the company's or organization's culture and values. That means asking questions that will reveal how the job candidate thinks, and to which the interviewee will have a hard time faking answers. This takes some introspection on the hiring manager's part and for the overall felt great about work — what did it feel like and what made you feel that way? And viceversa about a horrible day?

- How would you describe your communication style?
- Do you make decisions quickly or do you first need time to think things over?
- What type of boss was the best you ever worked for and why? What about the worst?

Go beyond the interview

The interviewers need to really listen to answers to make the process work, Flaxington emphasizes. For instance, if a manager prizes employees who can make quick decisions, and a job candidate clearly says that's not his or her style, conflict may be in the works. "And if candidates say they've never had a bad workplace situation, that's a red flag, too," she adds. "Everybody has had one."

After the interviews conclude, everyone involved should compare notes to make sure the candidates' answers were consistent. In addition, before hiring someone, all stakeholders should agree on the criteria used to assess a new hire's success periodically, say, three and six months down the road. By the same token, if a new hire doesn't pan out, don't just chalk it up to being a bad boss/employee fit and use the same faulty hiring process all over again. Figure out what went wrong and how the process can be fixed, she says.

Flaxington notes that some managers may resist extreme job interview makeovers; they may feel squeamish about discussing things like values and corporate cultures because it seems too touchy-feely to them.

"But I tell them that if their organization experiences high turnover, or if they've ever brought someone into a role and it didn't work out, perhaps it's worthwhile to take a look at this process and see if it makes a difference," she says. "Not everyone will embrace it. But if anyone has made bad hiring choices, or lost people they thought would be with the organization for a long time, it's definitely worth looking at all the components. It's just too expensive to keep making the same mistakes over and over again." ◆



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International Pipe Bursting Association helps carve a clear path for the industry's future *By Ted DeBoda*, *P.E.*

n the August issue of *Municipal Sewer & Water* I shared how NASSCO provides unbiased support to all technologies equally, and discussed the history and advancement of the Infiltration Control Grouting Association, one of our NASSCO divisions. This month, I'd like to share more about the International Pipe Bursting Association.

The IPBA is another important division that supports NASSCO's mission to set industry standards for the assessment and rehabilitation of underground infrastructure and to assure the continued acceptance of trenchless technologies. The association is open to current NASSCO members in good standing, and enjoys an active membership base of contractors, engineers, members of academia and manufacturers.

IPBA was originally formed in August 2000. Gerry Muenchmeyer,

NASSCO's current technical director, was part of the founding committee. "Originally named the North American Pipe Bursting Association, the objectives in forming this association were to educate the end user on the benefits of pipe bursting, develop user-friendly performance specifications, develop industry standards for pipe bursting, promote techniques for a higher predictability of underground conditions, and encourage sound technical testing and evaluation to solve real-world, enduser challenges," Muenchmeyer says.

Like any other dynamic and evolving technology, changing times and market conditions over the years have resulted in a strategic shift for IPBA, including renaming the association to serve a global market.

"In 2009, IPBA experienced significant growth," explains George Mallakis, IPBA's current chairman. "We made the commitment then to recruit and establish a new generation of motivated and experienced pipe bursting professionals. This group also wanted to push forward to promote the benefits of membership and establish a more comprehensive short- and long-term approach to training, education and general awareness of pipe bursting technology. In 2010, we established a progressive, five-year strategic plan that is currently in full swing."

Matt Timberlake, IPBA's current vice-chairman, shares the strategy and overall vision for IPBA's future: "We are committed to growing pipe bursting throughout North America and the world while continuing to refine its application and raise the product value to the end user, who is ultimately the general public. We will accomplish this through education, outreach and effective marketing," Timberlake says. "Most important to our success, however, is ensuring that IPBA continues to serve as an avenue for direct collaboration with others who are committed to this technology. The only way we can accomplish the goals set forth in our current five-year strategic plan is to grow the high level of commitment and involvement that our members have, and continue to promote consistent, timely and accurate information regarding pipe bursting and its applications. IPBA membership is a huge benefit to members and one that I hope more will take advantage of in the coming years."

If you are involved in pipe bursting, please consider IPBA membership, or join other members when they meet in Houston, Texas, at UCT in January 2014. To learn more or join now, visit www.ipbaonline.org.

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

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LIFT STATIONS AND CONVEYANCE

By Craig Mandli

Lift stations contain the pumps, valves and electrical equipment necessary to move sewage from low to high elevation, making them an essential component of many municipal sewer systems. Here are several stations on the market, along with the individual components that keep them operating, including pumps, meters, valves, control panels and SCADA systems.

Lift Stations/Components

Vertical auger screen

The Vertical Auger Monster screening system from JWC Environmental fits inside pump stations to screen, clean and convey debris straight up and out of the sewer system before they can clog pumps, eliminating the time and expense needed to de-rag. When attached to the wall of the pump station next to the influent pipeline, it captures rags, wipes, plastics and trash before they get inside the wet well. A custom-built screen fits every site and can screen up to 1 mgd. It can also be installed as a headworks screen for small



treatment plants or lagoon systems. 800/331-2277; www.jwce.com.

Fiberglass shelter

Strong, lightweight, super-insulated fiberglass shelters from Orenco Systems safely house lift stations, equipment, chemicals, controls and workers. Standard sizes are 8 feet tall, 4 to 16 feet wide and up to 42 feet long. Features include structural foam-core fiberglass walls (2 to 4 inches thick); weath-



erproof, watertight structure; insulation value up to R24; a high resistance to chemicals and corrosion; a roof structure rated up to 100 psf; and field or factory assembly. Custom options are available, including skid-proof floors, windows, roll up doors, HVAC, load centers, multi-color schemes and OLS control panels that contain integrated variable-frequency drives, which can optimize lift station operation and reduce energy usage by reducing hard starts and water hammering. Multiple drives can be configured for access through one user-friendly, easy-to-understand human-machine interface. 800/348-9843; www.orenco.com.

