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JULY 2011

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Wastewater education
for administrators**

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So Long to

“Red Circles”

John Lande
Plant manager
Monroe, Wash.

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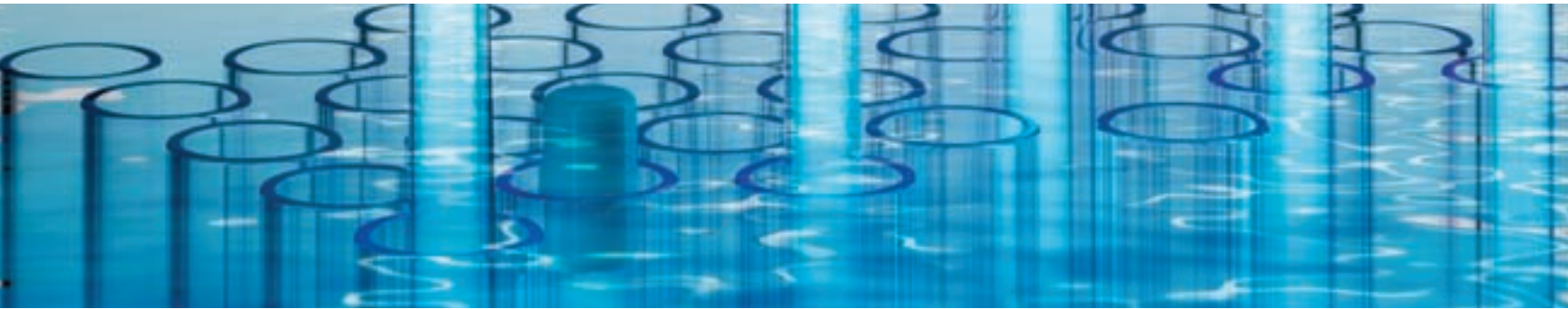
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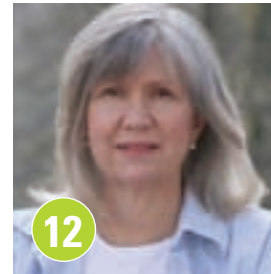
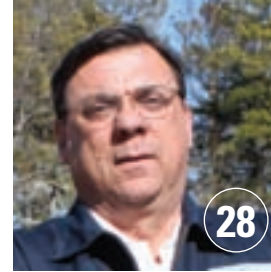
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Plant manager John Lande and his team in Monroe, Wash., no longer struggle to keep an outdated plant in compliance. A new process went online in 2004, and the staff works together to keep on improving treatment and producing the best possible effluent for discharge to the Skykomish River. (Photography by Dan Armstrong)





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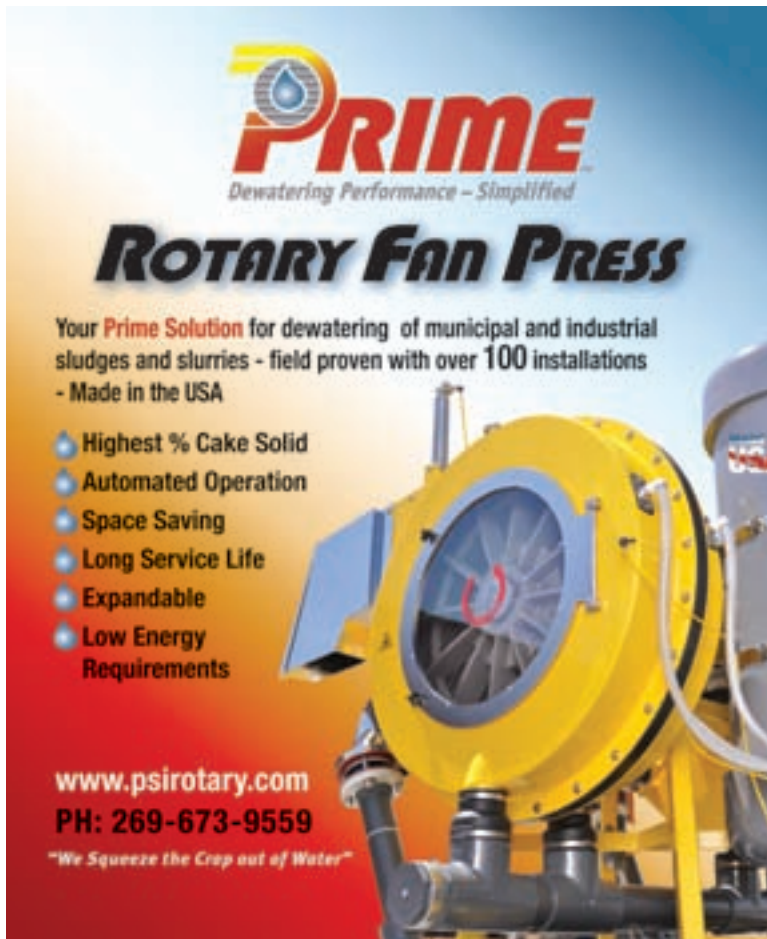


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Your Most Critical Audience?

SOMETIMES IT'S NOT THE PEOPLE OUT IN THE COMMUNITY, IT'S THE ONES IN THE CITY OR VILLAGE HALL WHOSE HEARTS AND MINDS YOU MOST NEED TO WIN

By Ted J. Rulseh, Editor

One of the toughest things to deal with at work is a boss who doesn't understand you — or worse, doesn't understand what you do.

Wastewater operators run into that a lot. So there's a twist to this month's "Hearts and Minds" column. It's not about

helping the general public understand wastewater treatment and its importance. It's about getting the bosses — those utility managers, aldermen, mayors — on board with treatment and the daily challenges operators face.



The story tells how John Hricko, manager at the Town of Crewe (Va.) Wastewater Treatment Plant, teamed with Town of Farmville manager Gerry Spates to put on a class in "Water & Wastewater Treatment 101 For Administrative Personnel."

The moral is that the way to gain more support and buy-in at the top is not to complain and wish things would get better, but to do something affirmative about it.

There was an interesting perspective on that general topic in our sister publication, *Municipal Sewer & Water*, last month.

There, workplace psychologist and leadership trainer Marie McIntyre emphasized that the boss-employee relationship is a two-way street: Employees are just as responsible for establishing a good relationship with their managers as those managers are for doing the same for their team.

NOVEL CONCEPT

That's a novel concept — that warming up relations with the troops isn't only the manager's job. Just grasping that idea can be a start toward better cooperation at work.

Of course, many clean-water plant staffs are squarely on the same page with community decision makers. And plant staffs themselves seem, in general, to function quite cohesively.

But as Hricko and Spates observed, the people in city hall and the people at the plant often don't connect as well as they should. Maybe that's because the treatment people are specialists and the administrators are generalists. Maybe it's that public officials and employees not in the clean-water professions prefer not to "get their hands dirty" — like the general public, they like treatment to be out of sight, out of mind.



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Whatever the reason, a gap exists in many communities between those who run the plant and those who make the decisions and hold the purse strings.

MAKING AN IMPACT

Closing that gap doesn't require doing something as elaborate as what Hricko and Spates did with their daylong course. There are many simpler and easier ways to establish connections — and the more personal the better.

How about inviting the city council or village board down for a tour? What about offering a tour as a matter of course to newly elected officials as soon as they take office?

How about popping into the mayor's office maybe once a quarter to pass along an interesting article or your latest glowing report to your regulatory agency? Does your plant report regularly to the local council? That's a good and convenient place to meet all the decision makers in the same room. How about asking for five minutes on the council agenda, maybe twice a year, to tell how the plant is doing?

The way to gain more support and buy-in at the top is not to complain and wish things would get better, but to do something affirmative about it.

And there's nothing like good publicity to warm your local officials' hearts. Keep your local newspaper apprised of your accomplishments — awards, service milestones, new certifications, promotions, compliance records. Your community leaders will notice.

TAKING ACTION

These ideas just scratch the surface. The point is to make the effort. It's a near-universal truth that people find wastewater treatment interesting once they learn what is involved. That's as true of public officials as it is of anyone else.

The point is: If your relationships with your administrators and council aren't what you would like them to be, decide to make them better. Then act. As an old popular song said: *"How often times it happens that we live our lives in chains, and we never even know we have the key."* **tpo**

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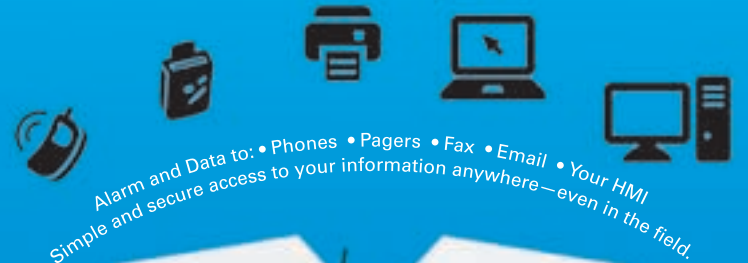
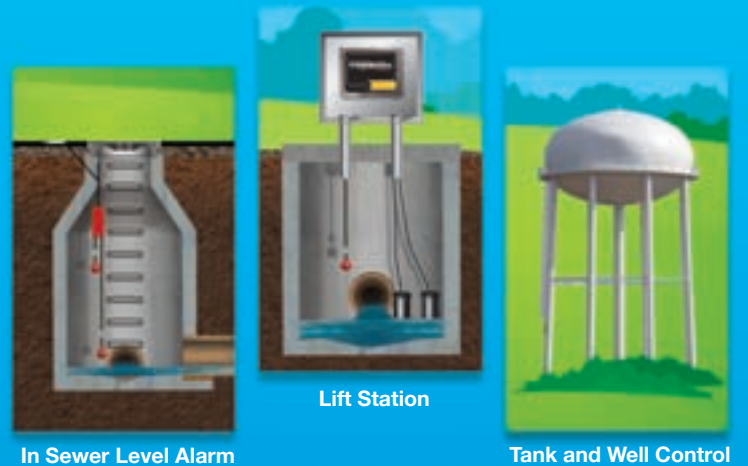
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Teaching Upward

VIRGINIA TOWNS COLLABORATE ON A SEMINAR TO HELP LOCAL GOVERNMENT LEADERS UNDERSTAND WATER AND WASTEWATER SYSTEMS — AND APPRECIATE THE PEOPLE WHO RUN THEM

By Ted J. Rulseh

Wastewater operators' education initiatives usually reach out — to students and adults in their communities.

Two Virginia towns recently took a different approach, reaching up with a one-day class for the elected and appointed officials who make the key decisions and hold the purse strings. The results were immediate and positive: The typical response from attendees was, "I had no idea how much was involved!" says John Hricko, plant manager at the Town of Crewe Wastewater Treatment Plant and course instructor.

The program, on Dec. 14, was sponsored by the Town of Crewe and the nearby Town of Farmville, which donated its South Street Conference Center for the event and provided breakfast and lunch for the 30 participants, representing 17 area communities.

"Two words — team and education — are the miracle drugs in building an effective, cohesive effort, from municipal administration, through the collection system maintenance people, to the treatment plant operations staffs," says Hricko. The "Water & Wastewater Treatment 101 For Administrative Personnel" class dished out a healthy dose of both.

"It gave everyone a better understanding of what's involved in water and wastewater treatment plant operations," says Gerry Spates, Town of Farmville manager. "It's not just a case where you build a plant and everything's fine."

IDEA TAKES SHAPE

The idea for the class grew out of a casual conversation about water and wastewater between Hricko and Crewe town manager Wade Walker. "At the end, Wade said it would be really neat if there were a wastewater class for dummies — something very basic and not aimed at people who are already in the profession," Hricko recalls.

"He put the idea in my head. My wife, Lisa, works as administra-



PHOTOS COURTESY OF JOHN HRICKO

The class for administrative personnel drew 30 attendees from 17 communities.

"We had a great, diverse group. We had town managers, county administrators, support staff, directors of public works, public works supervisors, utility directors, water authority board members, town council members, all in attendance."

JOHN HRICKO

tive assistant and clerk for the Town of Farmville. I asked her to speak to Gerry Spates, to see if this was something he would be interested in. He said, 'Absolutely.' Gerry was extremely generous. He provided the facility and all the food and drinks for the breakfast and lunch."

Lisa Hricko, being a municipal clerk, had a mailing list of the other area clerks, and she sent out a flyer announcing the class to about 30 communities within a 50-mile radius that had water or wastewater treatment plants.

The 30 spaces in the class filled up almost immediately. "We had a great, diverse group," says Hricko. "We had town managers, county administrators, support staff, directors of public works, public works supervisors, utility directors, water authority board members, town council members, all in attendance."

SPEAKING THE LANGUAGE

Hricko, who holds Class I water and wastewater licenses and in his spare time is an instructor for the American Association of Water & Wastewater Professionals, made an

What's Your Story?

TPO welcomes news about your public education and community outreach efforts for future articles in the Hearts and Minds column. Send your ideas to editor@tpomag.com or call 877/953-3301.



The "Water & Wastewater Treatment 101 For Administrative Personnel" class promoted education and interchange for public officials who oversee treatment operations.

“Afterward, I got comments from the attendees saying how much more they appreciated what their people do. And within a couple days I had operators calling me saying, ‘Whatever you taught them, thanks.’”

JOHN HRICKO

immediate impression on attendees by placing a jar test apparatus at the entry to the meeting room with a jar of influent and a jar of effluent side by side. “They were amazed when they saw it,” he recalls. “They said, ‘You mean we discharge water like this when it comes in like that?’”

To connect with his audience, Hricko acknowledged that community leaders faced extreme budget pressure and needed their plant operators to do “more and more with less and less.” He also stressed the need to make sure operators have the resources to do their jobs well. “I told them that treatment really doesn’t work by itself, and if your people aren’t properly trained and equipped, then the operators aren’t running the plant — the plant is running the operators. That kind of plant is going to have trouble, and it’s going to be something major.”

He walked the audience step by step through the treatment process, spending most of the time on biological treatment processes. “My message was that to successfully treat wastewater, it comes down to one thing: Controlling the environment. If we control the environment, we can manipulate the bugs to do the job we want them to do.”

On the water side, Hricko described the basic processes of coagulation and flocculation and emphasized the consequences of having a mechanical breakdown that compromises treatment — up to and including dumping storage tanks or flushing hundreds of thousands of gallons of water onto the ground after it has been treated at substantial cost.

Another point of emphasis was training: “Regulations and compliance issues get tougher every year, and if you don’t stay on top of it, in a very short time it has passed you by. If you expect quality results from your people, you’ve got to give them all the tools. Quality training, even if it costs money, is well worth it. It’s an investment that pays off big in the long run.”

IMMEDIATE IMPACT

Hricko was surprised at how soon the message took hold. “From the very first break, they were astounded,” he recalls. “It was an eye-opening experience for all of them. Afterward, I got comments from the attendees saying how much more they appreciated what their people do. And within a couple days I had operators calling me saying, ‘Whatever you taught them, thanks. Since they came back, they’re looking at what we do in a totally different light.’”

Spates adds, “There was a lot of information about what the operators do. Our town has seven operators, but as administrators we don’t see what they deal with day to day and all the responsibility they have. John did an excellent job with the presentation. He showed a lot of illustrations and presented the information in very interesting ways.”

Hricko sees an opportunity for similar courses to help bring together decision makers and hands-on operations staff. “By including these two vital groups

in every success the plant enjoys, you very quickly evolve the realization that operators do not hold an ‘us against them’ attitude toward the administration,” he says. “In turn, this inclusion makes the statement to the operators that without the help and support of administration and maintenance, we would be hard-pressed to find success.

