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DEDICATED TO MUNICIPAL WASTEWATER PROFESSIONALS
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FEBRUARY 2012

Kevin Miller
Plant manager
Roswell, Ga.

It's All About *Control*

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on the cover

The treatment processes at Johns Creek Environmental Campus are largely underground, making control a special challenge. The new 90,000-square-foot treatment and recycling facility is designed to be odorless and noiseless. Plant manager Kevin Miller oversees all aspects of the 3 mgd facility. (Photography by Collin Chappelle)

tpo

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It Takes a Community

THERE'S MORE TO A CLEAN-WATER PLANT THAN THE DESIGNERS, THE EQUIPMENT, AND THE PEOPLE WHO RUN IT. THE MISSING COMPONENT OFTEN IS THE PEOPLE WHO FUND IT.

By Ted J. Rulseh, Editor

Every now and then in talking to people in the profession, I run across an idea that should have been obvious to me, but wasn't, and so seems worth sharing. Sometimes its not so much the idea itself as the way the person presents it.

I picked up such an idea in speaking with Bob Martin, superintendent of the Water and Wastewater Department in South Lyon, Mich., (whose plant will be profiled in a future issue of this magazine). And it fits well with our "In My Words" feature in this edition, involving Marian Galbraith, mayor of Groton, Conn.

Martin managed to convey with great clarity where the credit belongs for the award-winning success of South Lyon's facility. It doesn't all belong to him. It doesn't even all belong to his eight co-workers. It also belongs to the people of the community and the elected officials who represent them.

After all, he said, without the community's support, and without the community's pride in the quality of water leaving the outfall, the plant's accomplishments wouldn't be possible. It's an enlightened view.

TAKING NOTICE

Typically, the work clean-water operators do is, to paraphrase a famous speech, little noted nor long remembered. But think of what happens when good leaders manage to cultivate awareness and understanding between plant personnel, community leaders, and rank-and-file citizens.

Suddenly, plant operators appreciate how the people in all those homes and businesses along the streets pay for the facility and for the jobs they have, and so become even more dedicated and conscientious. And the people, in turn, may give more than a passing thought to the men and women who run the plant and take care of the sewers, and become more willing to support it when it's time to pay for an upgrade.

It's an atmosphere of mutual respect that can only lead to good things. Deep down, everyone in the clean-water profession knows this. It's simply worth bringing it into the clear light of day once in a while, and Bob Martin did a great job of that.

MAYOR AT WORK

And that leads to Groton's mayor. Who can play a more important role in creating this atmosphere of respect than a city's most visible official? Just look at what Atlanta mayor Shirley Jackson did for her city, championing a very expensive yet absolutely necessary upgrade of the sewer system, in the process becoming known as the "sewer mayor," and carrying the title with pride.

Mayor Galbraith of Groton didn't do anything that dramatic, but she did show by example that the treatment plant and its operating team are incredibly important. She took a full day out of her schedule to do job shadowing at the plant — not just taking a tour or standing around watching, but actually pulling water samples, taking instrument readings, and doing all sorts of tasks plant staff members handle daily.

Typically, the work clean-water operators do is, to paraphrase a famous speech, little noted nor long remembered. But think of what happens when good leaders manage to cultivate awareness and understanding between plant personnel, community leaders, and rank-and-file citizens.

In the interview printed in this issue, she tells why it was important for her, as the city's chief executive, to understand the people at the clean-water plant, the equipment they use, and the issues that challenge them.

What she didn't mention, yet is still abundantly clear, is how that understanding will make her a more effective advocate with the public at times when the plant needs improvements for which the public must pay.

ALL TOGETHER NOW

So there's the idea. This business of clean water involves everyone. It's not just a job for the men and women at the end of the big pipe. It's everyone's job, one way or another, whether manning the SCADA system at the plant, voting for the bond issue for the new aerobic digesters, or sitting at the dining room table writing that quarterly check for the water and sewer bill.

Such a simple idea, yet so powerful. **tpo**

Less Volume, Less Cost

AN ENZYME FORMULATION HELPS A SMALL WASHINGTON TREATMENT PLANT REDUCE BIOSOLIDS VOLUME AND CUT HAULING COSTS SUBSTANTIALLY

By Scottie Dayton

The Mission Beach Wastewater Treatment Plant in Marysville, Wash., spent more than $100,000 per year transporting biosolids every few days to the Class A compost facility at the La Conner Wastewater Treatment Plant.