Lift station inside drops

The use of controlled **inside drops** in lift stations from RELINER/Duran allows pump life to be extended by preventing aerated influent from being directly drawn into the pumps, the primary cause of cavitation. Their use can lead to dramatic reductions in pump-related problems, as well as reduced general maintenance and odor complaints. The drop pipe should always be extended below the low limit level and cut to follow the slope of the base fillet. If there is no fillet, cut the pipe at 45 degrees and in all cases



maintain a distance from the floor or fillet of one pipe diameter. This will create a diffuser by directing the flow back against the structure, thus deaerating the influent. The simple arrangement is easy to maintain, as there is nothing to collect rags and debris and they can be cleaned from above. 800/508-6001; www.reliner.com.

Underground pump station

The **CAPSULAR** underground pump station from Smith & Loveless can meet large-flow pumping system needs with pump sizes ranging from 4 to 12 inches. Designed with internal HVAC systems, spacious interiors and SAFE-STAIR entry, the station promotes safe, continuous human occupancy. Functional options inside the pump station include sinks, shelving and work desks. The design philoso-



phy and non-clog pump stimulates long-lasting, reliable operation, energy savings and hassle-free maintenance. The fluted wall design, with 50-year cathodic protection, provides structural support and durability with VERSAPOX coating to enhance corrosion protection. Complete factorytested stations arrive on site ready for connection. Capacities range from 75 to 20,000 gpm. 800/898-9122; www.smithandloveless.com.

Standby lift station system

Permanently installed standby pump units from Thompson Pump & Manufacturing continue pumping despite power loss or pri-



mary pump failures. The automatic self-priming pump set can meet system demands during wet weather, routine maintenance, new construction or emergency repair. The system includes the Thompson Pump Enviroprime System, which actively prevents sewage spills. It utilizes programmable electronic controls, which make use of sensors that monitor levels in the wet well and initiate backup pumping as programmed. In addition to these SCADA-capable controls that send an alarm to alert the operator, pumps are available with the Silent Knight canopy that reduces sound levels for residential areas. 800/767-7310; www.thompsonpump.com.

Pumps

Lift station shredder pump

Model SK22 submersible shredder pumps from BJM Pumps can handle up to 240 gpm of wastewater at heads up to 59 feet. They use carbide-tipped cutting impellers which rotate against a spiral-shaped impeller plate to shred solids. A stainless steel motor housing protects the pumps from corrosion, abrasion and premature wear. 877/256-7867; www.bjmpumps.com.



Portable non-clog pump

The **Dri-Prime NC150** pump from **Godwin**, **a Xylem brand**, is engineered to deliver non-clog performance, sustained high efficiency and longterm energy/fuel savings. It is an extremely powerful yet compact pump with flow capabilities up to 1,767 gpm and discharge heads up to 195 feet. It features Flygt N-technology with a



self-cleaning impeller. The automatic self-priming system primes and reprimes from dry up to 28 feet without operator assistance or foot valve control. It features a dry-running high-pressure oil bath mechanical seal with abrasion-resistant silicon carbide faces. It can be customized with a diesel engine or electric motor on a highway trailer or skid-mount, or in a quiet enclosure. **800/247-8674; www.godwinpumps.com.**

Pump backup system

Designed to deliver all the benefits of soundattenuated silent pumps, the **ReliaPrime** emergency bypass station from **Gorman-Rupp Company** operates on natural gas, making it a quiet, efficient and environmentally friendly option. It features a 6-inch Super T Series pump capable of passing a 3-inch spherical solid, and offers a soundproof lightweight alu-



minum enclosure with lockable door panels that can be removed for mainte-

nance. It is a complete backup package, ready for hookup for emergencies and power outages, primary pump repair and additional pumping capacity. **419/755-1011; www.grpumps.com.**

Solids-handling pump

The **HPE Series** of premium-efficient solids-handling pumps from **Pentair Water - Hydromatic** has been engineered for lower life cycle costs, increased serviceability and increased pump life. They offer the lowest cost of ownership using a premium-efficient, oil-filled motor. This allows for not only less power consumption, but also decreased operating temperatures and permanently lubricated bearings for extended pump life. Features include switchable seal design (easily change between Type 2 and cartridge seal), optional quick-disconnect cord (no rewir-



ing needed), optional shaft-grounding ring for use with VFDs (eliminates bearing fusion caused by shaft currents), bronze sleeve bearing (eliminates the labyrinth ring), and a Hydromatic seal-leak detector (alerts prior to water entry into the motor). **888/416-9513; www.hydromatic.com.**

Single-stage centrifugal pump

The **CRP** overhung single-stage centrifugal pump from **Ruhrpumpen** is ideally suited for the chemical and petrochemical market, and can also *(continued)*



be utilized in tank farms, HVAC, power plants and lift stations. It is available in 33 hydraulic combinations capable of reaching every operating condition required, and conforms to the standard DIN EN ISO 2858, with standardized operating points and dimensions. Known as "Chemienormpumps,"



they offer advantages regarding service, supply of spare

parts and maintenance. 918/627-8400; www.ruhrpumpen.com.

Vertical immersion sump pump

The **Series 800** immersion vertical sump pump from **Vertiflo Pump Co.** is ideal for service in water, corrosive chemicals, hazardous liquids, sump drainage, flood control and process drainage to meet EPA and OSHA requirements. It is designed for minimal maintenance at heads to 230 feet, temperatures to 350 degrees F, pit depths to 26 feet and up to 3,000 gpm. Features include carbon graphite line shaft bearings, semi-open impeller with external adjustment, high-thrust angular contact ball bearing, 416 stainless steel shafts to 1 15/16 inches and standard NEMA C face motor. Available construction materials are cast iron, 316 stainless steel, alloy 20,



Hastelloy and CD4Mcu. 513/530-0888; www.vertiflopump.com.