“Educating people in administration and maintenance about how much is involved in wastewater treatment is as vital in building a team as are the ‘pats on the back.’ Once the process begins, the respect gained by people outside the day-to-day of treatment is measurable and real.” **tpo**

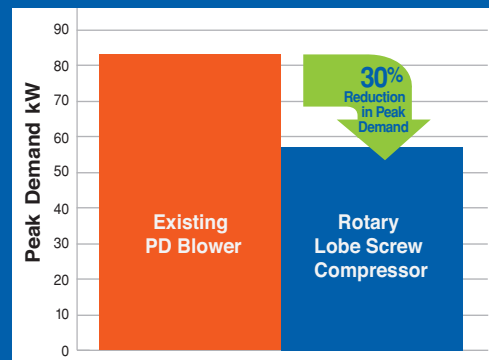
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The Monroe (Wash.) Wastewater Treatment Plant team includes, from left, operator Jim Tobacco, supervisor Donovan Sheppard, operator Randy Oesch, lab analyst/pretreatment coordinator Linda Gleason, operator Theresa Davis, and plant manager John Lande. (Photography by Dan Armstrong)

So Long to “Red Circles”

A NEW PROCESS AND A DEDICATED STAFF HELP A WASHINGTON TREATMENT PLANT GET IN STEP WITH PERMIT REQUIREMENTS AND EARN STATE RECOGNITION FOR EXCELLENCE

By Ted J. Rulseh

JOHN LANDE REMEMBERS A TIME WHEN HE AND his staff didn't enjoy going to work. In the late 1990s, a new permit imposed chlorine, ammonia and metals limits on the City of Monroe (Wash.) Wastewater Treatment Plant that the fixed-film rotating biological contactor (RBC) process just couldn't meet.

For a few years, until completion of a new activated sludge process in 2002, work life was a daily struggle to get into compliance.

“We tried all kinds of ideas and all kinds of methods,” says Lande, plant manager and a Class IV operator. “And although those efforts did make things better, they weren't enough to get us under the limits. It wore on us. It wore on our morale, it wore on each other. It was bothersome that we couldn't be successful in our work.”

What a difference a few years can make. In 2004, two years after the new

process went online, the plant received the first of its three Outstanding Performance Awards from the state Department of Ecology. “After years of writing red circles on our monthly Discharge Monitoring Reports, to go a 12-month cycle without a permit violation — we were very proud of that,” says Lande. “We threw that plaque up on the wall right away.”

The pride from that first award persists today as Lande and a long-tenured team work together to keep on improving, solve treatment challenges in-house when possible, and produce the best possible effluent for discharge to the Skykomish River.

ROAD TO RECOVERY

The plant (2.84 mgd design, 1.5 mgd average) serves a western Washington community of 16,000, plus 2,000 prisoners and staff at the Washington

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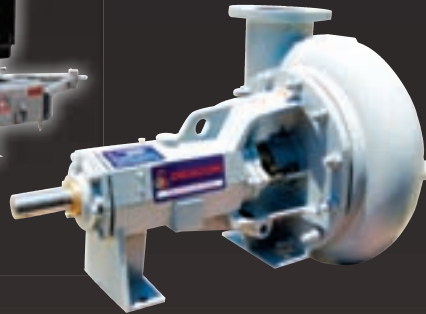
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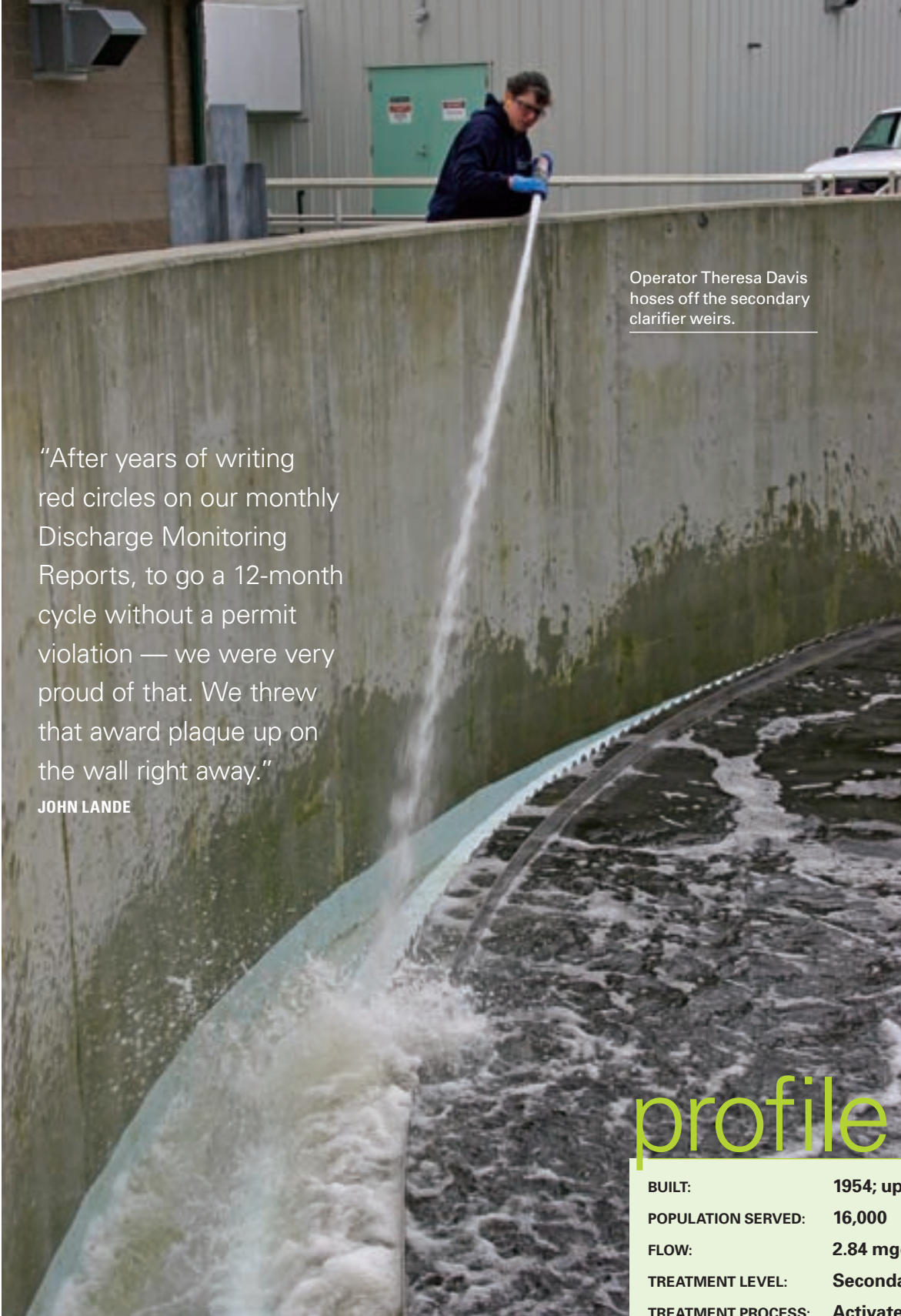


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Operator Theresa Davis hoses off the secondary clarifier weirs.

“After years of writing red circles on our monthly Discharge Monitoring Reports, to go a 12-month cycle without a permit violation — we were very proud of that. We threw that award plaque up on the wall right away.”

JOHN LANDE

profile

the secondary process, added primary clarification, and increased aerobic digestion. The 2002 upgrade replaced the RBCs with a modified Ludzack Ettinger (MLE) activated sludge process, added secondary clarification, and replaced chlorine disinfection with UV.

The plant’s compliance issues began in 1995 when the Department of Ecology imposed new limits on ammonia, chlorine, copper, mercury and zinc. “When that permit was issued, the treatment plant we had wasn’t really in position to be in compliance,” recalls Lande. “We were disinfecting with chlorine, but we didn’t have dechlorination facilities. The copper limit on effluent was below what came out of our citizens’ taps, and with the RBC plant, we couldn’t nitrify year-round to meet the ammonia limits. As a consequence, we had monthly violations that went on for some time.

“The first thing we did was take out chlorine disinfection and put in UV. The problem was that although the UV system resolved the chlorine issue, the RBCs could not meet the water-quality criteria that would make the UV systems successful. We couldn’t provide the transmittance level of 60 percent that was necessary. So we traded one effluent problem for another.

“In 1997, we went into engineering to design the activated sludge facility, which would provide the effluent quality needed for UV disinfection and also would nitrify, and so resolve the ammonia issue we were having. Along the way, in 2001, the city received notice from an environmental group, Waste Action

City of Monroe (Wash.) Wastewater Treatment Plant

BUILT:	1954; upgrades 1976, 1995, 2002	
POPULATION SERVED:	16,000	
FLOW:	2.84 mgd design, 1.5 mgd average	
TREATMENT LEVEL:	Secondary	
TREATMENT PROCESS:	Activated sludge	
RECEIVING WATER:	Skykomish River	
BIOSOLIDS:	Class B biosolids to farmland	
ANNUAL BUDGET:	\$3.7 million	
WEBSITE:	www.ci.monroe.wa.us	
GPS COORDINATES:	Latitude: 47°50'55.33"N Longitude: 121°58'33.41"W	

State Reformatory. Lande, with Monroe for 17 years, leads a team made up of plant supervisor Donovan Sheppard, (Class IV, 12 years), lab analyst/pretreatment coordinator Linda Gleason (Class IV, 16 years), and operators Theresa Davis (Class III, 10 years), Jim Tobacco (Class IV, 7 years), José Agudelo (Class IV, 4 years) and Randy Oesch (Class II, 11 years).

The plant was built in 1954 with primary treatment and upgraded in 1976 with secondary treatment using the RBC process. A 1995 upgrade expanded

(continued)

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ABOVE: Operator Randy Oesch operates the Ashbrook Klampress belt press. RIGHT: Samples are taken at the aeration basin to measure the ORP/pH balance.



project, of its intent to sue for Clean Water Act violations.”

BACK ON TRACK

Now, the plant consistently complies with its permit, in part because the Department of Ecology removed the ammonia, copper and zinc limits after a mixing zone study showed they were unnecessary, but mainly because the new treatment process is highly effective.

Wastewater enters a wet well from which a series of Crane Deming influent pumps lift it to the headworks. It passes through a Parkson Monoscreen elliptical step screen and then goes to an aerated grit chamber and primary clarification.

The activated sludge process uses Hoffman/Lamson centrifugal aeration blowers and fine-bubble diffusers (ITT Water & Wastewater). Hach instruments and a Hach sc1000 control unit monitor and regulate dissolved oxygen, pH and ORP in the MLE process. From aeration, the water flows to two Enviroquip secondary clarifiers (Ovivo). The secondary effluent passes through three Aquionics 8000 in-vessel medium-pressure UV disinfection systems.

Discharge is by gravity, except that an effluent pump station is used in times of high river flows or high treatment plant flows, which usually coincide.

On the solids side, Gorman-Rupp pumps move return and waste activated sludge. The primary and waste activated sludge are anaerobically digested and dewatered to about 16 percent solids in an Ashbrook 1.5-meter belt press. Until 2009, the city composted its biosolids, but by then, according to Lande, the cost of sawdust “priced us out of composting operations.” Now the Class B material is carried by a contract hauler for application to wheat fields.

NITRIFY ANYWAY

Although the ammonia limit in the permit has been removed, Monroe uses the MLE process, which reduces effluent ammonia levels.

“We take aeration basin effluent, which is relatively high in nitrate from the nitrification in the process, and pump that back to the head of the basins to our anoxic selectors,” says Lande.

“That nitrate, in the anoxic environment, allows denitrification to occur. We operate this mode primarily to recover alkalinity and so maintain the pH of the system. If we did not recover that alkalinity, the nitrification that occurs in the basins would drop the alkalinity to where our pH could fall below the level our microbes need to live, and our effluent pH would drop

OF SOLIDS AND SALMON

The connection between biosolids and salmon may seem less than obvious, but it does exist for the City of Monroe Wastewater Treatment Plant. Since last February, about 15 to 20 percent of the plant’s dewatered biosolids have gone to composting as part of a cooperative program to protect water quality and salmon habitat in the Skykomish and Snohomish rivers.

Proper management of dairy farm manure is essential to protecting the rivers and their salmon and steelhead spawning grounds. To that end, the Tulalip Indian tribes, the Sno/Sky Agricultural Alliance (representing farmers), and Northwest Chinook Recovery have formed Qualco Energy Corp., which operates a digester producing biogas.

“The wild Chinook salmon of Puget Sound are a threatened species and are very important to tribes’ history and culture and the economics of the area,” says John Lande, treatment plant manager. “The group built an anaerobic digester mainly for dairy waste. They burn the methane to generate power that is sold to the local grid.”

The City of Monroe operates a small composting project at the Qualco site. Biosolids from the treatment plant are trucked to Qualco at the rate of about one wet ton per day (16 percent solids) and composted with the output of the Qualco digester. The material is processed by an in-vessel composting system and then windrowed. “It’s a small project now that we hope can become larger in scale,” says Lande.

“For the most part we’re local people. We like working for the community. We have a great mix of people from different backgrounds. We’re all different, but we enjoy each other’s company and like to come to work and see each other.”

DONOVAN SHEPPARD

below our permit limits.”

The staged selector is a compartment at the head of the aeration basin where no air is introduced to it. Certain bacteria, in the absence of dissolved oxygen, utilize the oxygen from the nitrate, and release it as nitrogen gas. “We feel this process makes the plant more stable and helps us produce a better effluent,” Lande says.

ALWAYS INGENIOUS

Since the 2002 plant upgrade stabilized the treatment process, staff morale has been high. Plant supervisor Sheppard observes, “For the most part we’re local people. We like working for the community. The city of Monroe is a good employer, and the benefit package is competitive. Overall, it’s just a good place to work.

“We have a great mix of people from different backgrounds. Operator José Agudelo comes from Colombia. We have a range of ages. I’m the youngest at 33, and it goes up to Jim Tobacco, at 63. We’re all different, but we enjoy each other’s company and like to come to work and see each other.”

Lande, meanwhile, sees his job as “treating the water to the finest level,



Theresa Davis calibrates the probes on the Hach sc1000 control unit. She stands over one of the aeration basins, which are indoors for odor control.

and doing it safely and efficiently. There's a lot of that. We ask a lot of the folks who work here. I try to give them an environment where they can be successful.

"We've done a lot of things to make the plant run better. Our group does a really good job in identifying and addressing problems. If they see that they're spending too much time doing one thing or another, they're going to let me know, and we're going to try to come up with a solution. We try to tweak things and make our efforts show in that clean water coming out the end of the pipe. We all understand the importance of clean water, and that's our drive."

CREATIVE SOLUTIONS

In 1995, the staff observed that the self-cleaning bar screen in the headworks was too coarse and was allowing materials to pass through and cause issues in downstream processes. "We looked at that and said, 'We really need to improve this,'" Lande recalls. "So we took it on internally, without outside engineering.

"We went through the procurement process and purchased the two Parkson step screens we have today, with the conveyor systems and the screw wash press. Our own staff took out the old screens and installed the new equipment. That was a rewarding project, and just one of several that we've done."

Another involved concrete deteriorating on a secondary clarifier launder, exposing the aggregate. Algae then accumulated and the staff spent excessive time brushing and cleaning the weirs. "One thing I ask of my group is to have really clean clarifiers, so they look nice when visitors come, or even when I stick my head out and look at the water coming over the weir," says Lande.

"Two summers ago, we applied a Tnemec product that was like a grout over the exposed aggregate. Then we put a two-part finish over it. For two years,



The Monroe treatment plant won an Outstanding Performance Award from the state Department of Ecology in May 2010.

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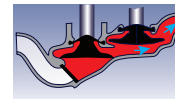


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“One thing I ask of my group is to have really clean clarifiers, so they look nice when visitors come, or even when I stick my head out and look at the water coming over the weir.”

JOHN LANDE

**City of Monroe Wastewater Treatment Plant
PERMIT AND PERFORMANCE**

	INFLUENT	EFFLUENT (Annual average)	PERMIT
BOD	~300 mg/l	7 mg/l	30 mg/l monthly 45 mg/l weekly
TSS	~300 mg/l	10 mg/l	30 mg/l monthly 45 mg/l weekly
pH	7-7.5	6.4	6-9
Ammonia	30-40 mg/l	<0.5 mg/l	N/A
Fecal coliform	N/A	50	200 monthly 400 weekly
Mercury (dry season only)	N/A	Non-detect	0.16 µg/l monthly 0.28 µg/l daily max.

it has been quite resilient and has remedied the man-hours we used to spend keeping our clarifiers clean.”

In another case, after installation of the belt press, the staff experienced repeated failures in a double-diaphragm sludge pump that fed the press. “We had to speed that pump up to meet the capacities required for the press, and we were blowing diaphragms, seals and gaskets on almost a weekly basis,”



WAS/RAS pumps from Gorman-Rupp.

Lande recalls. The solution was to install a new seepex progressive cavity sludge pump.