"It's a 60-mile round trip, fuel averages $114 per day, and the fee is $330 per load," says plant manager Cliff Jones. "We own the 3,300-gallon tanker and it's our driver, but the trips take him away from his other duty of pumping septic tanks."

The plant has a dewatering screw press from Somat Co., but the fees for delivering cake to facilities near Everett or Seattle were two and three times higher. "We can't land-apply because we're not set up for 503 regulations," says Jones. "Furthermore, the plant is on Tulalip Tribal lands, and the tribal membership told us that biosolids must be removed from the reservation."

Looking for ways to minimize biosolids production, Jones turned to BiOWiSH-Aqua FOG, a biocatalyst distributed by Green Bio Solutions. The company agreed to provide all materials for a four-month pilot project — the product's first test at a wastewater treatment plant.

The enzymes and cofactors in BiOWiSH-Aqua FOG accelerate the breakdown of organic waste, reducing nutrients to nitrogen and oxygen.

"In 2010, a year before the project, we hauled 148 loads of biosolids," says Jones. "Using BiOWiSH, we expect to haul 100 to 105 loads for 2011."

ADD WATER AND MIX

Opened in 1993, the 616,000 gpd (design) activated sludge treatment plant has an average flow of 200,000 gpd from 3,200 residential customers. Effluent discharges to Puget Sound. Sludge is wasted to an aerated digester tank for decanting and removal.

BiOWiSH, a blend of enzymes and cofactors that assist in biochemical transformations, acts like a catalyst, accelerating the breakdown of organic material and reducing odors. The enzymes digest solids, reducing them to nitrogen and oxygen.

Green Bio Solutions delivered two 55-gallon drums, set up at the headworks. One drum lid held an aquarium aerator and the other a 1/30 hp peristaltic dosing pump. No advance preparation was necessary. "The startup dose was two 2.2-pound packages of product per day for a week," says Jones. "After that, it was one pack per day."

Audrey Charles, laboratory technician II, prepared the mixtures.

PHOTOS COURTESY OF GREEN BIO SOLUTIONS

Audrey Charles, laboratory technician II, empties a 2.2-pound package of BiOWiSH-Aqua FOG biocatalyst into the mixing drum.

She emptied the packets of freeze-dried enzymes into a drum, filled it with water, put on the lid with the aerator, and allowed the solution to mix for 24 hours. The core water temperature, 45 to 50 degrees F, was too cold for the enzymes, so Green Bio Solutions suggested wrapping barrel heaters around the drums to keep the liquid at 60 to 70 degrees.

The pump on the second drum dosed a few cubic centimeters of solution into the oxidation ditch with each pulse, distributing 55 gallons over 24 hours. "At startup, we kept the mixed

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liquor suspended solids at 2,200 to 4,500 mg/l to provide enough activity to jump-start the process," says Jones. "Now we try to keep it at 2,700 to 3,300 mg/l."

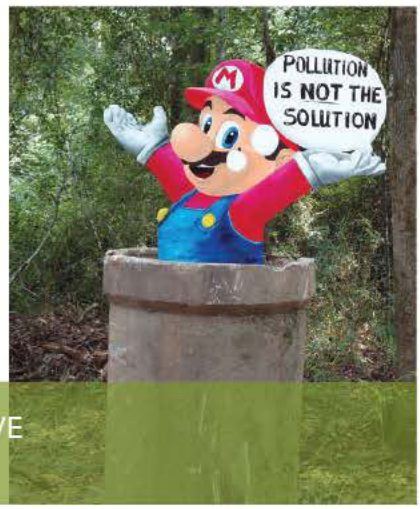
MINIMAL MAINTENANCE

During the first three weeks of the project, Jones watched TSS numbers edge toward the plant's limit. "The rise in turbidity scared me," he says. "Our fecal coliform also increased, from zeros and ones to nine and 10 CFU per 100 ml. Then all of a sudden at the end of the third week, the numbers began going back down."

> "We never expected to make major dollars at the end of the year. The whole idea was to save a little bit over a long time. When you extend those savings over 10 years, that's a substantial amount for our small operation."
>
> **CLIFF JONES**

Jones assumed that the spike was due to enzymes attacking the accumulated grease in the plant and sending it downstream. When the aquarium aerator wore out, Jones upgraded to a Gast air compressor rated for 24-hour operation at 0.2 cfm/10 psi.