Grinder pump

The **915 Shark** grinder system from **Zoeller Engineered Products** is a fraction horsepower grinder pump that significantly eliminates the worries associated with a clogged pump and the damage it may cause to a lift station or piping system. It utilizes a compact yet powerful 1/2 hp grinder pump with scissor-action, TriSlice cutter technology. The motor uses a low amount of energy (8 amps). Requiring a standard 115V power source, the system can be installed almost anywhere. It offers either an indoor or outdoor basin for use in new construc-



tion or as a retrofit for an existing system. Duplex systems using two alternating pumps are available, extending the life of the lift station as well as offering a backup pump. A high-water alarm is included, and an alternating panel serves similarly for the duplex system. A 1.25-inch silent check valve eliminates water hammer in the line. Each package is shipped fully assembled and ready to drop in the ground. **800/928-7867; www.zoeller.com**.

Meters

Vortex shedding flowmeter

The **Coolpoint** vortex shedding flowmeter from **Universal Flow Monitors** features an Intrinsic

Safety option. It has no moving parts to stick or coat, eliminating potential for clogging. The transmitter with Intrinsic Safety is a two-wire 4-20 mA transmitter that has approved barriers and no display, alarm or pulse output. It conforms to requirements for NEC Class I, Division 1, Group D environments. Features include a brass body with viton seals and PVDF sensors, availability in pipe sizes to 4 inches, flow repeatability +/- 0.25 percent, +/- 2 percent full-scale accuracy at maximum flow and a turndown ratio of 10:1. 248/542-9635; www.flowmeters.com.

Valves/Pipe Cleaning

Wafer check valves

WCV Series wafer check valves from **Hayward** Flow Control feature all thermoplastic molded construction, including angle seat and disc design for high flow capacities. The valves fit both ANSI 150 and PN10 flanges and are available in PVC and CPVC in 2- to 8-inch diameters with a maxi-



mum pressure rating of 150 psi non-shock at 70 degrees F. 888/429-4635; www.haywardflowcontrol.com.

Gate valve

The **ZTS Gate Valve** from **KSB** utilizes a fine-grained, homogenous hammer-forged body design that can withstand some of the highest pressure (up to 8,700 psi) and temperature (up to 1,200 degrees F) ratings. It is equipped with a movable, double-wedge design that prevents the wedge halves from additional actuating moments and additional loads on the seat/disc interface. The result is flexible and precise wedge movement with reliable operation. A confined graphite gland prevents packing from creeping into the clearance between the valve's stem and body. Flexible stainless steel caps protect the



graphite from oxidation above temperatures of 1,000 degrees F, further increasing service life and reducing risk of leakage. **804/222-1818; www. ksbusa.com.**

Grease removal blocks

FOG Blocks from **Martech Research** are designed to lower fats, oils and grease in a convenient and easy-to-use block. The formula results in a smoother, more efficient and effective flow with a 90



percent reduction in pumping volume. They are biodegradable, nontoxic and nonhazardous. 803/428-2000; www.martechresearch.com.

Sewage relief valve

The **Pneumatic Dynamic Lifter (PDL)** from **Singer Valve** is a responsive compact sewage relief valve with 100 percent surge protection resulting from pump or power failures which in turn can lead to pipe bursts. It can handle high pressures, and uses a compressed air cylinder to hold the valve closed. It is fitted with a relief pilot that is normally closed as long as the line pressure is lower than the set point. If pressure rises above the set point, the relief pilot opens, causing the air in the cylinder to vent, which in turn



opens the valve. The valve closes drip tight when pressure falls below the set point. It has been designed to minimize maintenance and keep costs low. The piston and closing speed controls operate separately from the sewage, in a clean noncontaminating environment, and easily open through the actuator to flush out unwanted buildups. **604/594-5404;** www.singervalve.com.

Control Panels

Advanced duplex pump controller

The **APX** pump controller from **Franklin Control Systems** supports lead/lag and alternating pump operation, and is ideal for applications where redundancy or variable-capacity pumping are required. It has HOA switches for local or remote control, along with dual run pilot lights, which indicate motor



operation. It's capable of controlling between three and five float switches, which provides redundancy and allows for flexible operation. A doormounted alarm pilot light indicates two alarm conditions: high level and float switch failure. In the case of a float failure, the alarm pilot light indicates the specific faulty float switch. Lag start delay and alternation settings are adjustable for maximum flexibility and customization. **800/962-3787; www.franklin-electric.com.**

Pump station manager

The **MultiSmart** pump station manager from **Multitrode, a xylem brand,** combines PLCs, RTUs and pump controllers into one comprehensive intuitive package and integrates numerous control panel components, lowering



control panel costs. It also includes preprogrammed logic specifically designed to significantly reduce operating cost for the municipal water and wastewater industry worldwide. With out-of-the-box functionality designed for fast and easy deployment, it combines thousands of dollars in technology, components and engineering into one device. **704/409-9700; www.multitrode.com.**

Low-voltage motor control center

Allen-Bradley NEMA motor control centers from **Rockwell Automation** are available with embedded EtherNet/IP, giving utilities access to production information throughout the enterprise. With EtherNet/IP integrated into them, engineers can access more detailed data allowing them to predict potential prob-



lems and prevent equipment failures – ultimately resulting in higher asset availability, improved productivity and reduced maintenance costs. Leveraging a single, standard network simplifies communication and provides users with the flexibility to control, configure and collect data from any point in the system. **414/382-2000; www.rockwellautomation. com/industries/water.**

Lift station control panel

The **331** lift station control panel from **SJE-Rhombus** is designed to fit and click the appropriate overload module into the starter for standard duplex applications. It features a lockable stainless steel or fiberglass wall-mount enclosure, single-point power connection, IEC



pump if lead fails, alternator relay for even run time, seal leak circuits for single or double probe pumps, red flashing alarm beacon and audible horn, pump run and seal leak lights, alarm silence/test push button, hand-off-auto selector switches, overtemp shutdown for motor winding temperature switches (auto reset), lag delay timing relay and elapsed time meters. It utilizes standard float operation (off, lead start, lag start, high level), and is UL/cUL listed. **888/342-5753; www.ecosmartpanel.com**.