MORE CHANGES COMING

For 2011, the Monroe team was looking at more improvements, including a new headworks with step screens, submersible influent pumps, and a vortex grit system with accompanying classifier. Also planned was a switch to a low-pressure, high-intensity in-vessel UV disinfection system to increase flow capacity and enhance energy efficiency.

For their constant efforts to improve, team members have been rewarded with additional Department of Ecology Outstanding Performance Awards in 2006 and 2009.

“This isn’t just a job to us,” says Lande. “The recognition was a long time coming. For those who lived through all the struggles when we were having compliance problems, it has been very gratifying.” **tpo**

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MANY HATS

PHIL WEBSTER ACTS AS MANAGER, VOLUNTEER COORDINATOR, PUBLIC EDUCATOR AND MORE AS HE LEADS THE WATER POLLUTION CONTROL DEPARTMENT IN SEDALIA, MO.

By Jim Force

PHIL WEBSTER'S TO-DO LIST MUST BE A MILE LONG. FIND MORE WOOD chips for the composting project. Work on a multi-year sewer overflow reduction plan. Order T-shirts for the Stream Team. Monitor effluent for metals. Prepare for the disinfection upgrade. Talk to high school students about clean water. Explain recent rate increases. Manage multiple contracts. Teach a class to wastewater operators.

"It's a big challenge," says Webster, Alliance Water Resources manager of the Sedalia (Mo.) Water Pollution Control Department. Webster is responsible for three wastewater treatment plants, 186 miles of sewers and 10 lift stations, a composting facility, and 17 employees who remain on the city's payroll. He also manages the city's stormwater and industrial pretreatment programs. Twelve-hour days are not uncommon.

But he has no complaints. "Water really motivates me," he says. "I grew up on the shores of Lake Huron. When I was a kid I remember driving by Lake Superior on a family vacation and looking out over the blue waters of the lake. It gave me a sense of awe and wonderment. I'm not sure what the feeling meant, but the majority of my professional life has been involved in water-based operations."

STARTING OUT

After earning a degree in fisheries and wildlife at the University of Missouri at Columbia, Webster cut his teeth working at a fish hatchery in Osage Beach, Mo. After five years of working on a farm that raised more than 20 species of freshwater fish, he got married and signed on with Alliance Water.



Phil Webster at Sedalia's Southeast Wastewater Treatment Plant. (Photography by Sydney Brink)

"I had to make a choice," he recalls, "I couldn't stay married to the fish farm."

Alliance assigned him to the wastewater treatment plant the firm operated at O'Fallon, Mo., and he began as a laboratory technician, complementing two years of lab experience at St. Louis University, where he also took courses.

Three years later, Alliance promoted him to manager at Cameron, Mo., and in 2008, he came to Sedalia. Today, his duties include management of the city's North, Central, and Southeast wastewater treatment facilities. All handle 1.0 to 1.5 mgd, and combined they serve a population of about 21,000. The North plant dates to the 1940s and uses old-style trickling filters to treat the majority of the community's industrial load, which emanates from metals, photographic, and meat processing plants.

The Central plant was an exact replica of the North plant, but was upgraded to activated sludge treatment in 2000. The majority of the community's restaurants feed this facility, as does the Missouri State Fair for two weeks every summer.

The Southeast plant was built in the early 1980s and features a pair of oxidation ditches and in-channel clarifiers. Biosolids from all three facilities are dewatered on belt presses, then brought to a central facility. For many years, the solids were land-applied, but recently Sedalia launched a static aerated pile composting operation.

The biosolids program is just one challenge that brought Alliance Water and Webster to the scene in 2008. Previously, the solids were not passing vector reduction requirements due to inadequate digestion. The material had to be disced into the soil, at extra expense.

"I've often told myself, usually in difficult situations, that I have the power to turn a problem into a solution. Although this can be difficult, it has always worked when I stop for a second and remind myself that being positive is the best mindset to have."

PHIL WEBSTER



profile



Phil Webster, Alliance Water Resources, Sedalia, Mo.

POSITION: Manager, Pollution Control Department

EXPERIENCE: 25 years

DUTIES: Manage city employees and wastewater treatment and collections infrastructure

EDUCATION: Bachelor's degree in fish and wildlife biology, University of Missouri

CERTIFICATION: Missouri Class A wastewater treatment

GOALS: Protect and nurture water resources, oversee plant and system improvements, train and inspire new operators and managers, educate the public about the importance of clean water

GPS COORDINATES: Latitude: 38°43'0.45"N;
(Central plant) Longitude: 93°15'49.67"W

ABOVE: Phil Webster checks the variety of protozoa in a sample of wastewater to get a snapshot of the population's health and the efficacy of the treatment process.



A lagoon built to catch stormwater overflow is located next to Sedalia's West treatment plant.



IMMERSED IN WATER

Phil Webster really lives water. “Over the past several years, I have adopted an activity that combines a few of my favorite things into a sort of spiritual effort. On New Year’s Eve, I run about four miles from my house to a pond, and when I get to the water I strip to my shorts and jump in the water for a short dip.”

Then he either runs home or gets a ride. “Although it sounds crazy, I really feel refreshed,” he says. “It has become my way of bidding farewell to the old year and welcoming in the new year.”

Every day Phil Webster, center, holds a meeting at 7 a.m. with supervisors and maps out the day’s work. From left, are Doug Knight, maintenance mechanic, Curtis Campbell, crew supervisor, and Stephen Kelly, crew supervisor.

IT’S ABOUT ATTITUDE

“The city understood the issue and looked at what else they could do,” says Webster. “The new compost facility is looking really good and is producing a Class A material.”

Still, finding an adequate source of wood chips and marketing the material successfully remain works in progress. “We need about 200 cubic yards of wood chips a week,” Webster says. “We started operation in September 2010. The final product is screened to quarter-inch granular material. It’s a good way to go with our solids.”

In talking with Webster, you get the impression that it’s only a matter of time before the composting challenge will be solved; he seems to flourish when faced with a problem. “Attitude plays a big role



Members of the Sedalia waste treatment team managed by Phil Webster (front and center), are from left, back row, Mark Grose, head operator, North plant; Denny Vinson, operator, Southeast plant; Stephen Kelly, crew supervisor; and Jed West, operator, Southeast plant. Middle row, from left, Doug Knight, maintenance mechanic; and Curtis Campbell, crew supervisor.

in getting me motivated,” he says. “I’ve often told myself, usually in difficult situations, that I have the power to turn a problem into a solution. Although this can be difficult, it has always worked when I stop for a second and remind myself that being positive is the best mindset to have.”

That can-do attitude is no doubt helping Webster deal with a number of other issues he and his staff and the city face as they work to improve Sedalia’s wastewater treatment system.

The city has entered a consent decree to correct wet-weather problems, and Webster is in charge of developing a long-range comprehensive plan that will cost about \$30 million over the next five years.

“During rainstorms, we can see upwards of 14 mgd at the Southeast plant,” he says. “It’s a serious I&I problem. We’re doing a lot of flow monitoring and modeling, using about 35 to 40 monitoring sites.”

MULTIPLE SOURCES

On the stormwater side, the city is concentrating on illicit discharges, construction sites, and its own municipal operations. “I go out personally and review all our municipal operations to make sure we’re practicing what we preach in stormwater control,” he says. The wet-weather plan also includes a number of retention basins.

There’s more on his plate. With several metal finishing operations on the Sedalia system, the city’s permit has limits for metals. Webster and the Sedalia staff are heavily involved in a translator study for metals in the receiving streams.

Disinfection is another issue. At present, disinfection is not required at Sedalia, but it will be soon. Webster is responsible for preparing a plan to add disinfection to the treatment facilities when that requirement takes hold in 2013. On an even larger scale, the city is considering the feasibility of consol-

GOING TO THE MAT

While proud of his accomplishments as a water manager, Phil Webster is just as enthusiastic about his family’s success. His daughter Emily is a wrestler on Sedalia’s Smith-Cotton High School team and one of the few girls in the country competing against boys.

Wrestling in the 103-pound division, she was named to the 2010 girls high school All-American team by TheMat.com/ASICS. “It hasn’t always been easy for her, but overall I think sports can lead to great things for girls,” Webster says.

She’s following in her father’s footsteps. One team observer recently commented, “Emily’s footwork reminds me a lot of Phil.” Webster, who also has a 23-year-old son and another boy in fifth grade, disagrees. “She’s a lot faster than I ever was,” he says.

inating treatment at one or two of its treatment plants.

Webster's ability to involve the employees will help solve these issues. "Phil makes employees part of the answer," says mayor Elaine Horn. "He empowers employees to do their jobs better. In turn, they really accept him."

JOHN Q. PUBLIC

All these improvements will require funding in a time when state and federal support is limited. Sedalia's citizens will be asked to shoulder more of the burden. That's one reason that Webster practices public education so avidly that he could be the poster child for the Water Environment Federation's public education committee.

He organizes citizen groups, known as Stream Teams, that clean stream banks and monitor water quality throughout the community. "I want people to know that our efforts are bearing fruit," he says.

He has prepared printed materials explaining wastewater treatment and water quality. A stormwater education program he wrote features cartoon caricatures he created. One creature is MI and another ZU, for the Miz-zou chant of University of Missouri fans during sports events.

"Phil makes employees part of the answer. He empowers employees to do their jobs better. In turn, they really accept him."

MAYOR ELAINE HORN

The third represents a water drop, and together they tell the water cycle story.

"I saw the little artful characters used at the 1998 Nagano Olympic Games, and I thought they were a wonderful communications tool," says Webster. "When I came to Sedalia, I developed these little characters as a way to promote the stormwater volunteer effort."

He started an Adopt a Storm Drain program, and he frequently talks to students at area schools. "We're just planting seeds," he says. He wants people to have fun with water topics, and he takes the same approach as he teaches a wastewater management course approved for operator certification credits in Missouri.

ON THE FRONT LINE

The work Webster does is part of what makes a success of public-private partnerships like the one between Sedalia and Alliance Water. "First of all, the municipality has to have a real need that we can meet," says Webster. "Then we can use our experience and expertise to meet their needs and develop a good working relationship."

"Our economy of size helps save money on chemicals and certain equipment purchases. And the company's wealth of experience can help a municipality work smarter and more cost-effectively. We also try to become part of the community by joining service clubs, giving classes in the schools, and volunteering in the community."

Mayor Horn notes that Webster has been an essential promoter of the city's \$30 million sewer overflow project. "He's right there," Horn says. "He goes into the schools, he gives presentations to service clubs. He explains how we got where we are and where we need to get to. He's gotten families to adopt storm

drains and outfalls and to take part in things in their neighborhoods. None of this would have happened without Phil.

"He brings an incredible wealth of knowledge and education to our community. He has an impressive dedication to the job, and he works nonstop. He's been able to assess what we're doing well and what we can do better, where we can consolidate. With his leadership at the department, we've been able to move forward."

Webster observes, "I approach each day as a gift, a new beginning so to speak; with the knowledge that no matter what happens to me, the sun will rise again tomorrow. This work has great variety and plenty of challenges. It offers me the opportunity to be a real environmentalist. I'm serving on the front line of environmental protection." **tpo**

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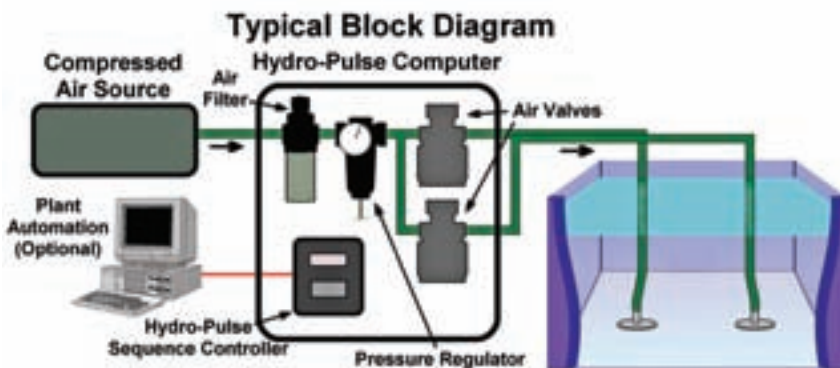
By John Sparks

The Ohio city of London brought its new activated sludge wastewater treatment plant online in 2009 and soon encountered issues with solids pumping. Waste activated sludge (WAS) is pumped to a gravity belt thickener where it is concentrated to about 2.5 percent solids before being pumped to anaerobic digesters from a holding tank.

Wasting to the thickener is not continuous, so the thickening process operates only when sludge needs to be wasted. As a result, thickened sludge is kept in the holding tank until 15,000 to 20,000 gallons accumulate. Any septic tank waste or grease delivered by contractors is emptied directly into the thickener so that it goes to the holding tank and eventually to the anaerobic digesters.

When held in a tank for a length of time, WAS will denitrify. At London, the solids floated to the tank surface, resulting in a layer of water at the bottom. Grease also floated. When the batch was pumped to the digesters, the water layer low in solids was pumped first and caused operational problems in the digesters. Because the water and sludge separated, sludge in the holding tank became thicker than the sludge pumps could handle, causing pumping problems.

Dan Leavitt, Wastewater Department superintendent, found a solution in a PHi Model 300 hydro-pulse mixing system from Pulsed Hydraulics.



FAIR TRIAL

Leavitt first looked into pump-based mixing systems, found a unit costing about \$70,000 plus installation, and considered purchasing it. He then met with Pulsed Hydraulics representatives Benjamin and Larry Bell at the treatment facility. As Leavitt explained his prob-



PHOTO AND GRAPHIC COURTESY OF JOHN SPARKS

The PHi Model 300 hydro-pulse mixing system from Pulsed Hydraulics.

Share Your Idea

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Send your ideas to editor@tpomag.com or call 877/953-3301.

lem, the visitors suggested a demonstration of the pulse mixer.

They found an on-site compressor that had been out of service and quickly configured a demonstration unit. They explained that the system would introduce a burst of compressed air at the base of the tank. The resulting bubble would create the necessary mixing. Pulsing the burst every 30 seconds would keep the material in suspension so it could be moved easily to the next process stage.

Leavitt saw the logic of the application. He also learned that it would cost just over \$5,000 and that his staff could install the package themselves. "All that was needed was a 5 hp compressor, a controller to regulate the frequency of the burst, a valve to regulate the volume of the burst, a flexible pipe, and a bubble-forming plate," Leavitt says.

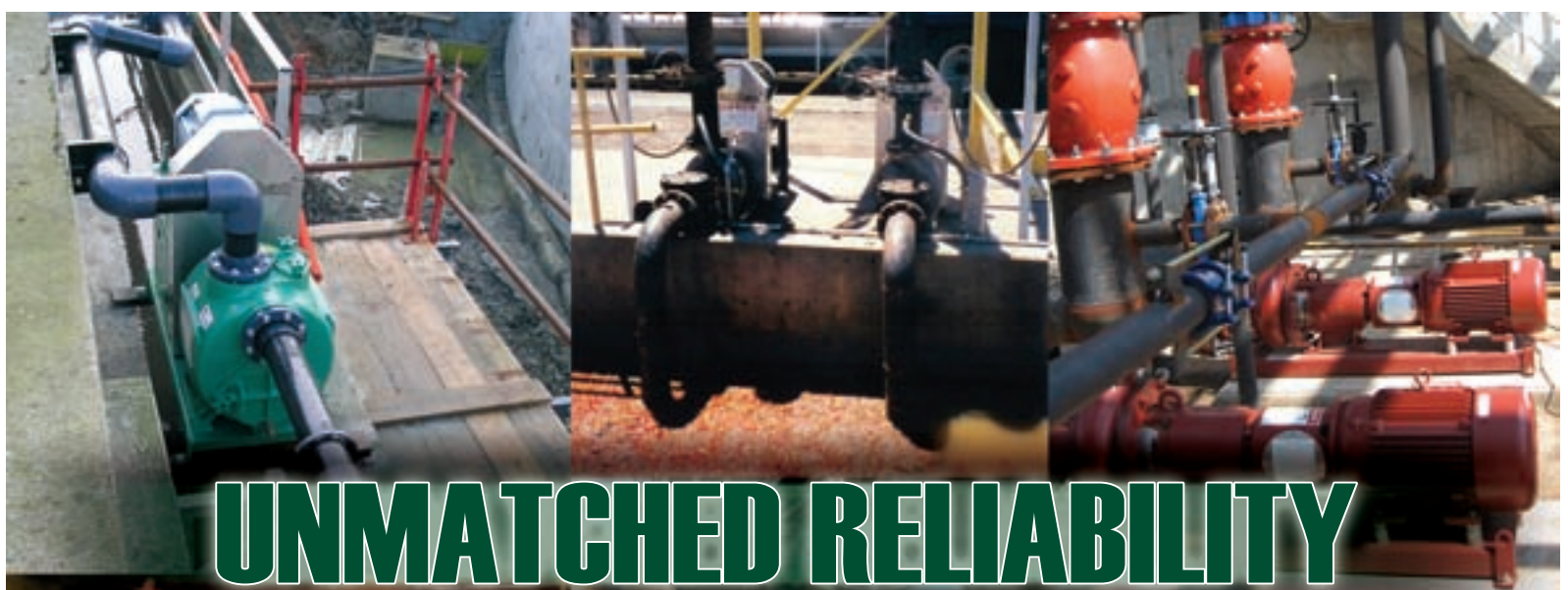
QUICK RESULTS

When the plate was dropped into the tank, the sludge became thoroughly mixed within a short time. "There are no moving parts in the tank," says Leavitt. "The bubble-forming plates are inert and never require servicing. If there were a problem, it would be a simple task to pull the pipe up and replace the failed part. As far as the compressor, it has a life cycle, but it doesn't pose any maintenance issue. The controller and valve are not high-maintenance items, either."

Since the bubble-forming plates are positioned on the bottom of the tank, no tank real estate is lost to pumps and their collectors. The compressor used for the system had been in the plant for years as part of another treatment process, since abandoned.

"We installed the PHi 300 system without using outside contractors," says Leavitt. "It is a very low-maintenance application, consumes a small amount of energy, is reliable and costs a fraction of the other solutions we reviewed."

Pulsed Hydraulics has installed its solution in wet wells to eliminate FOG mats and has had similar results. "The London Wastewater Department will consider that application, should the need arise," Leavitt concludes. **tpo**



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Looking Upstream

ROGER DESCOTEAUX HEADS AN AWARD-WINNING INDUSTRIAL PRETREATMENT PROGRAM THAT PROTECTS HIS PLANT'S PROCESS AND KEEPS THE MERRIMACK RIVER CLEAN

By Doug Day

There is more to being a regulator than enforcing regulations. Collaboration was one thing that helped Merrimack (N.H.) industrial wastewater pretreatment manager Roger Descoteaux earn the 2010 Regional Industrial Pretreatment Program Excellence Award from the U.S. EPA.

Merrimack's 5 mgd treatment plant was designed for a large volume of high-strength wastewater coming from the industrial base in this community of 28,000. Merrimack is one of 13 communities in the state required to have a pretreatment program, although others have established them voluntarily.

"Our pretreatment coordinators group meets two, three, or four times a year," says Descoteaux. "We discuss regulations, case studies, pretreatment methods, and enforcement actions. The EPA and state Environmental Services officials attend, and we invite representatives from other wastewater plants."

Descoteaux talked about his program and his approach to working with the industries in Merrimack in an interview with *Treatment Plant Operator*.

tpo: How did the pretreatment program start?

Descoteaux: It was required by the EPA in 1983. I was hired to implement and run the program, which was designed by a consultant. We had more than 10 significant users then. The plant was designed

"We do a minimum of two inspections per year and monitor effluent twice a year. I inspect the significant industrial users four times a year just to make sure I stay on top of things."

ROGER DESCOTEAUX

for 5 mgd, and we were getting up to 4 mgd. We had to get a lot of companies into compliance, and we worked together and developed a good rapport.

tpo: How many permits do you issue now?

Descoteaux: We issue more than 60 permits and have four significant users: an Anheuser-Busch brewery (home of the Budweiser Clydesdales), Nashua Corporation (printing and coated products), Kollman (avionics, electro-optics and medical instruments), and Saint-Gobain Performance Plastics.

tpo: What treatment process does the plant use?

Descoteaux: It's a secondary activated sludge plant designed in 1970 to handle the high-strength wastewater from the brewery. It had



PHOTOS COURTESY OF MERRIMACK WASTEWATER TREATMENT PLANT

ABOVE: The Merrimack wastewater treatment plant was designed to handle a large industrial load. RIGHT: Jay Pimpare (left), U.S. EPA Region 1 pretreatment coordinator, presents the 2010 Regional Industrial Pretreatment Program Excellence Award to Merrimack



pretreatment manager Roger Descoteaux (second from left); James Taylor, Merrimack assistant director of Public Works/Wastewater Division; and Rick Seymour, director of Public Works.

a trickling filter that we took offline in 2008 when the brewery built its own wastewater treatment system with an anaerobic digester and bio-energy recovery. We've made additional modifications with anaerobic selectors to reduce nutrients in our effluent, mainly phosphorous and total nitrogen and to increase capacity with the removal of the trickling filter.

The BOD from Anheuser-Busch is much lower now, but it's still around 600 mg/l, well above the 250 mg/l limit for a domestic wastewater plant. Total suspended solids is almost 1,300 mg/l, even with the anaerobic digester. That's what drives us.

Nashua Corporation is a Categorical Industrial User for organics, chemicals, plastics and synthetic fibers. They have some heavy metal limits and very restrictive VOC and SVOC limits in the parts per billion range. They've done a good job with their treatment facility.

tpo: How do you work with customers?

Descoteaux: I have a key contact at each one. We do a minimum of two inspections per year and monitor effluent twice a year. I inspect

the significant industrial users four times a year just to make sure I stay on top of things.

I check for anything unusual and make sure they're managing their waste properly, that they don't have any spills and have a spill procedure, and that they make sure floor drains are sealed or have secondary containment. I make suggestions and recommendations and follow up between inspections.

tpo: It sounds like a lot of paperwork.

Descoteaux: One of the reasons for the award was the annual pretreatment report. I also use that information as a reference tool. I track all my analytical data. We have charts for influent, effluent, all the compost data, organics, and everything else.

tpo: How do you keep up with process changes that may alter an industry's effluent?

Descoteaux: They're required to notify us of any change, and we evaluate it. If they're looking at changing some chemistry, we require Material Safety Data Sheets (MSDS) to make sure it's something we can handle. We may make some recommendations to use something different.

tpo: Do you use contributory flow limits or uniform concentration limits?

Descoteaux: Every pretreatment program has to develop local limits based on the type of industries they have. We use contributory flow limits so only those industries that have a certain pollutant in their discharge have a limit for that pollutant. Most pretreatment programs have uniform concentration limits that cover everyone.

tpo: How has the economy affected your customer base?

Descoteaux: Our waste strength is significantly reduced due to some industries closing, but it's still much higher than for a regular domestic wastewater treatment plant. We have plenty of capacity for future growth.

We were designed for 5 mgd but we're down to 1.8 mgd as a daily average. A lot of places don't have that excess capacity. We've lost some big users over the years, and Anheuser-Busch has done some significant water conservation. They used to discharge between 1.8 and 2 mgd and are down to a little over 600,000 gpd.

tpo: Are there unique challenges from having such a high percentage of your loading coming from a single source?

Descoteaux: They have the ability to overwhelm us. We've developed procedures to divert some of the flow to spill-diversion tanks if they have to bypass their anaerobic digester. We have a good relationship with them and all our customers. If someone has a problem, they call me right away.

tpo: What other steps do you take to protect the environment?

Descoteaux: We recommend and encourage drug take-back programs to keep pharmaceuticals out of the waste stream and give people alternatives to flushing them. We make sure automotive repair facilities have oil separators and manage their oils properly. We don't issue permits to dentists, but I do inspections every year to work with them.

We accept 5 million gallons of septage every year from 10 surrounding communities. To protect our biological system, the septage can only be domestic wastewater. Our SCADA system monitors every load for pH. If it's high or low, we will follow up to find out where the material came from. It hasn't been a problem recently, but we have had problems in the past and have issued some fines against haulers.

tpo: What issues are looming on the horizon?

Descoteaux: We'll have some new nutrient limits down the road, so we're preparing to keep nutrients like phosphorous as low as we

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"You're not trying to hammer them; you're trying to help them. People don't want to see you coming through the door if you're just going to be a bearer of bad news. When there is a violation, we try to work together."

ROGER DESCOTEAUX

possibly can. We're planning a \$4.2 million upgrade to help us meet those limits and to replace some equipment that is more than 40 years old.

tpo: Are there any other challenges for your pretreatment program?

Descoteaux: Our plant has a major compost marketing and giveaway program. We monitor the biosolids for metals, VOCs, SVOCs, pesticides, dioxins, nutrients and other contaminants.

We also have a state limit for compost of 10 mg/l for molybdenum. On a couple of occasions, those numbers were getting a little over 10. We found some companies using molybdenum for corrosion control in their cooling towers and asked them to look at some other chemistry. A few made changes, and the concentrations went down.

tpo: How do you view your role as a regulator?

Descoteaux: You're not trying to hammer them; you're trying to help them. People don't want to see you coming through the door if you're just going to be a bearer of bad news. When there is a violation, we try to work together. That makes it in their best interest to not hold back and not be afraid to say, "We have a problem." The key is that we all want to protect the Merrimack River and the rest of the environment. **tpo**



Larry Tignor, Class 4 operator, adjusts the dividers on a belt filter press from OR-TEC. (Photography by Dianne Saison)

One Step Ahead

A VIRGINIA TREATMENT PLANT PREPARES IN ADVANCE FOR TIGHTER NUTRIENT STANDARDS AND USES OUTREACH TO WIN PUBLIC SUPPORT FOR A MAJOR PROCESS UPGRADE

By Jim Force

“BE PREPARED.” THAT OLD BOY SCOUT MOTTO MIGHT WELL BE THE WATCHWORD at the Tappahannock (Va.) Wastewater Treatment Plant.

In anticipation of new biological nutrient removal standards in the Chesapeake Bay watershed, the plant and town management engaged their designer, lined up funding, hired and trained operators, and educated ratepayers well in advance so as to be ready when the new regulations took effect on Jan. 1, 2011.

“Some places waited, but we didn’t,” says town manager Gayle Belfield. “Our style is to be proactive rather than reactive. We wanted to be at the head of the line.” The new standards call for phosphorus reduction to 0.3 mg/l in the Tappahannock effluent, and total nitrogen of no more than 4.0 mg/l. These are significantly tighter than the standards the plant had to meet previously and are in response to a federal and regional effort to reduce pollution of Chesapeake Bay, one of the nation’s most sensitive water bodies (see sidebar).

“Previously, we had a phosphorus standard of 2.0 mg/l, and TKN of 3.0 mg/l,” explains treatment plant supervisor Steve Short. “It’s been a challenge, especially with the cold weather last winter, but we’re getting used to balancing and refining the process to meet our waste load allocations.”

MAJOR UPGRADE

Before the upgrade, the Tappahannock plant operated as an extended aeration facility, meeting secondary treatment requirements. The new 0.8 mgd (design) plant, designed by Wiley and Wilson, town engineering consultant for more than 30 years, called for a four-stage Bardenpho biological nutrient removal system, installed in the existing oxidation ditches.

“We could have participated in nutrient credit trading to meet our new permit,” says Belfield, “but through the foresight of our town council we chose to secure funds and upgrade treatment. We’re pleased with that decision

Overview of the Tappahannock Wastewater Treatment Plant.

"Nothing beats on-site training. As you work with the process on a daily basis, you get a lot of practical knowledge."

STEVE SHORT

profile

Tappahannock (Va.) Wastewater Treatment Plant

BUILT:	1986; upgrades in 2000 and 2010
POPULATION SERVED:	2,100
FLOWS:	0.8 mgd design, 0.35 mgd average
TREATMENT LEVEL:	Tertiary
PROCESS:	4-stage Bardenpho; deep-bed sand filters
RECEIVING WATER:	Hoskins Creek
BIOSOLIDS:	Dewatered; cake to landfill
ANNUAL BUDGET:	\$589,000
WEBSITE:	www.tappahannock-va.gov
GPS COORDINATES:	Latitude: 37°54'44.99"N; Longitude: 76°52'29.14"W



ABOVE: Members of the Tappahannock plant team include Larry Tignor, Class 4 operator; Michael Patterson, pump technician; Frankie Sanders, assistant supervisor; Lance Franklin, senior operator; Adam Townsend, Class 2 operator; Steve Davis, facilities manager; Steve Short, plant supervisor; and Johnny Davis, fleet maintenance specialist. LEFT: Plant supervisor Steve Short believes in the value of on-site training.

to be ahead of the game.”

In the Bardenpho process, the first zone provides anoxic treatment, while the second zone is oxic. Nitrates are returned from the second zone to the first. Anoxic treat-

ment occurs again in the third zone, and nitrogen gas is stripped to the atmosphere in zone four. Zones two through four occupy the earlier oxidation ditches. A new basin was constructed for zone one, and flow from it was split between the two trains.

New blowers (The Spencer Turbine Co.) and existing Gardner Denver blowers drive the aeration systems. The four existing secondary clarifiers remained in service. Other improvements included a new Huber mechanical step screen — a unique design with plates rotating on an oscillating cam and lifting solids up steps to disposal. The screen does not operate continuously, but saves energy by activating only when water level rises.

Tappahannock also incorporates alum addition for coagulating phosphorus and uses deep-bed Severn Trent sand filters to remove solids and associated phosphorus from the effluent.

TrojanUV units disinfect the effluent before discharge to Hoskins Creek, which flows to the Rappahannock River and ultimately to Chesapeake Bay.

IT'S ALL ABOUT THE BAY

Chesapeake Bay is the largest estuary in the United States, more than 200 miles long and covering some 4,000 square miles. Its waters and wetlands are home to some of the world's best oyster and crab harvests, as well as fishing, boating, and beautiful scenery.

In the view of Steve Short, supervisor of the Tappahannock Wastewater Treatment Plant, that's why ratepayers are in sync with the recent upgrades, even though the improvements meant higher sewer rates. "Folks understand why we needed to do it," says Short. "We are all good stewards of the bay. We want it to be as clean as possible."

Short says people also understand the context of the improvements at Tappahannock and that the solution to improving water quality in the bay involves the entire watershed, both point source and nonpoint source pollution.

Under the direction of the U.S. EPA, and in conjunction with states and regional entities throughout the watershed, waste load allocations for nutrients like nitrogen and phosphorus are being applied to rivers and streams that feed the bay. The watershed is huge — more than 65,000 square miles — and includes parts of Virginia, West Virginia, Maryland, Delaware, Pennsylvania, New York, and the District of Columbia.

Rob Mangrum, vice president and project manager for Wiley and Wilson, explains that the deep-bed filters were the choice because they can be used for nitrate polishing in the future. Also, a weir system replaced the existing controller gates ahead of the UV units to assure constant flow during periods when the filters backwash and plant flow is interrupted.

Biosolids are digested aerobically, then dewatered on an OR-TEC belt filter press and landfilled. Short and his team took advantage of the upgrade project to double the digester capacity to 440,000 gallons, and to add a sec-

ond belt to the press. That has increased the solids content of the pressed cake from 11 to 18 percent, reducing the amount of material landfilled.

The new plant uses Gorman-Rupp pumps throughout. Systems East Inc. supplied the SCADA system, and the plant uses Teledyne Isco samplers and Hach instruments for dissolved oxygen and ORP monitoring.

ON-SITE TRAINING

The construction project proceeded in phases to assure continuous operation and permit compliance. The existing biological process consisted of two parallel treatment trains, so as one was converted to the Bardenpho process, the other continued to operate. That sequence also provided a unique training opportunity for Tappahannock's staff.

In anticipation of the new process and treatment requirements, the town council approved and funded three new operator positions before the new plant went online. Newcomers and existing staff learned about the Bardenpho process as it was installed in 2009. "It enabled us to really learn the process before it went into full operation," says Short. "Nothing beats on-site training. As you work with the process on a daily basis, you get a lot of practical knowledge."

"If we can do it ourselves and not have to send it out, that's going to save us money."

STEVE SHORT

Representatives of the various equipment manufacturers were on hand for several days to provide additional training, and plant staff worked closely with Wiley and Wilson to make sure everyone understood the new processes. "It was a real team effort," says Belfield. "We've always worked well together, with lots of give and take."