SCADA Systems

Obsolescence-proof SCADA system

The **TAC II SCADA System** from **Data Flow Systems** features user-friendly HMI software, no-cost SCADA software licenses, a plug-and-play design, ease of integration, durability in harsh environmental conditions and a three-year lightning warranty. The sys-



tem provides a true obsolescence-proof solution, in which all new products maintain a downward compatibility with all older versions, allowing a utility to maximize their investment in SCADA over the long term. 321/259-5009; www.dataflowsys.com.

Managed SCADA system

The managed **SCADA system** from **Mission Communications** is a complete monitoring and controls system that allows municipalities to better manage, operate and maintain collection and distribution systems. Real-time alarms are delivered by any combination of voice phone calls, text messages, emails, faxes and pagers, and each alarm is logged on the Web portal. Because the system is Web-based, enhancements and



new features are immediately available at no extra cost. Compare pump station flow with local rainfall, analyze pump run times for anomalies or track site access with reports tailored to the water and wastewater industry. Reports assist with preventing noncompliant events from occurring. The Web portal can be accessed anytime, anywhere from any Webenabled device. **877/993-1911; www.123mc.com.** ◆



Kirk Watson, Plant Supervisor, Aurora (Colo.) Water

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Small-footprint macerator system needed for large detention center

Problem

A high volume of large debris in the wastewater at the Clark County Detention Center in Las Vegas, Nev., must be macerated before being discharged into the city sewer. The existing macerator/pump system began to fail in late 2012, causing the facility's administrators to seek an alternative.

Solution

Jensen Engineered Systems, a division of Jensen Precast, assisted the plumbing subcontractor in the design of a grinder/ pump station. The preliminary design called for a large, pour-inplace concrete structure. The challenge of building the structure was that it was located between two high-rise buildings in close proximity. In addition,



all mechanical equipment was to be located in a dry pit (no submersible motors), with complete system redundancy and one station to both grind and pump wastewater. The last requirement would typically be solved by passing wastewater through three independent structures: grinder vault, wet well and then a dry pit pump vault.

RESULT

The first and third structures were combined into one U-shaped design. By stacking two manhole bases, the footprint was minimized and a dry environment for the mechanical equipment was provided. Redundancy was provided by utilizing a three-way plug valve with an electric actuator on the upper grinder deck. Once a week, the sewage flow is redirected to the alternate grinder. Alternating duplex pumps were also used. The pump station has met all expectations since installation. **855/468-5600; www.jensenengineeredsystems.com**.

Lift station upgrades constant-speed pump system

Problem

In an effort to keep up with increased demand and the high probability of future development in the village, Romeoville, Ill., decided to make an upgrade to the existing duplex constant-speed pump system at the Woods Lift Station.

Solution

Based upon **design suggestions by Metropolitan Industries,** it was decided that the station be upgraded to a triplex system configuration, housed in three prefabricated concrete buildings, which would include separate



chemical and generator rooms. In addition, the upgrade would include a new control system with cost-effective variable-frequency drives.

RESULT

The system now has three submersible explosion-proof sewage pumps each with a capacity of 2,084 gpm at 99 feet TDH. Each pump motor and VFD is rated to 125 hp. A 400 kW, diesel-fueled generator and automatic transfer switch, which are protected by the housing, support all three pumps during a power or phase failure. The generator's automatic transfer switch recognizes any power failure, brownout or phase issues, and supplies clean power from the generator to the pumps until reliable power is regained, ensuring that unstable power cannot damage the motors, VFDs or other sensitive electrical equipment. **800/323-1665; www.metropolitanind.com.**

Large-volume motors move water in underground canal

Problem

The Delta-Mendota Canal/California Aqueduct Intertie project is the latest effort to relieve the water woes in the Golden State. The Intertie, or short canal, is a 500-foot underground canal and pumping station that moves water from the state-controlled California Aqueduct to the feder-

ally controlled Delta-Mendota Canal. Large-volume pumps and motors were needed to move the water.

Solution

Cascade Pump Company selected Nidec Motor Corporation to provide the motors for the four pumps. Powering the pumps are 1,000 hp Titan solid-shaft vertical motors from U.S. MOTORS. Because vertical motors are specifically designed for the pump application, they deliver superior durability and reliability.



RESULT

According to Cascade, the Nidec motors have performed to their expectations and are considered a major contributor to the success of the project. **888/637-7333; www.nidec-motor.com.**

Illinois municipality replaces outdated SCADA system and saves funds

Problem

The Lakes Region Sanitary District (LRSD) in Northwestern Lake County, Ill., needed to replace its failing SCADA system quickly. The integrator that supplied the system was no longer in business, leaving them with no source for replacement equipment. As units failed, they lost the ability to remotely monitor their stations, resulting in significant overtime expenses. The system required a complete cost-effective replacement that could be installed and operational as quickly as possible.

Solution

LRSD evaluated several systems and decided to hold a public bid for a new system that allowed PLC-based systems. LRSD awarded the con-

tract to **Precision Systems, a distributor for Scadata-Pac SCADA systems.** Due to the simplicity of the Scadata-Pac system, LRSD elected to self-install the system to reduce costs.