Mangrum credits the plant for staying current on technology and trends in the wastewater field. "It's fun working with them," he says. "They have a great set of operators, and they really take their profession to heart. This is a very clean, well-organized plant."

GETTING CERTIFIED

Short and assistant plant supervisor Frankie Sanders also made sure new hires got certified. All operators are certified at Class 1, 2, 3 or 4, even though some came on the job as recently as 2009. "We've always stressed certification within our organization," says Sanders.

Besides Short and Sanders (both Class 1), the staff includes senior operator Lance Franklin (Class 1); operators Adam Townsend (Class 2), Chris Eckles (Class 3) and Larry Tignor (Class 4); facilities manager Steve Davis; pump technician Mike Patterson; and fleet maintenance specialist Johnny Davis.

The Virginia Department of Environmental Quality (DEQ) requires operators to acquire a specified number of Continued Professional Education contact hours during each two-year certification renewal period. Classes are offered through the Virginia Rural Water Association, and through the DEQ and other sources. On-site training is available.

"Each operator at our plant is required to attend a number of contact hours of classroom training each year to meet the requirement," says Short. "The

town also supplies each operator trainee with correspondence courses purchased through California State University Sacramento."

The emphasis on certification and training has proven worthwhile. The new nutrient requirements took effect in the middle of one of the coldest winters on record along the East Coast. "The cold weather has definitely been a challenge," says Short. "Our nitrification-denitrification definitely slowed down in the winter. We had water temperatures of around 8 to 9 degrees C, and if we have anything below 15 degrees C, we start to worry."

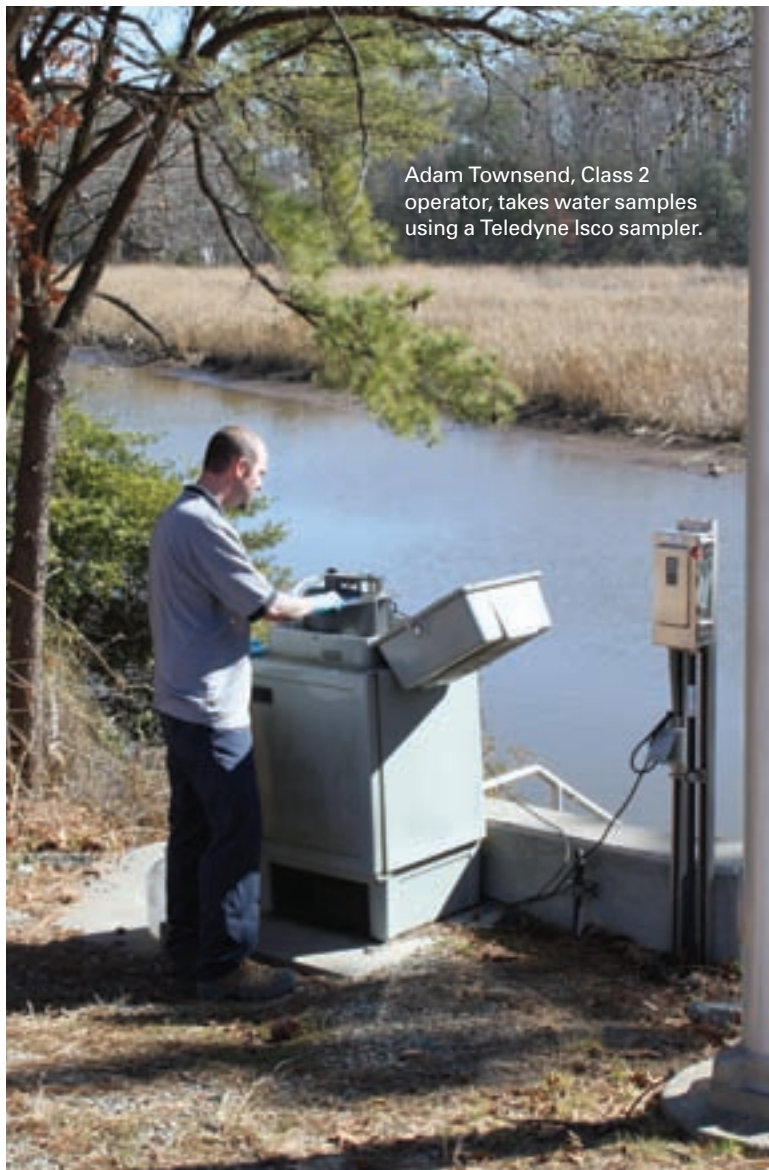
Oxygen levels are the key, of course, and Short and Sanders credit the Hach instrumentation for helping the plant maintain adequate dissolved oxygen levels throughout the process steps. A non-rated glycerin chemical can be added to the fourth zone to help feed the biological organisms in cold weather.

"By January (when the new limits took effect) we were starting to see good numbers," Short observes. The plant's new allocation is just 731 pounds

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Adam Townsend, Class 2 operator, takes water samples using a Teledyne Isco sampler.



Frankie Sanders, assistant supervisor and Class 1 operator, checks the UV disinfection system (Trojan Technologies).

of phosphorus and 9,761 pounds of total nitrogen per year.

COST JUSTIFICATION

While Tappahannock ratepayers are seeing higher sewer charges, the capital cost of the upgrade project was entirely borne by state funds. The total cost of \$8 million came out of the State of Virginia revolving loan fund, and through a water-quality improvement grant.

Again, the town took a proactive approach to the financial portion of the project. As the necessity to upgrade treatment became apparent, Belfield did a thorough rate structure analysis of all surrounding communities. The numbers helped justify the Tappahannock rate increase and also provided a reasonable estimate of the impact on treatment costs for the next several

Tappahannock (Va.) Wastewater Treatment Plant PERMIT AND PERFORMANCE

	INFLUENT	EFFLUENT	PERMIT
BOD	195 mg/l	2 mg/l	30 mg/l
TSS	350 mg/l	1.6 mg/l	30 mg/l
P	5.52 mg/l	0.12 mg/l	0.30 mg/l
Total N	36.6 mg/l	3.0 mg/l*	4.0 mg/l

* Result obtained under winter conditions

years. "It's an estimate, but it helps us compare our actuals to our projected expenses," Belfield says.

The town also engaged in a consistent program of public education, cooperating with the local newspaper in a series of articles about the need for the upgrade and the approaching cost increases. "We reported what we were doing and where we were going," Belfield says.

He acknowledges that additional treatment costs and increased rates can be painful. "We realized we were going to have to extend hours of operation in order to meet the new regulations," he says. "But we started the budget preparations early, again being proactive. Our governing body was receptive, and when we had public meetings on the project, there were no objections."

The Tappahannock staff does its part by looking for ways to save on operating costs. "The double belt press enables us to handle an increased solids load but send less volume to the landfill," says Short. That's a saving, as is the potential for operating just one side of the biological process when conditions permit. "We're really two treatment plants here," says Short. "If we can get by running just one train, that's more economical."

The Tappahannock staff performs its own maintenance wherever possible. "If we can do it ourselves and not have to send it out, that's going to save us money," Short says.

PRIDE OF OWNERSHIP

It's not often that municipal leaders visit their wastewater treatment plants, but in Tappahannock, town manager Belfield stops by every day. And it's not just for coffee, although he admits the brew is pretty good there. "When I came to the town in 1976, I was a sewer and water inspector for a newly annexed area," he says. "It's a whole lot easier to talk with the operators when you know what they're talking about."

Mangrum says Belfield is very hands-on and "really knows what makes sense at the plant. That's a good thing." Belfield's visits exemplify what he calls "total town involvement" in the new treatment facilities. "We're proud of what we've done here," he says. "The council and the public are behind our efforts. That's the most important piece of infrastructure we have." **tpo**

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Pump resolves maintenance issues

Problem

Mechanical seal failures on 6-inch pumps in lift stations were frustrating Jay Roberts, primary operator at the Bradford (Ohio) Wastewater Treatment Plant. Replacing the proprietary seals took weeks and averaged nearly \$3,000 per pump, severely straining the maintenance budget. Roberts wanted a pump that would warn of impending seal problems, be faster and less expensive to repair, and resist clogging.

Solution

The village purchased a **Barnes 4SHMD 3-inch solids-handling submersible enclosed monovane pump with 25 hp motor from Crane Pumps**. Installing it in the Wise Street lift station required a 4- by 6-inch slide rail adapter to fit the old pump's base elbow, and a MiniCAS adapter relay to connect to the existing control panel.



RESULT

An alarm connection to the plant's SCADA system warns of seal issues. The lift station is trouble-free. Roberts plans to purchase another 4SHMD pump for another lift station. **937/778-8947; www.cranepumps.com**.

Pump eliminates debris and drag

Problem

In the hilly topography of Summit County, Ohio, high-strength waste from medical and day care centers, restaurants, and schools often clogged the more than 100 grinder pumps in 108 lift stations sending flows to two wastewater treatment plants. The most problematic stations choked almost daily. The most notorious was the 1.5 mgd Station 10 with three 80 hp pumps rated at 25 to 75 gpm. Incoming flow cascaded down a sloped wall before reaching the pumps in a trench in the floor.

Solution

Engineers from ITT Water & Wastewater recommended a test of the **Flygt 66 hp N-pump in Station 10**. A 4-inch discharge throat, semi-open impeller, and relief groove in the volute streamline passage of material. The impeller blades with flattened, backswept leading edges sweep solids from the center to the perimeter of the inlet. As the impeller turns, rags and other long stringy material are forced into the spiral-shaped relief groove, helping tug material from the impeller into the volute. A guide pin in the volute pushes solids away from the impeller, enabling them to be pumped out. The design also eliminates debris-induced drag.



RESULT

The test was so successful that the utility installed N-pumps in other stations and plans to add more. Eliminating pump drag led to an average 40 percent energy savings. **704/409-9700; www.flygtus.com**.

Control reduces energy demand

Problem

The Lockport (Ill.) Wastewater Treatment Plant was expanding from 2.3 to 3.4 mgd. Having used technologies from Metropolitan Industries before, city engineers consulted with the company to find additional ways to lower blower energy usage.

Solution

Metropolitan recommended controlling dissolved oxygen (DO) in the six aeration basins with a proportional-integral-derivative (PID) control loop that adjusts blower speed. A motor-operated butterfly valve in the zone header pipe balances the airflow between basins and the treatment zone within each basin regardless of differences in water elevation. The SCADA-remote thermal unit holds the adjustable DO set points for several zones using multilevel, cascaded, PID loop strategy that compensates for BOD, air density, blower efficiency, plant flow, and blower surge mitigation.



RESULT

Plant operators are maintaining an efficient, precise, optimal DO concentration at each aeration chamber. A pilot study by Metropolitan Industries showed an average energy savings of 16 percent. **815/886-9200; www.metropolitanind.com**.

Turbo blower cuts energy costs

Problem

The Little Cedar Bayou Wastewater Treatment Plant in La Porte, Texas, treats about 4 mgd and aerates its basin and tanks with two 25 hp positive displacement blowers. "I figured that it cost a minimum of \$6,500 per year to maintain them," says Billie Brooks, senior operator. The city looked for ways to minimize expenses and improve energy efficiency.

Solution

The city purchased a **Frame 2 high-speed turbo blower from HSI**. The pre-engineered system included compressor, motor, variable-speed motor starter, pressure relief valve, expansion joint, and control cabinet. The HSI blower line is rated at up to 10,000 cfm/25 psi. Each impeller vane configuration matches its own specific volute to optimize aerodynamic efficiency. Impellers at both ends of the shaft counterbalance thrust load in the axial direction to reduce stress or twisting and enhance stability. As the shaft rotates at high speed, the air film formed between it and the bearings achieves friction-free flotation, eliminating the need for lubricants.



The fully enclosed blower does not exceed 85 decibels, and the compact cabinet saves space. No special foundation support is required, and the design offers easy access without overhead cranes. The integrated controls can be upgraded to communicate with all remote operation and monitoring protocols.

RESULT

"The new unit replaced the other two blowers and reduced our maintenance to just changing an air filter," says Robert Banks, plant supervisor. After one year, the unit lowered annual energy cost by almost 35 percent. Based on those savings, the city should realize payback in two to three years. **800/725-6409; www.hsiblowers.com.**

Bypass pumps enhance efficiency

Problem

Metro Vancouver was demolishing a 46 mgd concrete sewer interceptor in Coquitlam, B.C., and needed to bypass the vaults between nine manholes, a distance of 2,800 feet. The project managers contacted Rain for Rent for help.

Solution

Rain for Rent provided two DV-600c 30- by 24-inch Power Prime pumps as primary units and two DV-400c 18- by 16-inch pumps as backups, joined by dual lines of 24-inch fused HDPE pipe 1,800 feet long. The lines split into three runs of 24-inch pipe for the remaining 1,000 feet to reduce friction loss, head pressure, and flow velocity.

Rated at 28,000 gpm, each primary pump produced 96 feet of head, lifted 28 feet, handled 5.25-inch solids, and ran at 87 percent efficiency, saving substantial fuel. The high-flow capacity of the primary pumps allowed the entire setup to fit in a 170-square-foot footprint under an overpass. The 430-gallon integral fuel tank on the primary pumps provided a 22-hour run time. Rated at 16,000 gpm, each backup pump produced 200 feet of head, lifted 28 feet, handled 4.5-inch solids, and had a 100-gallon fuel tank.



RESULT

The pumps' compact design and high capacities meant fewer pumps on the small job site. The bypass system pumped nonstop as Rain for Rent personnel monitored the operation. **800/742-7246; www.rainforrent.com.**

Right-angle speed reducer

Problem

The 35 collector drives for settling tanks at Donald C. Tillman Water Reclamation Plant in Van Nuys, Calif., had maintenance issues that included high-speed-pinion-related failures. Pritpal Jhaj, mechanical supervisor, and Victor De La Rosa of Applied Industrial Technologies in North Hollywood, consulted the engineering department of Sumitomo Drive Technologies.

Solution

Sumitomo engineers reviewed the critical dimensions of the double-extended output shafts on the existing gear motors, then **selected model LHHJS-3B12DBTK-Y1-956:1 Cyclo Bevel Buddyboxes** with cycloidal gear reducers and a single-stage right-angle spiral bevel gearbox in a shaft-mounted design. To eliminate time-consuming motor alignment hassles with the existing motor scoop arrangement, Jhaj and Rosa opted for self-aligning NEMA C-face adapters. They also provided transition bases to adapt the units to the standard foot dimensions.

RESULT

The first six units are in operation, and 20 more are ordered for the next phase of the retrofit. **800/762-9256; www.smcyclo.com.**

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Cake pump system enhances reliability

Problem

The Harpers Ferry and Bolivar (W.Va.) Public Service District Waste Water Treatment Plant used open-air drying beds to dewater biosolids. A front-end loader then dumped the cake into trucks for hauling to a landfill. To comply with regulations mandating more efficient and contained systems, plant supervisor Jimmy Williams ordered a new belt press from Siemens.

Solution

seepex Inc. integrated its progressive cavity pumps into the press to make it more automated.

The BN 30-6LT unit conveys material to the press at up to 2,200 gpm/720 psi. A cost-effective direct flange-mounted drive eliminates the drive casing, elastic coupling, and common baseplate. The drive and rotating unit have plug-in connections for easy maintenance.

Cake as high as 16 to 18 percent solids falls into the rectangular feed hopper of the BTI 17-12 pump. When the cake reaches a certain level, the load cell system activates the pump. Capable of 572 gpm/540 psi, the pump adjusts production as needed, loading cake via piping into the trucks. When the belt stops feeding the hopper, the pump shuts off. Load cells, discharge pressure protection, and run-dry (TSE) and motor overheating protection are connected to a custom control system for easy adjustments and monitoring.



RESULT

"The pumps are running without issues and we're happy with the solution seepex provided," says Williams. 937/864-7150; www.seepex.com. tpo

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The 94 photovoltaic modules at the Madera treatment plant track the sun east to west across the sky daily and north to south as its altitude changes during the year.



PHOTOS COURTESY OF MADERA WASTEWATER TREATMENT PLANT



Nine acres of land made it possible for REC Solar and SunEdison to develop one of the largest dual-axis photovoltaic systems in California at the Madera treatment plant.