RESULT

LRSD personnel were able to install the Scadata-Pac and make it operational on time and under budget. The system monitors 20 lift stations with over 200

inputs. The system delivers detailed alarm messages to operators' cellphones, and performs complete trending and historical analysis of all connected processes, features not available with their old system. **708/891-4300; www.precision-systems.com.** ◆





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OCTOBER 2013

Gorman-Rupp names

rental sales manager

Gorman-Rupp Co. promoted Jamie Schoenian to rental sales manager. He will be responsible for sales, service, aftermarket, technical support and product forecasting between Gorman-Rupp and national rental accounts.



Jamie Schoenian

Oldcastle provides Nashville stormwater detention system

Oldcastle Precast provided an underground stormwater detention system for fire station No. 21 in Nashville, Tenn. Constructed under the entrance road, the system contains 16 3-foot-tall Storm Capture modules installed atop 16 base slabs for 3,700 cubic feet of detention storage. In addition, five catch basins/storm structures, 15- by 18-inch reinforced concrete pipe and three sanitary manholes were provided for the project.

Microvi Biotechnologies names chairman of the board

Rafael Simon joined Microvi Biotechnologies as chairman of the board of directors. Simon was chief operating officer for Zenon Environmental prior to its acquisition by GE Water. During his tenure, Simon was named Canada's top COO by Canadian Business magazine.



Rafael Simon

VAC2GO hires executive, warehouse assistants

VAC2GO hired Kate Wetherby as an executive assistant for its LaGrange, Ky., office. She will manage day-to-day operations. David Miles was hired as warehouse assistant for the South Carolina office.

Electro Scan receives Virginia sewer project

Electro Scan, in partnership with Prism Contractors & Engineers, will conduct a 20,000-foot inspection of sewer mains in Hampton Roads, Va. The project will detect sources of infiltration that cause sewer overflows and backups. It also will certify point repairs and lining projects as leak free.

Smithers Quality Assessments names president

Smithers Quality Assessments (SQA) promoted Jeanette Preston to president. She will oversee SQA's global business, including operations based in Akron, Ohio, and Suzhou, China. Preston joined the company in 2007 as director of operations.



Jeanette Preston

National Pump & Compressor launches website

National Pump & Compressor, an industrial equipment rental, sales and service provider, launched the website myhurricanesupport.com to provide awareness of the emerging disaster recovery business. The site is intended to provide businesses and municipalities with information on how to prepare for a hurricane, history of areas affected by hurricanes and how the company can help in the event of a hurricane or natural disaster. It includes information on industrial pumps, hoses, generators and other flood relief and dewatering equipment.

Fluid Imaging expands management team

Fluid Imaging Technologies expanded its senior management team, naming Becky Metivier vice president, marketing, and Barry Godowsky, vice president, industrial sales. Rob Chatfield was promoted to vice president,



Pictured, from left, are Kent Peterson, Fluid Imaging Technologies president and CEO, Barry Godowsky, Harry Nelson, Becky Metivier and Rob Chatfield.

chief financial officer, and Harry Nelson was promoted to vice president, aquatic markets. Metivier will be responsible for the marketing team, including global marketing strategy, brand management and corporate communications. Godowsky will be responsible for developing new business. Chatfield, former CFO, will be responsible for the company's overall economic strategy. Nelson, formerly director of aquatic sales and marketing, will be responsible for leading the aquatics division.

Woodard & Curran names vice presidents

Woodard & Curran named four vice presidents to the engineering firm. Paul Couture, PMP, is senior project manager in the Providence, R.I., office, responsible for control system design and programming. David Prickett, P.E., is senior project manager for water and wastewater treatment and infrastructure projects, supporting municipalities in Connecticut and Massachusetts. Rebecca Talbert, assistant counsel, is an attorney in the Portland, Maine, office. Carl Wilcox, P.E., is senior project manager in the Portland office.

ARCADIS names vice presidents

ARCADIS promoted 10 staff members to vice president. Jack Hartigan, P.E., BCEE, and Barry Quinn were named senior vice presidents. Wendy Stoveland and Roger Eisenbarth were promoted to vice president and Amy R. Dant, Edward Kowalski, P.E., PMP, Carolyn A. Lowe, P.E., Sandra K. Ralston, Mike Wooden, P.E., and Anwar Zahis, Ph.D., were promoted to associate vice president.

Red Valve offers product catalog

Red Valve's 28-page product line catalog includes pinch valves, check valves, air diffusers, expansion joints and other flow control products. The catalog is available by calling 412/279-0044 or visiting www.redvalve.com.



Franklin Electric rebrands Cerus Industrial

Franklin Electric rebranded its latest acquisition, Cerus Industrial, as Franklin Control Systems. Based in Hillsboro, Ore., the company will focus on the design and production of electronic drives and controls for water pumping and industrial systems. Products made by Franklin Control Systems will carry either the Franklin Electric or Franklin Control Systems brand.

Trelleborg receives gas compression contract

Trelleborg Offshore & Construction was awarded a contract to provide Akler Solutions with high-performance subsea insulation for use on the Asgard subsea gas compression facility. Trelleborg's Vikotherm II insulation material will be used on 1,968.5 feet of piping, forming part of the compression system, located on the Halten Bank in the Norwegian Sea, approximately 124 miles off Norway.

Dewberry selected for Alabama watershed project

Dewberry was selected to provide comprehensive planning services for the restoration of the Three Mile Creek Watershed in Mobile County, Ala., including hydrology and water quality. The project will improve access and recreational opportunities in an effort to promote ecotourism in the region.

Water Research Foundation names chairperson

The Water Research Foundation named Denise L. Kruger, senior vice president of regulated utilities at Golden State Water Co., chairperson of its board of directors. She will serve until June 2016.

Sauereisen named Entrepreneur of Year

J. Eric Sauereisen, president of Pittsburgh-based Sauereisen, a third-generation manufacturer of corrosionresistant materials, was named Entrepreneur of the Year by



J. Eric Sauereisen

Ernst & Young in the Family Business category in the Western Pennsylvania/West Virginia region.

Flowtite names executive vice president

Flowtite Pipe named Mike Leathers executive vice president. He will help educate the U.S. market on the benefits of Flowtite FRP for pressure applications, such as water transport.

Jetter Depot redesigns website

Jetter Depot redesigned its website, www. jetterdepot.com. The site features new and used sewer and drain cleaning equipment for jetting and jet/vac machines, as well as customer-submitted photos of the company's equipment in use.

Harris Utilities names executive vice president

Harris Utilities named Chris Lewis executive vice president of Harris Utilities SmartWorks. He will be responsible for bringing new smart grid offerings to market, meeting the evolving needs of utilities and leveraging opportunities. Lewis previously served as vice president of business development.

Johnson Matthey SCR system sales exceed 3.4 GW

Sales of Johnson Matthey's selective catalytic reduction (SCR) systems have exceeded 3.4 gigawatts of stationary diesel and gasoline engine power for applications worldwide. The engines, ranging from several hundred kilowatts to more than 20 megawatts, have been fueled by ultra-low sulfur diesel, natural gas, propane, digester gas, landfill gas, dual fuel, blended fuel, biodiesel or heavy fuel oil.

SPIR STAR names sales representatives

SPIR STAR named Keith Tierney and Carolina Sanchez sales representatives. They will assist in the development of the company's sales strategies and help maximize customer satisfaction and performance.



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PRODUCT NEWS

OCTOBER 2013



JetScan video n<mark>oz</mark>zle from Envirosight

By Ed Wodalski

he JetScan video nozzle from Envirosight attaches to any 3/4- or 1 1/2-inch jetter hose, delivering high-definition video of buried pipe without tying up an expensive TV truck and crew. Using pressurized water to advance down lines, the video nozzle enables

operators to quickly determine what cleaning tools to use, what obstructions and hazards exist and whether cleaning was ultimately successful.

Designed for use in 8- to 24-inch pipe (15 inch and up with optional roller extensions), the self-leveling camera captures 1,280 by 720 pixel video in MPEG format on an onboard memory card that can be removed for viewing on an iPad or other SDHC-compatible device. Twin LED lamps ensure bright video footage.

"If you're a municipal manager and you're sending out a crew to clean lines, this is going to be your go-to tool," says Andy Wicker, southeastern regional manager at Envirosight. "It's very simple for operators — even those who've never used video equipment. You can put it in anybody's hands and they'll have valuable footage in minutes."

Intended as a quick, easy alternative to CCTV crawlers, the video nozzle provides a less expensive way to help operators prepare to clean pipe, identify potential hazards such as cross bores and collapses, and document the results of a cleaning. The nozzle accepts flows to 80 gpm and pressures to 2,500 psi, generating 130 pounds of thrust, which can be reduced by replacing two, three or four of the six nozzles with supplied plugs.

Wicker says simplicity is a key feature of the video nozzle that eliminates problematic wires or wireless signals and is priced similarly to a push camera. Recording begins with a press of a button at the top of the unit, is confirmed by the button flashing, and is stopped by pressing the button a second time.

"Jetter nozzles travel somewhat faster and more erratically than CCTV crawlers," he says. "But with JetScan's HD resolution and bright illumination, you don't miss anything. And what's more, you can use the controls on your jetter reel to vary JetScan's speed and determine how far it is into a pipe."

The self-contained video system, whose nozzle and sled were developed in conjunction with StoneAge, requires little maintenance — only cleaning after use and pressurization. It runs up to four hours on rechargeable lithium-ion batteries and stores up to eight hours of video. 866/936-8476; www.envirosight.com.

Badger Meter utility

management software

ReadCenter AnalyticsPro and ReadCenter Analytics+ software from Badger Meter provide water and gas utilities with access to metrics and information for efficient operation. When coupled with Advanced Metering Infrastructure hardware, the



software helps utilities optimize operations for increased productivity. The enhanced dashboard enables water utility personnel to view potential issues such as leaks, tampering, no usage, reverse flow and endpoints that are reaching the final days of useful life. Users also can click to see condition details. 800/876-3837; www.badgermeter.com.



Val-Matic swing check valve

The AWWA swing check valve from Val-Matic Valve & Manufacturing Corp. is designed for municipal and industrial water and wastewater applications. The valve prevents backflow by automatically closing when fluid reverses direc-

tion. Features include a ductile iron disc that swings open upon pump startup. When closed, the valve provides a tight shut-off through the field-replaceable stainless steel seat. Valves are available with three closure options (lever and weight, air cushion, lever and spring) and 2to 24-inch and 30- to 48-inch sizes. 630/941-7600; www.valmatic.com.

Air-Spade air-excavation tool

The Utility air-excavation tool

from Air-Spade, a division of Guardair Corp., is designed for working around underground electric and gas lines. The tool features a highvoltage insulated (300 kV), 4-foot barrel and non-sparking nozzle (105 and 150 cfm). Available with multiple extension lengths, the tool operates off a 185 cfm tow-behind compressor. 800/482-7324; www. guardaircorp.com.

Rain for Rent TDH calculator app

The TDH calculator mobile app from Rain for Rent can be used by engineers, field operators and technicians to determine pump selection. The free app can be downloaded from iTunes. 800/742-7246; www.rainforrent.com.

Victaulic direct groove, two-piece coupling

Rigid and flexible Advanced Groove System couplings from Victaulic are designed for piping systems up to 60 inches in diameter, install in less than an hour and offer pressure ratings up to 350 psi. 610/559-3300; www. victaulic.com.