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Following the Sun

A DUAL-AXIS SOLAR PHOTOVOLTAIC SYSTEM MEANS A FUTURE OF MAJOR SAVINGS ON ELECTRICITY FOR THE TREATMENT PLANT IN MADERA, CALIF.

By Doug Day

Solar power makes a lot of sense when you live in a community that gets 90 percent of its possible sunshine most of the year. It makes even more sense when you can harness that power without spending any money.

The 1.16 MW photovoltaic system at the Madera (Calif.) Wastewater Treatment Plant is one of the largest of its kind in the state. The joint turnkey project between REC Solar and SunEdison went online in August 2010 and is meeting all expectations.

"We are very happy with the results so far," says Matt Bullis, Madera Public Works operations director. "The data is limited at this point, but we're seeing a savings in the first year of operation."

Located just north of Fresno in the middle of the San Joaquin Valley in the Sierra Nevada mountain range, the 10.1 mgd (design) activated sludge treatment plant has about 10,000 residential, commercial and industrial customers. Bullis expects to generate about 62 percent of the plant's electricity with the solar units.

That will save the city around \$150,000 a year in electricity at today's rates, a 25 percent savings in power costs and 6 percent overall savings to the operating budget that can be used elsewhere to cover rising costs. Over the 20-year contract, the city will save an estimated \$3 million on electricity.

"We are very happy with the results so far. The data is limited at this point, but we're seeing a savings in the first year of operation."

MATT BULLIS

NO COST TO THE CITY

There are 5,200 panels at the plant, grouped in 94 modules of 56 panels each. Together, they generate 2.5 million kWh (2,500 MWh) a year and will offset 47 million pounds of carbon dioxide over the first 20 years of operation.

The 9-acre solar facility is on property provided by the city. SunEdison is the owner and operator and is responsible for maintenance.

It also financed the project, designed by REC Solar. The project was selected in a request for proposal process issued by the Madera City Council in an effort to increase its use of sustainable energy.

"Finding ways to reduce costs for taxpayers while reducing our carbon footprint for our children and grandchildren should be a goal of responsible government at all levels," said Mayor Gary Svanda. "I'm very proud that Madera is leading the way."

Besides providing the land, the city signed a 20-year purchased power agreement with SunEdison. The rates are comparable to those of the local utility, Pacific Gas & Electric, in the first few years. "The real savings is in the fixed escalation rate of 3 percent," Bullis says. "That is significantly less than the anticipated escalation of 5.5 percent in our utility rates. The future is when our big savings come in to play." When the contract ends, the city has the option of buying the facility.

The treatment plant generally uses all the electricity from the photovoltaic system. During the summer, it could generate more power than the facility needs during peak sunlight hours of 10 a.m. to 2 p.m. That extra energy runs the meter backwards, earning the plant credits for off-hour power use.

DUAL-AXIS SYSTEM

A fixed photovoltaic system is the simplest and least expensive type of solar installation. The solar panels are set at a fixed angle to capture as much energy as they can, considering the changing movements of the sun throughout the year. It achieves maximum generation for only a few minutes a year.

The Madera photovoltaic project is a dual-axis system. Automated motors change the tilt and angle of the solar panel modules to follow the sun, maximizing generation throughout the day. The panels move with the sun from east to west, as a single-axis system does, while also tracking the sun as its north/south angle from the horizon changes through the year.

By staying focused directly on the sun, dual-axis tracking increases the electrical output of solar panels by 35 percent over a fixed system and about 20 percent over a single-axis system.

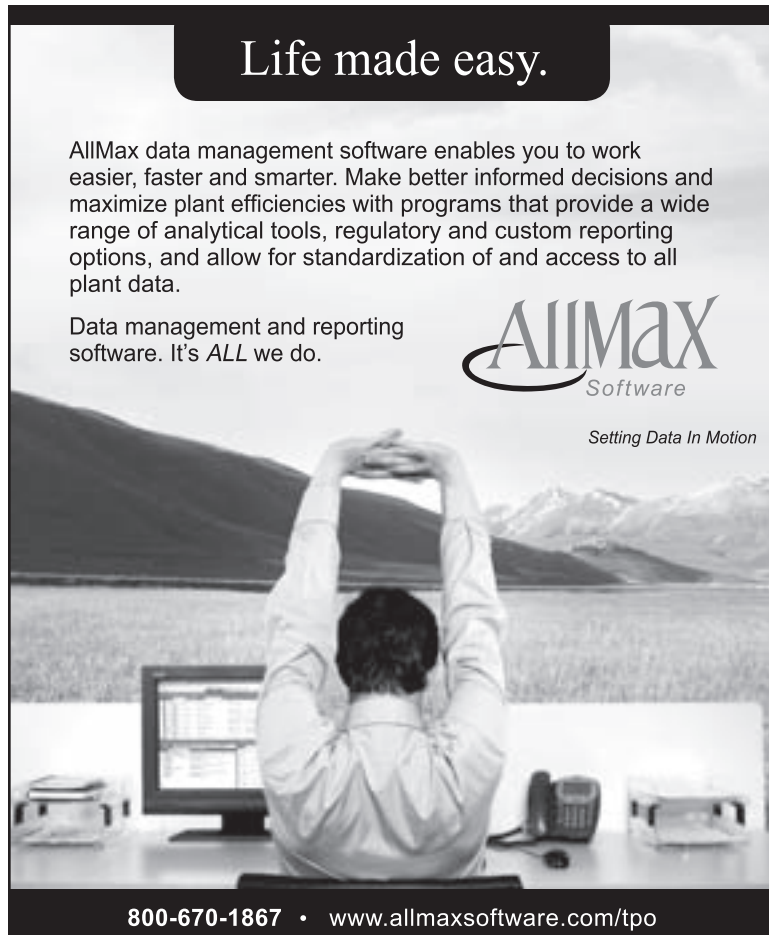
MORE SOLAR?

Beyond solar, there are no other big renewable projects on the horizon for the Madera plant, according to Bullis. The staff considered biogas for electrical generation, but, "We're not producing enough gas to make it worthwhile," he says. "We have to generate more effluent and more gas to make that happen."

Madera's police department and youth center are getting solar systems, and Bullis says a few more units may be added to the treatment plant's system. That would boost electrical production to nearly 80 percent of the plant's demand, meaning even more savings for the next 20 years with no expense. **tpo**



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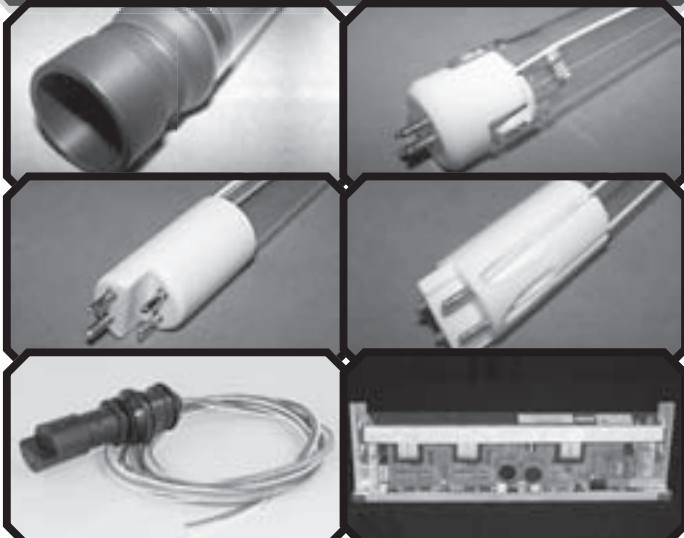


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One of the larger rain gardens, built on a steep slope, is called Prairie Hillside. Deep-rooted prairie grass grows here because it holds significantly more water than ordinary turf.



A blue flag iris stands out in the Nitty-Gritty rain garden, built to handle runoff from the grit building.



PHOTOS COURTESY OF SUPERIOR WASTEWATER TREATMENT PLANT

Soaking Up Knowledge

RAIN GARDENS AT THE TREATMENT PLANT IN SUPERIOR, WIS., HELP CONTROL SITE RUNOFF AND SUPPORT STORMWATER EDUCATION FOR THE COMMUNITY

By Jeff Smith

Using rain gardens to educate the community about rainwater runoff is serious business at the 12 mgd (design) activated sludge wastewater treatment plant in Superior, Wis. Since 2003, the staff has built six rain gardens covering nearly 5,500 square feet, each with a different strategy to demonstrate versatility in location and size to citizens interested in building such gardens on their own property.

“The main purpose of a rain garden is to control rainwater runoff,” says Environmental Services Division research assistant Carrie Sanda, the plant’s community outreach and education coordinator. “They are much more effective in soaking up water than regular turf grass.”

The gardens are named to reflect their locations or other special features. For instance, the 900-square-foot garden built to handle runoff from the grit building is called Nitty-Gritty. Native wildflowers grow along the streetside perimeter and chokeberry shrubs went near the building. Between the two is a showcase of blue flag iris with a mixture of sedge and wildflowers.

“The rain gardens have been one of the things we were able to do to improve our rainwater management and education. They are not only aesthetically pleasing, but practical as well.”

JOHN SHAMLA

Another larger garden built on a steep slope is called Prairie Hillside. Deep-rooted prairie grass grows here because it holds significantly more water than ordinary turf, like Kentucky bluegrass. “It’s about 1,800 square feet and shows that a garden can be built on steep hills like those of nearby Duluth, Minnesota,” says Sanda.

She says it is important for people to know that the more rainwater that stays on their property, the less goes into storm drains. “All the runoff from roofs, parking lots and other impervious surfaces can carry along pollutants that end up in the streams and rivers and finally Lake Superior,” she says. “The more rainwater that stays on the property, whether it’s homes or busi-

nesses, the better it is.”

Stormwater coordinator Diane Nelson was involved in the rain garden project from its inception. “We were awarded a grant from the Great Lakes Commission for Erosion Control and built the first three gardens in large areas of runoff,” she says. “Then we realized that most people wouldn’t need such large gardens, so we built smaller ones in more difficult areas, like the 1,088-square-foot Queen’s Greens garden which gets only brief morning sun, then rests in the shade for the rest of the day.”

Excavating and amending the soil to overcome the poor infiltration rate of the predominantly clay soil in the area was the biggest cost in building the gardens. The treatment plant staff did that work. Local contractor Leaning Pine Native Landscapes developed the designs, provided the plants, and did the initial planting.

“Since then, a lot of the work was done with volunteers from our plant and the community,” Nelson says. For instance, the 300-square-foot Neighborhood Nook garden got its name because community members helped with layout and planning. Bluebell Dell garden was planted by community volunteers taking part in a rain garden workshop hosted by the plant.

As head of the plant’s Public Education, Involvement and Relations initiative, or PEIR program, Sanda takes her message about the benefits of rain gardens directly to the community, attending local events with displays and giving out information. She explains how to design and build a rain garden using native plants that require no mowing and a minimum of maintenance.

A yearly rain barrel and compost bin sale provides another opportunity for Sanda to deliver her message. In 2010, nearly 200 barrels and half as many bins were sold throughout this community of nearly 28,000. An upcoming native tree sale and a stormwater newslet-

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ter will also promote interest in rain gardens.

A separate grant from the Wisconsin Coastal Management Project in 2005 was used to partner with the Superior Middle School to create five rain gardens at the school, each designed and built by students from two sixth grade science classes. "The seeds were harvested from rain gardens at the wastewater plant and grown under lamps over the winter so students could observe their growth," Sanda says.

Tours of the treatment plant also serve as an opportunity to educate. In addition to city officials and the general public, each year Sanda leads ten classes of fifth graders through the treatment plant and gardens. "That's about 350 fifth graders," she says with enthusiasm.

"The rain gardens have been one of the things we were able to do to improve our rainwater management and education," says plant operations manager John Shamla. "They are not only aesthetically pleasing, but practical as well." **tpo**

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AN INNOVATIVE VACUUMING TECHNIQUE HELPS A WASHINGTON STATE SEWER AND WATER DISTRICT RESTORE A PLUGGED GRAVEL FILTER TO QUALITY PERFORMANCE

By Roy Light

The Eastsound Sewer and Water District operates a small (15,000 gpd) recirculating gravel filter system on Orcas Island, Wash. — one of two treatment facilities that serve separate small communities.

When the filter became plugged with sludge after many years through the normal aging process, the district was faced with a costly remediation. Instead, the district staff devised a much simpler solution that cost less than 10 percent of what its engineers had recommended.

SIMPLE SYSTEM

The gravel filter serves the Town of Orcas Village, and the 160,000 gpd activated sludge plant serves the Town of Eastsound, also on Orcas Island. Both treatment systems are septic tank effluent pump (STEP) systems in which primary solids are removed in individual septic tanks owned by residents and maintained by the district.

There are 500 septic tanks in all, amounting to 1,100 residential equivalents. The recirculating gravel filter plant consists of two concrete boxes, each 30 by 50 feet and about 6 feet deep, filled with graded pea gravel about 3.5 mm in diameter with larger support rock on the bottom and drain rock about a foot deep on top.

A 10,000-gallon recirculation tank is pumped to the filters alternately, and the wastewater is distributed over the top. The water flows downward through the gravel and returns to the recirculation tank by gravity.

Because of the district's location on an island, the cost to transport the new material, replace the gravel and dispose of the old gravel and sludge was about \$500,000. Instead, the staff devised a solution requiring only three days of labor and about \$30,000.

A floating ball acts as a valve and releases treated effluent to the contact chamber for chlorination and discharge to Puget Sound. The plant has been in operation since 1989 and produces excellent-quality water with BOD and TSS under 5 mg/l.

About two years ago, the effluent quality began to deteriorate suddenly, and within three weeks the plant was in violation of its permit. On examining the filters, the district staff found a layer of sludge



PHOTOS COURTESY OF ROY LIGHT

Eastsound Sewer and Water staff devised a plan to push a 6-foot-tall by 2-foot-diameter cylinder into the gravel while applying vacuum to fluff the gravel and draw the sludge into the truck for disposal.



By cleaning the media in place rather than replacing the gravel in the filters, the Eastsound Sewer and Water District saved money and labor.

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about a foot thick clogging the gravel and causing the filters to go anaerobic. It first appeared that the only solution was to replace the gravel in the filters.

SEEKING ALTERNATIVES

Because of the district's location on an island, the cost to transport the new material, replace the gravel and dispose of the old gravel and sludge was about \$500,000. Given the size of the plant and the small number of connections (about 60 residential equivalent customers), that cost would have had a major impact on users.

Instead, the staff devised a solution requiring only three days of labor and about \$30,000. It involved cleaning the media in place and returning the plant to operation. In the next two years, the plant has again produced excellent effluent consistently.

The solution was to construct a heavy steel cylinder 6 feet tall and 2 feet in diameter, closed on the top except for two valve openings. This assembly was bolted to the bucket of a large excavator, and the cylinder was connected to the district's septic system vacuum truck. By pushing the cylinder into the gravel and applying vacuum, workers were able to fluff the gravel and draw the sludge out into the truck for disposal.

USEFUL TO OTHERS?

The method required some experimentation and finesse on the part of the operator to get the gravel to loosen and stir, but once the technique was perfected, the process worked well. The wastewater and sludge removed was processed in the activated sludge treatment



The recirculating gravel filter plant consists of two concrete boxes, each 30 by 50 feet and about 6 feet deep, filled with graded pea gravel about 3.5 mm in diameter.

plant. Plant influent was used as the wash water for the process, so no discharge occurred during the cleaning.

There are many small gravel filter plants around the country, and they all eventually plug with sludge. The process Eastsound used to clean the gravel and repair the plant will be useful to others in similar situations.

ABOUT THE AUTHOR

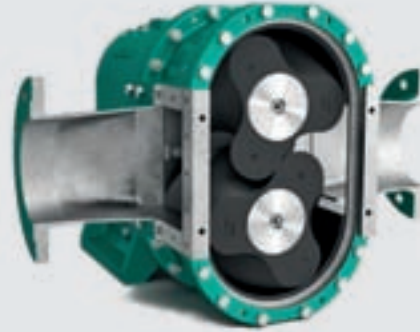
Roy Light is superintendent of the Eastsound (Wash.) Sewer and Water District. **tpo**



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Pumps, Drives, Valves and Blowers

By Scottie Dayton

HYBRID COMPRESSOR

Delta Hybrid oil-free rotary lobe compressor packages from Aerzen USA Corp. combine rotary lobe blowers with screw compressor technologies for flows of 65 to 2,400 cfm/22 psi or 21 inches Hg in air and neutral gas applications. Low-pressure (3 to 5 psi) units use a 3+3 twisted rotor (super-charger) profile, while a 3+4 compressor rotor profile is used for pressures up to 22 psi.