HEMCO emergency shower

The emergency shower from HEMCO is designed to protect individuals working with hazardous chemicals. Constructed of one-piece fiberglass composite, the showers are fully assembled and ready for installation to water supply and waste systems. The unit includes a pull-rod activated shower and push-handle eye/

face wash for immediate drenching of personnel who have been exposed to harmful chemicals. Options include grab bars, and handheld body wash and curtains. The unit is ANSI and OSHA compliant. 800/779-4362; www.hemcocorp.com.

General Pipe Cleaners pipe inspection system

The Gen-Eye POD and MINI-POD video pipe inspection systems from General Pipe Cleaners combine camera, reel and monitor in one package. The POD system includes a 7-inch, LCD color monitor with padded case, self-leveling camera





Miller Twin Turbo fall protection system

The Miller Twin Turbo fall protection system with G2 connector for 100 percent tie-off from Honeywell Safety Products attaches to harness webbing below the back D-ring. The connector has a webbing

retainer clip that can accommodate thicker harness webbing designs and is available in 6- and 2.3-pound TurboLite 9-foot personnel fall limiter models. The connector meets all applicable standards, including OSHA, ANSI and CSA. **800/873-5242; www.millerfallprotection.com.**

Oldham fixed gas monitor

The iTrans 2 fixed gas monitor from Oldham, An Industrial Scientific Company, detects explosive gases, toxic gases or oxygen. The intelligent electronics platform provides one or two points of detection from a single head. When in RS485 bus configuration, one system is capable of accommodating more than 200 transmitters and can monitor any combination of gases for a specific environment. Other features include nonintrusive calibra-



tion, HART and Modbus communication, programmable relays and explosion-proof aluminum or stainless steel housings. **800/338-3287;** www.oldhamgas.com. (continued)



PRODUCT NEWS

StoneAge automated tube lancing system

The Sabertooth SRT-100 automated tube lancing system from StoneAge has a maximum pressure of 22,000 psi, maximum flow of 40 gpm and 3/4-inch MP inlet connection



with 0.87- to 2-inch tube I.D. The self-contained dual hose reel has up to 52 feet of usable stroke for use with Banshee BN18 and BN24 nozzles. The system has a feed rate of 0.3 to 1.2 feet per second, weighs 550 pounds and requires a 78 cfm air supply. **866/795-1586; www. stoneagetools.com.**



Trimble wireless

remote laser display The Spectra Precision RD20 wireless in-cab remote display from Trimble works with LR laser receivers to provide grade information to help operators increase productivity and improve safety. The remote display

can be positioned without cables for optimal viewing in the cab. Red, blue or green LED lights signal high, low or on-grade. An audible signal enables the operator to focus on the job. **800/874-6253; www.trimble. com/mgis.**





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Radiodetection video system with built-in battery

The GatorCam 4+ pushrod video inspection range with built-in battery option from Radiodetection, a unit of SPX, adds onboard lithium-ion battery power for a full day's usage. The push-button fuel gauge indicates remaining power, even with the controller switched off. 877/247-3797; www.radiodetection.com.



RIDGID RP 340

press tool The RP 340 press tool from RIDGID joins copper and stainless tubing 1/2 to 4 inches in diameter as well as

PEX tubing and black iron pipe 1/2 to 2 inches in diameter. The tool is compatible with all RIDGID Standard Series pressing jaws and attachments. Features include

bolt sensor technology, four-second cycle time, ability to rotate jaws up to 270 degrees to access tight spaces and the ability to operate in temperatures from 15 to 122 degrees F. **440/323-5581**; www.ridgid.com.

Ditch Witch ride-on trencher

The RT30 ride-on, dedicated trencher from Ditch Witch has a 24.8 hp Kubota diesel engine and can dig a trench up to 8 inches wide and 42 inches deep. The 42-inch boom provides a 36-inch cover depth. 800/654-6481; www.ditchwitch.com.





Fluid Components air/gas flowmeter

The ST100 air/gas flowmeter from Fluid Components International can be calibrated to measure most process gas, including wet, mixed and dirty gases. It can store five unique calibration groups, differing mixtures of the same gas and has a plug-in card replacement that can be changed out in the field. Features include a

graphical, multivariable, backlit LCD display. The readout continuously displays all process measurements and alarm status. It also can query for service diagnostics. **800/854-1993; www.fluidcomponents.com.**

Lowell valve key sockets

The three-size valve key sockets kit from Lowell Corp. can handle from 1 13/16-inch Boston gate nuts to 2-inch standard square nuts. It includes a compact case, attachment plate and 3-inch screw to mount the socket on any standard key. 800/456-9355; www. lowellcorp.com. ◆



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EDUCATION

RoyCEU.com: We provide continuing education courses for water, wastewater and water distribution system operators. Log onto www.royceu.com and see our approved states and courses. Call 386-574-4307 for details. (oBM)

PIPELINE REHABILITATION

Perma-Liner Top Gun F-18 Inversion Unit. Used only one time. Comes with five 6"-18" inversion heads, Viper steam-cure system with steam control unit and all related hoses. Paid \$138,500. Will sell for \$99,000 or best offer. For photos visit Industrialwasterecovery.com. Call 616-719-5595 (M10)

CLEARLINE LASER PIPE PROFILERS: Two Models - LAS50 and LAS50T. Never used, must sell. Wesco Infrastructure Technologies, Ted Anderson, 310-808-1290 Ext. 304 (C10)

Permaliner inversion system, complete installation system purchased 2012. Like new condition. System includes materials and multiple inversion heads from 3" to 6". \$26,500. 626-221-5379 ask for Joel. (C10)

POSITIONS AVAILABLE

GENERAL MANAGER: Loudoun Water, a public utility located in Ashburn, Virginia is actively recruiting for a General Manager. For further information visit http://www.loudounwater.org. Resumes will be received at Loudoun Water, GM Apply, PO Box 973, Ashburn VA 20146 or at GM-apply@loudounwater.org. Confidentiality will be respected. The position will be an appointment by the Board of Directors and will remain open until filled. Employment terms are negotiable. (M10)

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

Florida-based utility contractor is expanding. Seeking experienced TV/Grout Operators, CIPP Lining Technicians for a new crew, all positions. Clean CDL B w/Tanker, 3 years CIPP experience req. w/references. EEO/AA, drug and alcohol-free workplace. USDOT regulated company. Call 727-528-1998 for further details, e-mail resumes to jtvincorporated@aol.com (C10)

SERVICE/REPAIR

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

TV INSPECTION

CUES K2 SYSTEM: Steerable Compact Pipe Ranger (CPR), 0Z3 camera, 1000' gold cable, auto cable reel, CPU, CCU, wireless controllers, six different wheel sets, two different wheel spacer sets, tool and manual. Like new (app. 40 hours) at 20% off list. Call 866-936-8476 or email office@envirosight.com. (MBM)



2006 Chevrolet C4500 CUES truckmounted TV Inspection Unit. 16-ft. American Cargo body, Honda 6.0 generator, multiple color cameras and transporter. Complete turn-key operation. \$37,500 minimum. Contact Larry Fredrick, City of Urbana Fleet Manager, at:

lsfredrick@urbanaillinois.us

M10

Lots of Aries camera equipment for sale: 1 Pathfinder Saturn system with 1 TR3300 and 1 TR3400 with large line kit, PE3500 zoom camera and full set of tires, reterm kit and misc nuts and bolts \$60,000. 1 Pathfinder Saturn system with 2 TR3300 tractors, PE3300 non-zoom camera and a set of tires \$25,000. 1 2 PE3600 with pathfinder adapter \$14,000. Package deal for everything. Call or email Kyle 515-360-8582 kyle@accujetiowa.com (C10)

Aries Camera Inspection Van. Single conductor, Ford E-450 cut away, Onan 7.5kw, Win-Can, camera with tractor, ready to inspect pipe. Serviced regularly. 2894@comcast.net (C10)

WORTH NOTING

PEOPLE/AWARDS

The Florida Stormwater Association announced its 2013 award winners:

- Program: City of Gainesville Credit Basin Program
- Program: Hillsborough County Stormwater Environmental Programs Team
- Program: **Sarasota County** Stormwater Infrastructure Rehabilitation Program
- Project: City of Fort Myers Model Stormwater Urban Retrofit
- Project: City of Bradenton Riverwalk Restoration
- Project: City of Haines Stormwater Educational Unit

DuPage County Stormwater Management was awarded the 2013 Illinois Association for Floodplain and Stormwater Management's Stormwater Management of the Year Award.

The **City of Valparaiso** received awards in three categories recently from the Indiana Department of Environmental Management for its Municipal Separate Storm Sewer System program. The city was recognized for: 1) its efforts to detect and eliminate illicit discharges; 2) its success in controlling post-construction stormwater runoff; and 3) its recent rain barrel decorating competition among the schools as part of the public education/participation portion of the MS4 program.

The **Municipal Infrastructure Group Ltd.** received an Award of Excellence from the Consulting Engineers of Ontario for its Elm Drive Stormwater Management Retrofit Project in Mississauga.



CALENDAR

Oct. I-3

National Rural Water Association H2O-XPO, Louisville, Ky. Visit www.h2o-expo.org.

Oct. 5-9

Water Environment Federation's Technical Exhibition and Conference, McCormick Place South, Chicago. Visit www.wef.org.

Oct. 9-12

American Society of Civil Engineers 2013 Annual Conference, Charlotte Convention Center, Charlotte, N.C.Visit www.asce.org.

Nov. 4-7

American Water Resources Association Annual Conference, Red Lion Hotel, Portland, Ore.Visit www.awra.org.

May 4-7, 2014

American Public Works Association 2014 North American Snow Conference, Duke Energy Convention Center, Cincinnati, Ohio, Visit www.apwa.net/snow.

Jim Chaffee of Jacobs Engineering Group in Wisconsin, began his tenure as president of the American Water Works Association.

LB Water was recognized by the Maryland Rural Water Association as its Associate Member of the Year for 2013.

MSW welcomes your contribution to this listing. Please send notices of new hires, promotions, service milestones, certifications or achievements to editor@mswmag.com.

LEARNING OPPORTUNITIES

American Society of Civil Engineers The ASCE has these courses:

- Nov. 7-8 Leadership Development for the Engineer, Lake Buena Vista, Fla.
- Nov. 7-8 Pumping Systems Design for Civil Engineers, Lake Buena Vista, Fla.
- Dec. 12-13 Stormwater Treatment Using Detention Ponds and Commercial Devices, Portland, Ore.
- Jan. 7-8 Construction Plans, Specifications and Ethics for Civil Engineers, Las Vegas
- Jan. 23-24 Leadership Development for the Engineer, Colorado Springs, Colo.
- Jan. 23-24 Financial Management for the Professional Engineer, Alexandria, Va.

Visit www.asce.org.

Texas

The National Association of Flood and Stormwater Management Agencies has a Flood Risk Management Agency-to-Agency Mentoring Session on Oct. 4 in Sugar Land. Call 281/275-8400 or visit www.nafsma.org.

Wisconsin

The University of Wisconsin Department of Engineering-Professional Development has a Using WinSLAMM v. 10.0.1: Meeting Urban Stormwater Management Goals seminar on Oct. 14-15 in Madison. Visit http://epdweb.engr.wisc.edu. ◆

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



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