Delta Hybrid rotary lobe compressor packages from Aerzen USA Corp.

The compressor is matched to the required pressure range for optimum efficiency and energy savings. **610/380-0244; www.aerzenusa.com.**



Turbo blowers from APG-Neuros

TURBO BLOWERS

Compact, energy-efficient, high-speed Turbo blowers from APG-Neuros combine aeronautic compressors, bump foil air bearings, and permanent magnet synchronous motors with built-in variable-speed drives and programmable logic controllers to attain flows of 20,000 cfm/15 psi and discharge pressures of 42 psi.

Oil-free, non-contact air bearings need no lubrication or maintenance, reducing operating costs up to 40 percent. The 30 to 700 hp motors transfer electromotive force to the load rather than wind-

ings and slip rings with no physical contact between stator and shaft, offering high-precision speed control.

Dual Core models from 400 to 700 hp combine two cores within the same enclosure, providing 3,000 and 17,000 cfm with a turndown rate of 76 percent. Integrated glycol cooling systems offer higher performance and durability. Units require no external water supply, run at 80 decibels, and experience minimum vibration. **866/592-9482; www.apg-neuros.com.**

SCREW BLOWER

Independent testing of the ZS screw blower from Atlas Copco showed that it lowered energy costs by up to 30 percent. The oil-free positive displacement blower pairs male and female rotors. At the beginning of the compression cycle, air at the inlet fills the flute space. The air is continually compressed as the two parts mesh with each revolution, pushing the air through and out the discharge port. Because the air is compressed internally, the discharge volume is smaller than the suction volume and requires less energy. **866/472-1013; www.encyclopedia.com.**



ZS screw blower from Atlas Copco



Regenerative blower from Atlantic Blowers

LOW NOISE, COMPACT DESIGN

Atlantic Blowers' improved oil-free single- and double-stage regenerative blowers include high-temperature thermal protectors to prevent overloads, double-shielded stainless steel-sealed NSK/SKF/NSN bearings, and 50/60 Hz motors. Tighter tolerances between the impellers and housings increase flow and pressure efficiency.

The motor shaft-mounted impeller eliminates belts, couplings and gears. Lightweight cast-aluminum housings resist corrosion, while the shaft oil seals between the impeller and bearings protect against air contamination. **214/233-0280; www.atlanticblowers.com.**

PRE-ENGINEERED STATIONS

ReliaSource 6x6T aboveground lift station from Gorman-Rupp are 3 feet higher than the 6x6 to accommodate controls such as reduced-voltage solid-state starters and variable-frequency drives. The added space also eases access. The customizable packaged stations have two removable side panels and split doors on the pump suction and control sides. The bottom half opens and the upper gas-shocked and hinged door lifts overhead to serve as an awning. **419/755-1011; www.grpumps.com.**



ReliaSource 6x6T lift station from Gorman-Rupp



ProSeries M4 peristaltic pump from Blue-White Industries

METERING PUMP

The NSF 61-listed ProSeries M4 peristaltic pump from Blue-White Industries has a pump tube assembly with size and material choices for most applications. Its self-loading design makes replacing tubes fast and trouble-free, while the tube failure detection system alerts operators when replacements are required.

Rated at up to 125 psi/158.5 gph, the pumps have a revolution counter with programmable alarm set point and 10,000:1 turndown ratio for low rotational speeds to enhance tube life and reliability. A one-piece junction box with a color-coded terminal block simplifies input and output connections. **714/893-8529; www.blue-white.com.**

MEDIUM-VOLTAGE DRIVES

Ampgard SC 9000 medium-voltage adjustable-frequency drives from Eaton Corporation optimize energy usage by matching consumption to power requirements. The drives can gradually accelerate a pump or motor, extending equipment life. The compact unit is designed for applications that require variable power output.

The fully integrated drive includes an isolation switch, power fuses, main contactor, 24-pulse phase shifting and isolating transformer connected to three-level neutral-point-clamped voltage source inverter technology, using medium-voltage insulated gate bipolar transistor (IGBT) power components.

A modular roll-in/roll-out inverter design reduces mean time to repair and maximizes uptime. The insulation system protects the inverter components from harsh environments while minimizing noise. **877/386-2273; www.eaton.com/sc9000.**



Ampgard SC 9000 drives from Eaton Corporation

REPLACEMENT STATORS

Long-lived replacement Alldur stators from the Colfax Fluid Handling Allweiler brand reduce downtime and increase maintenance intervals on progressive cavity pumps. The chemical composition in the units is matched to the liquid in the pumps, maximizing resistance to mechanical wear even in high-solids wastewater over extended periods. The units handle dynamic loads and have high-impact resilience, high-tensile strength, and high tear-growth resistance, and operate in a wide temperature range. **704/289-6511; www.colfaxcorp.com.**



Alldur stators from Colfax Fluid Handling Allweiler



SGi shaft grounding bearing isolator from Garlock

BEARING ISOLATOR

The SGi shaft grounding bearing isolator from Garlock protect bearings from electrical damage, lubricant loss and contamination. The maintenance-free unit combines a non-sparking bronze labyrinth seal and shaft grounding ring in one unit. It is suited for motors controlled by variable-frequency drives (VFDs) running pumps, fans, high-speed spindles, and other equipment in water and wastewater applications.

The device provides an IP56 non-contact isolation seal that withstands dust and jetting liquids. It withstands operating temperatures from -22 to 300 degrees F and is available for motor shaft sizes from 0.875 to 6 inches in flanged, flangeless, and custom configurations. **800/448-6688; www.garlock.com.**

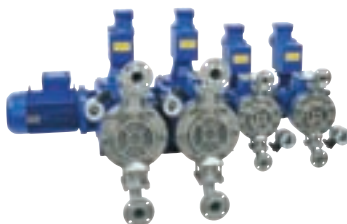
POSITIVE DISPLACEMENT BLOWERS

MB Series bi-lobe or ZG Series tri-lobe aeration blower packages from Eurus Blower are rated for 3,950 cfm/15 inches Hg. The low-vibration, low-noise units have integral-shaft ductile iron impellers, dual splash lubrication, oversized roller bearings, piston ring air seals, and viton lip seals.

Packages include a high-efficiency integrated intake filter-silencer with washable polyurethane filter media, combination base and heavy-duty integrated discharge silencer, V-belt drive and guard with automatic belt tensioning, and vibration dampers. **757/538-1717; www.eurusblower.com.**



MB Series bi-lobe or ZG Series tri-lobe blower packages from Eurus Blower



Bran+Luebbe NOVADOS pumps from SPX Flow Technology

DIAPHRAGM PUMPS

Bran+Luebbe NOVADOS pumps from SPX Flow Technology include leak-free hydraulically actuated double-diaphragm metering pumps and plunger pumps. They process flows from 3.4 ounces per hour to 2,642 gallons per hour at 1,450 psi. A positive diaphragm position control system ensures that the diaphragm cannot be

damaged even under critical conditions such as blocked pipes or closed valves upstream or downstream. The system allows no obstructions in the pump chamber, making the pumps suitable for metering slurries. **800/252-5200; www.spxft.com.**

SCREW BLOWER

The plug-and-play EE-PAC screw blower system from Universal Blower Pac is up to 40 percent more efficient than conventional positive displacement and multistage centrifugal blowers. The screw impellers have internal compression coupled with an electromechanical drive. Units will not surge and have a 5:1 turndown in airflow. An onboard control system enables automatic operation, maintenance scheduling, real-time power consumption, and airflow measurement. Standard models are rated at 3,100 cfm/20 psi, and custom models are available up to 500 hp. **317/773-7256; www.universalblowerpac.com.**



EE-PAC screw blower system from Universal Blower Pac



Double Disc positive displacement pumps from Penn Valley Pump Co.

PD PUMPS

Sludge-handling Double Disc positive displacement pumps from Penn Valley Pump Co. use a trunnion seal that eliminates mechanical seals or stuffing boxes. The design does not rely on close tolerances within the pump chamber to generate flow. That reduces wear and enables the pump to run dry without damage. A repair-in-place hinged housing allows complete servicing without disturbing the piping. **215/343-8750; www.pennvalley**

pump.com.

EFFICIENT BLOWERS

With flows from 300 to 12,000 cfm/18 psi, UBI-TurboMAX turbo blowers from United Blowers are 20 to 25 percent more efficient than positive displacement blowers and multistage centrifugal blowers over their entire 3:1 turndown range, according to the maker. Their efficiency is due to a high-speed motor, air bearings, and a powerful centrifugal compressor design. Models also have a one-third smaller footprint and weigh one-quarter less than standard blowers. Available from 50 to 500 hp, units require 5 to 10 percent of their full load amps to start, operate at 80 to 85 decibels, and do not require belts or lubricants. **800/849-4242; www.unitedblower.com.**



UBI-TurboMAX turbo blowers from United Blowers



NAMUR solenoid valve from Parker Fluid Control Division

SOLENOID VALVE

The high-flow direct-mount NAMUR solenoid valve from Parker Fluid Control Division is designed to provide cost-effective solutions for general-purpose valve actuator applications, including water and sewage. The compact valve has a NAMUR mounting pattern and high-flow rates from 1.2 to 3.0 Cv. A spring return allows fail-safe operation in case of power loss, and a screened exhaust nut protects valve function during outdoor use. An O-ring seal design increases sealing force at higher pressures and offers less breakaway resistance at lower pressures.

The valve has an anodized aluminum body, a stainless steel spool, and brass internal parts. It operates at 30 to 150 psi and at fluid temperature ranging from 32 to 122 degrees F. **800/825-8305; www.parkerfluidcontrol.com.**

(continued)

HIGH-PRESSURE CONTROL VALVE

The HP-60 60,000 psi high-pressure control valve from Badger Meter is engineered for chemical applications. With 17-4 PH alloy (chromium-copper precipitation hardening stainless steel) and solid Stellite innervalve assembly, the valve withstands intense pressure and provides moderate corrosion resistance. It can be used for flow control and as a Class IV shutoff valve. **800/876-3837; www.badgermeter.com.**



HP-60 control valve from Badger Meter

SLUDGE GRINDER



Sludge Monster grinders from JWC Environmental

Inline Sludge Monster grinders from JWC Environmental fit 4-inch pipes and use an 8-inch cutter stack with dual shafts to shred rags and debris, protecting sludge pumps, heat exchangers, centrifuges and other dewatering equipment from clogging. The low-speed, high-torque design produces three times the torque and five times the cutting force of high-speed macerators, but uses 27 percent less energy. The grinder has a 2 hp gear motor, processes 274 gpm, and can be used in scum lines. Six flush ports also are available. **800/331-2277; www.jwce.com/sludge.**

CHECK VALVES

Requiring no power source or maintenance, LarFlex check valves from Larox Flowsys control backpressure from abrasive, aggressive, corrosive, and other demanding slurry applications. Available in 1 to 90 inches, the valves will not rust, freeze, erode, or fatigue, and handle large obstructions without jamming. Their ribbed internal structure withstands heavy backflow, yet is sensitive enough to detect extremely low-cracking pressure. The elastomeric sleeves are high-grade rubber. **410/636-2250; www.larox.us.**



LarFlex check valves from Larox Flowsys

VALVELESS PUMPS

Rotary lobe pumps from Boerger are valveless, self priming, positive displacement pumps that use a timing gear and steel, stainless steel, or Teflon rotors with no preferred direction. The maintenance-in-place design allows quick and convenient replacement of all fluid-wetted parts without



Rotary lobe pumps from Boerger

removing the pipe or drive unit components. **612/435-7341; www.boerger.com.**

CAVITY PUMP

The 2000 Model G3 progressing cavity pump from Moyno handles semi-dry, high-solids or caked substances. It has a series of finger mechanisms mounted on two counter-rotating shafts. Positioned above the pump's auger feed, a bridge breaker device prevents accumulation of



2000 Model G3 progressing cavity pump from Moyno

material in the pump throat. It is independently driven for flexibility in controlling pump and bridge breaker speed. The pump can pass particles up to 1.5 inches and handle viscosities over 1 million cps. **800/486-6966; www.moyno.com.**

pH CONTROL

The CTS chemical treatment pump from Fluid Metering delivers caustic soda and other pH-adjusting chemicals to distribution pipes to retard acidic damage. A single rotating, reciprocating ceramic valveless piston delivers 15 gallons/hour with 1 percent drift-free accuracy. Pumps, self-priming to 125 psi, come in 15.5- by 13.5- by 7-inch NEMA 4X wall-mount or standard enclosures weighing 14 pounds. Units operate on less than 100 watts. **800/223-3388; www.chloritrol.com.**



CTS chemical treatment pump from Fluid Metering

CHOPPER PUMPS



Chopper pumps from Vaughan Co.

Self-priming Chopper pumps from Vaughan Co. handle flows of 6,000 gpm. A high-efficiency impeller allows priming up to 24 feet, and the design eliminates plugging and the need for a comminutor or screens. **888/249-2467; www.chopperpumps.com.**

DIAPHRAGM PUMP

The PTX301D diaphragm pump from Subaru has 3-inch suction and discharge ports and delivers up to 250 gpm at up to 21 psi. It has a maximum suction lift of 25 feet and a maximum lift head of 49 feet.

The design isolates the pump mechanism from the fluid, making it well suited for pumping abrasives, slurries, recirculated water and solids up to 2 inches. Because there are no moving parts, the pump can run dry indefinitely. The positive displacement-type, hermetically sealed compression chamber prevents loss of gases and liquids, while the large shock-reducing air cushion chamber decreases shock on the hoses. The pump is powered by a 7 hp Subaru EX21 overhead cam air-cooled four-cycle gasoline engine. **847/540-7300; www.subarupower.com.**



PTX301D diaphragm pump from Subaru

PLUG VALVES



Cam-Centric plug valves from Val-Matic Valve & Mfg. Corp.

Cam-Centric quarter-turn plug valves from Val-Matic Valve & Mfg. Corp. allow cost-effective, low-torque actuation for shutoff and throttling. The resilient-faced, fully encapsulated ductile iron molded plug, corrosion-resistant 316 stainless steel shaft bearings, and welded overlay nickel seat assure a tight seal and long life. The concentric design eliminates the need for lift and turn actuation.

Features include Buna-N Grit-Guard seals that keep media from entering the upper and lower bearing journals, and V-type packing that is field adjustable and replaceable without removing the actuator. Designs including threaded, flanged, mechanical joint, 100 percent ported, 100 percent ported three-way, and high pressure. The valves are sized from 1/2 to 54 inches. **630/993-4056; www.valmatic.com.**



PERISTALTIC PUMPS

Verderflex peristaltic hose and tube pumps from VerderGPM range from a few millimeters to 5 inches in diameter. Rated at 395 gpm/235 psi, Verderflex hose pumps have a close-coupled drive that simplifies maintenance and minimizes footprint. The hose construction adds fatigue strength for longer life, while the rigid

Verderflex peristaltic hose and tube pumps from VerderGPM

pump housing disperses heat. A simple hose connection retains the hose entirely within the pump casing eliminating leaks.

Rated at 0.001 to 7.1 gpm/30 psi, the SMART series of peristaltic tube pumps incorporate low-friction rollers, enabling it to run dry, self-prime, and handle viscous or abrasive liquids. Each rotation displaces a constant amount for accurate dosing. The continuous tube requires no seals, making the pumps leak-free and hygienic. **877/783-7337; www.verdergpm.com.**

INDUCTION PUMP

The SWEET submersible effluent treatment package from Global Treat uses a pump and venturi to recirculate process water through the ejector, creating a vacuum that draws in chlorine gas or sulfur dioxide. The process saves on water consumption and improves chemical efficiency. **800/370-4410; www.globaltreat.com.**



SWEET effluent treatment package from Global Treat



HST line of compressors from ABS

TURBO COMPRESSORS

The HST line of single-stage centrifugal high-speed turbo compressors from ABS were developed specifically for aeration applications. Power ratings range from 93 to 536 hp and airflows from 540 to 10,400 scfm. They include induction and permanent magnet motors for high overall efficiency. **800/525-7790; www.absgroup.com.**

HORIZONTAL-END PUMPS

Model CRN-H and CRE-H stainless steel horizontal-end suction pumps from Grundfos Pumps are made for washing and cleaning, water treatment and other applications. Both bolt directly into the piping and pump case footprint of a traditional ANSI pump. They are available with variable-speed functionality. **913/227-3400; www.grundfos.us. tpo**



Model CRN-H and CRE-H pumps from Grundfos Pumps



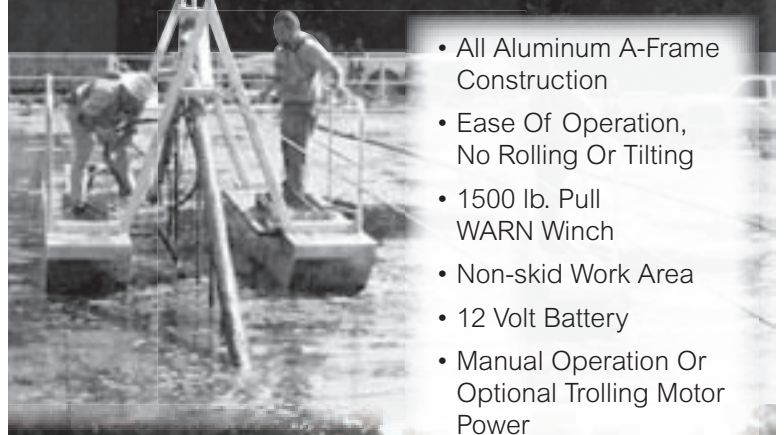
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PATENT PENDING



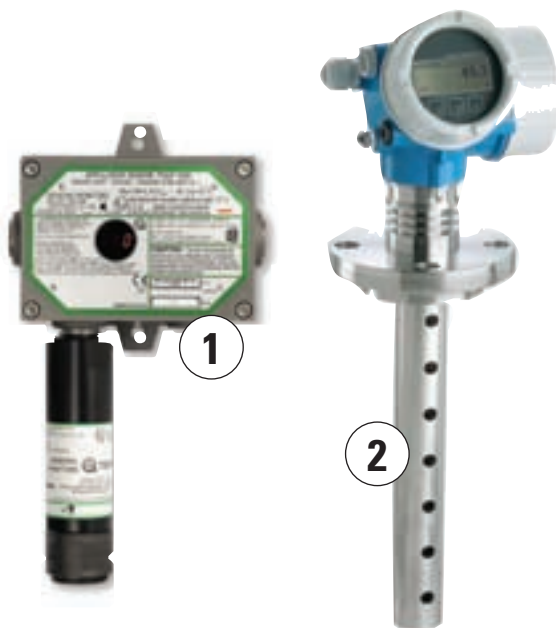
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1. GENERAL MONITORS INTRODUCES TS4000H GAS DETECTOR

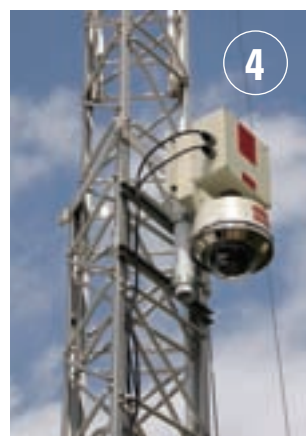
The TS4000H gas detector from General Monitors is made to continually monitor for hydrogen and can detect hydrogen at 0-500 ppm. The unit has an electrochemical hydrogen sensor with T90 response time of less than 30 seconds and minimal zero shift across its operating environmental conditions. Features include 4-20 mA output, 8-amp relays, HART or Modbus communications and a 3-digit LED display. The system also displays fault codes for troubleshooting and provides complete status to the control room. All electronics are enclosed in an explosion-proof housing. **800/330-9161; www.generalmonitors.com/products/toxic_ts4000h.html.**

2. ENDRESS+HAUSER INTRODUCES FMP55 LEVEL TRANSMITTER

The Levelflex FMP55 multiparameter level transmitter from Endress+Hauser can measure both the overall level of a liquid and the interface between two liquids. The transmitter automatically switches between technologies. Capacitance is not affected by emulsion or rag layers in interface applications. The transmitter has a multi-echo tracking algorithm that can track up to 20 tank echoes simultaneously as the tank level rises or lowers. The level sensor has a measuring range of up to 33 feet. The transmitter offers 4-20 mA with HART output signal plus an optional second 4-20 mA output. **317/535-1329; www.us.endress.com.**

3. ADS INTRODUCES XILOG PRESSURE, DATA LOGGER

The XiLog+ wireless pressure and data logger system from ADS LLC is designed to monitor water distribution networks and is available in single to nine-channel models for use with a variety of sensors. The logger can be programmed, downloaded and configured to alarm via wireless communication. Alarms also can be received via the included product software. Applications include district measurements, pressure measurements, water consumption monitoring, PRV performance monitoring and network modeling. The transmission period can be set from 15 minutes to 24 hours on demand. **800/633-7246; www.adsenv.com.**



4. IVC ADDS LONGWATCH SOFTWARE TO CAMERAS

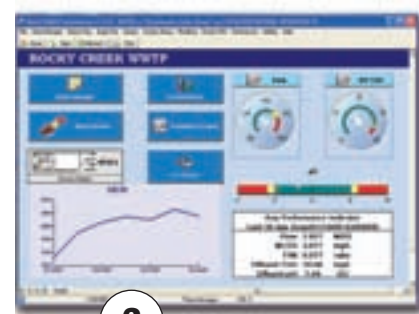
Industrial Video and Control has added Longwatch video monitoring software to its latest line of industrial cameras. The software runs on a stand-alone PC or can be integrated with most HMI/SCADA platforms, enabling automation and process control operators and engineers to view live camera data on their HMI screens, pan-and-zoom cameras from the HMI, review archived video, link archived video with historian data and record what operators saw and did during an event at their HMI screens. **781/255-7400; www.longwatch.com.**

5. BINMASTER INTRODUCES BINVIEW MANAGEMENT SYSTEM

BinView inventory management system from BinMaster Level Controls provides real-time bin level monitoring for solid materials over the Internet or a company LAN or VPN. The system features SmartBob2 or SmartBob-TS1 sensors mounted on the bins, a wireless or wired data communications network, a gateway to provide connectivity to a personal computer or IP network, and data collection software that can be viewed securely by an authorized individual. **800/278-4241; www.binmaster.com.**

6. HACH RELEASES 7.1 MANAGEMENT SOFTWARE

Version 7.1 Water Information Management Solution software from Hach Co. offers expanded electronic EPA filing. An online subscription-based option is available. Designed for the drinking water and wastewater industries, the software integrates data into a central, secure database for easy monitoring, analysis, reporting and predictive modeling. **800/227-4224; www.hach.com. tpo**



product spotlight



Pakscan P3 from Rotork Controls



Wireless Valve Actuator System Eliminates Cable

By Ed Wodalski

The Pakscan P3 modular control system from Rotork Controls provides a wireless network for Rotork valve actuators, eliminating wiring in new installations and retrofits. The system operates on the 2.4 GHz frequency and has a line-of-sight operating range of 70 meters indoors and 1,000 meters outdoors.

Developed for the oil and gas industry, traditional two-wire technology was adopted by the wastewater market in the 1990s, says Howard Williams, vice president-controls. "Before then, many plants didn't have a centralized control room. A valve operation involved someone walking up to the valve and pressing a button to actuate it. If you wanted to control the valve from a remote location, you had to hard-wire the actuator."

In 1985, the first two-wire control system replaced these wires with a twisted shielded pair of cables running in a daisy chain configuration from actuator to actuator. This allowed full operational control of each actuator in the loop and gave access to asset management data stored within each actuator. "Basically, the plant operator could see what was going on inside the actuator from the control room," Williams says.

A wireless system eliminates the expense of wiring. "At plants that have existing hardwired systems and are undergoing renovation, the savings from a wireless system can be significant," Williams says. "Existing buried conduits are often corroded. The control wiring is beyond reuse and the cost of excavating and replacing is high."

A plant with an existing Pakscan two-wire network can add a wireless segment to control any new actuators by installing a wireless module to communicate with any new wireless-equipped actuators. The new actuators will operate wirelessly alongside the existing wired unit.

The wireless system uses a series of antennas to relay data from the field unit inside the actuator to the master station. The system works as a mesh network, which means multiple actuators communicate through multiple paths, providing redundancy. "If the normal traffic route between two actuators is blocked, the network finds another path through neighboring actuators to continue communications seamlessly," Williams says.

Web pages built into the system enable control room operators to access and extract information such as actuator data logger and configuration files, observe changes in the operation of the valves, and eliminate downtime. Multiple security measures protect the system against malicious and accidental interference. 585/247-2304; www.rotork.com. tpo

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people/awards

Samuel Davis, electronics technician with U.S. Water, working at the Florida Government Utility Authority's Seven Springs Wastewater Treatment Plant in Holiday, Fla., received a Placard of Appreciation from U.S. Water to recognize his efforts with plant upgrades, electronic devices, and SCADA deployment, all of which led to improved plant efficiency. He also received a dinner gift card and was recognized in a presentation ceremony with his colleagues.

The California Water Environment Association-San Diego Section awarded the **City of Escondido** wastewater facility and staff three awards of excellence. The city's Hale Avenue Resource Recovery Facility was awarded the Plant of the Year Award 2010; Sarah Hooper, operator at the HARRF, won the Operator of the Year Award; and Christina Moran, associate chemist at the city's HARRF Laboratory, won the Laboratory Person of the Year Award.

TPO welcomes your contribution to this listing. To recognize members of your team, please send notices of new hires, promotions, service milestones, certifications or achievements to editor@tpomag.com.

education

Kentucky

The Kentucky Water and Wastewater Operators Association has these courses:

- Aug. 17 – Confined Space, Bowling Green
- Aug. 18 – Confined Space, Beattyville

Visit www.kwwoa.org.

Michigan

The Michigan Water Environment Association has these courses:

- Sept. 8 – Collections, Bath
- Sept. 27-28 – Biosolids, Kalamazoo

Visit www.mi-wea.org.

North Carolina

The North Carolina-American Water Works Association has these courses:

- Aug. 11 – Back to the Basics, Greenville
- Sept. 20 – Safety, Clemmons

Visit www.ncsafewater.org.

Ohio

The Ohio Water Environment Association has a Plant Operations course in Lewis Center Sept. 21-22. Visit www.ohiowea.org.

Pennsylvania

The Pennsylvania Water Environment Association has these courses:

- Sept. 14 – Securing Wastewater Treatment Facilities, Camp Hill
- Sept. 22 – Securing Wastewater Treatment Facilities, Hamburg

- Sept. 23 – Securing Wastewater Treatment Facilities, Pittsburgh
Visit www.pwea.org.

Texas

The Texas Water Utilities Association has these courses:

- July 18 – Utilities Management, Carrollton
- July 19 – Utilities Calculations, Gatesville
- Aug. 9 – Pumps and Pumping, Carrollton
- Aug. 15 – Pumps and Pumping, Corpus Christi
- Sept. 12 – Safety, Corpus Christi
- Sept. 13 – Utilities Calculations, Carrollton
- Sept. 14 – Management, Corpus Christi
- Sept. 19 – Calculations, Corpus Christi
- Sept. 20 – Wastewater Collection, Victoria

Visit www.twua.org.

The Water Environment Association of Texas has a course on Capacity, Management, Operation and Maintenance – Proactive Approach, Aug. 11-12 in Austin. Visit www.weat.org.

Wisconsin

The Wisconsin Department of Natural Resources has these courses:

- July 14 – Excavation “Competent Person” Safety, Plover
- July 28 – Permit-Required Confined Space Entry, Ashwaubenon
- July 28 – Collection Systems, Marshfield
- Aug. 18 – Confined Space Entry Hands-On Training, Plover

Visit www.dnr.state.wi.us/org/es/science/opcert/training.htm. **tpo**

TPO invites your national, state, or local association to post notices and news items in the Worth Noting column. Send contributions to editor@tpomag.com.

CALENDAR OF EVENTS

July 10-13

Georgia Association of Water Professionals' Annual Conference & Expo, Savannah International Trade & Convention Center, Savannah. Visit www.gawponline.org.

July 21-22

Nebraska Water Environment Association's Heartland Operators Conference, Holiday Inn, Kearney. Call 402/228-5221 or visit www.ne-wea.org.

July 31-Aug. 3

Water Environment Federation Energy and Water 2011: Efficiency, Generation, Management and Climate Impacts, Hyatt Regency McCormick Place, Chicago. Call 703/684-2441 or visit www.wef.org.

Aug. 1-2

Virginia Water Environment Association Annual GLP Conference, Omni Charlottesville Hotel. Visit www.vwea.org.

Aug. 30-Sept. 1

Kansas Water Environment Association and Kansas Section-American Water Works Association's Annual Joint Conference, Capitol Plaza Hotel, Topeka. Call 785/357-4780 or visit www.kwea.net.

Sept. 11-18
Pacific Northwest Clean Water Association Building Professional Excellence Conference, Hilton Vancouver (Wash.). Call 208/455-8381 or visit www.pncwa.org.

Sept. 14-15

Kentucky Water and Wastewater Operators Association Fall Conference. Visit www.kwwoa.org.

Sept. 15-16

New York Water Environment Association 2011 Science and Technical Conference, Hotel Thayer, West Point. Call 315/422-7811 or www.nywea.org.

Sept. 25-27

The Water Environment of Ontario National Residuals and Biosolids Conference, Centre des Congres, Quebec City. Visit www.weao.org.



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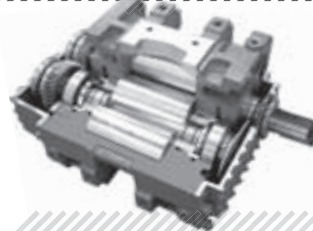
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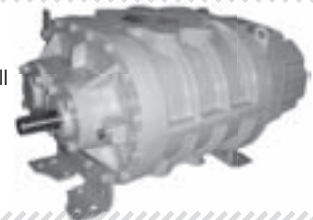
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Suomi Joins Gorman-Rupp as District Manager

Chris Suomi joined the Gorman-Rupp Co. as central district manager-engineered systems. Based in Wisconsin, he will cover North and South Dakota, Minnesota, Wisconsin, Iowa, Nebraska, Kansas, Missouri, Illinois, Indiana, Michigan, Ohio, Kentucky and Tennessee. Suomi has 15 years experience in the municipal market.



Chris Suomi

Staco Energy Names Lewis Regional Sales Manager

Staco Energy Products Co. named Michael Lewis central regional manager. Based in St. Louis, Lewis has 20 years experience in the power quality industry and is a graduate of the University of Illinois-Springfield.



Michael Lewis

Hach's BIG Picture Contest to Award \$140,000

The Hach Co.'s See the BIG Picture contest will award \$140,000 in equipment to municipal wastewater plants and industrial sites treating wastewater in the United States. The winners will be announced at WEFTEC 2011 in Los Angeles on Oct. 18. The Fan Favorite will be announced Nov. 7. Hach will award \$50,000 in equipment to a municipal site, \$50,000 to an industrial site and \$40,000 to the fan favorite based on voting at www.hach.com/bigpicture. Contest entries must be submitted by Aug. 31. Submissions must be either a video or PowerPoint.

JDV to Provide Baleen Filter in U.S.

JDV Equipment Corp. will supply the Baleen Filter to the U.S. market. Inspired by the baleen whale, the system can screen from 500 to 100 micron through a combination of high-pressure, low-volume sprays that dislodge material from the filter screen media, while sweeping away material for collection.

Huber Technology Names Hicks President

Huber Technology Inc. has named Dana Hicks company president. He has an extensive background in global business development and has been involved in growth and strategic initiatives with an emphasis on global markets and industries. Hicks has experience in sales, marketing, strategic planning, operations, analysis and process improvements. He has a bachelor's degree in industrial systems engineering from the Georgia Institute of Technology and studied as an exchange scholar at the Technical University of Berlin (Germany). He completed management training at Allen-Bradley Management Institute as well as Northwestern University, Kellogg Graduate School of Management. **tpo**



Dana Hicks

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