Based on savings recorded to date, Jones projects savings of $20,000 to $30,000 annually through reduced biosolids volume, resulting in a 12-month payback. "We never expected to make major dollars at the end of the year," he says. "The whole idea was to save a little bit over a long time. When you extend those savings over 10 years, that's a substantial amount for our small operation." tpo



PHOTOS COURTESY OF SHARON KELLY

On a Shoestring

THE PLANT TEAM IN PERRY, GA., PULLS TOGETHER WITH ARTISTRY AND CREATIVE RECYCLING TO CREATE A NATURE WALK ON THE GROUNDS FOR THE PUBLIC

By Jeff Smith

Creativity played a big part in the plan to upgrade the landscape and beautify the surroundings of the wastewater treatment plant in Perry, Ga.

While many facilities depend on local landscape architects or other professionals to lead the way, personnel at this 3 mgd activated sludge plant looked to one of their own to provide the vision. That creativity revealed itself in the creation of an entire nature walk area that serves to educate and entertain visitors to the plant.

ABOVE LEFT: Chad McMurrian with his painting of the plant operations building, which hangs in the manager's office. UPPER RIGHT: The goldfish pond is plant manager Sharon Kelly's pride and joy. LOWER RIGHT: McMurrian painted characters Mario and Luigi of Nintendo fame on 2- by 3-foot wooden cutouts. Each one has a narrative bubble. Mario and Luigi are post-mounted along the trail in front of strategically located concrete culverts to appear as though they are exiting a tunnel, much as they appear in the video game.

ARTIST DRIVEN

"The whole idea started slowly with a brainstorming session," says plant operator Brandon Lewis. "Our assistant plant manager, Chad McMurrian, is very artistic and paints as a hobby. He got things rolling by first painting a canvas that depicts our main operations building."

Plant manager Sharon Kelly was so impressed that she has the canvas hanging in her office for all to see. "Chad's love for the environment came early in life, with his passion in bass fishing as a young boy, and now his profession in water and wastewater treatment," says Kelly. "It's evident from his creative artwork and his devotion to the industry that he is enthusiastic about educating the public and protecting the environment for our future generations."

McMurrian has since painted characters Mario and Luigi of Nintendo fame on 2- by 3-foot wooden cutouts. Each one has a narrative bubble, one of which says, "Pollution is not the solution," while the other says, "Save our rivers and streams." Mario and Luigi are post-mounted along the trail in front of strategically located concrete culverts to appear as though they are exiting a tunnel, much as they appear in the video game.

LITTLE BY LITTLE

From that time on, construction of the nature walk steadily progressed, but without any tight schedule. "Whenever anyone in the plant had time, and particularly our line maintenance supervisor, Ryan Bode, or lead supervisor Randy Engram, plant staff pitched in to work on the trail," says Lewis.

The walking surface has been kept as natural as possible with grass, compacted leaves and soil. Gravel was used in low-lying areas and at the approach to the two bridges that cross some wetlands. Lewis says that the bridges are sturdy and wide enough to handle an ATV.

The trail itself varies from 15 feet to 25 feet wide. It meanders through some 200 yards of magnolias, oaks, birches, maples and other natural growth to the plant's receiving stream, Big Indian Creek. Along the way, and hanging from one of several canopies formed by the trees, is an owl McMurrian painted and whose narrative bubble says, "Give a hoot – Don't pollute!"

Near the trail's end is a deer feeder with a nearby motion-activated wildlife camera. Lewis says lots of other animals appear along the path and are sometimes caught on camera. A tire swing hangs from another tree farther down the trail near some duck houses the staff built and installed. And a crawfish trap is submerged in Big Indian Creek at the end of the trail.

CREATIVE APPROACH

Creativity and innovation also helped fund the project, because no direct dollars were spent to acquire products or labor. The materials were all unused resources, like scrapped pieces of wood from various projects and rocks and gravel from an abandoned trickling filter. The concrete culverts were recovered from a nearby lowland area where they had been dumped years ago. Otherwise, materials like the liner for the fish pond were donated.

And, of course, the artwork was

Share Your Ideas

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donated by McMurrian. "We are extremely proud of what the entire team has put together at the Perry Wastewater Treatment Plant and how Chad has been able to capture that in numerous pieces of artwork for all to enjoy," says Kelly.

The fish pond near the end of the trail is a particular source of pride to the staff, because its population of goldfish and colorful koi are nurtured by the flow of effluent on its way to Big Indian Creek.

"Chad's love for the environment came early in life, with his passion in bass fishing as a young boy, and now his profession in water and wastewater treatment. It's evident from his creative artwork and his devotion to the industry that he is enthusiastic about educating the public and protecting the environment for our future generations."

SHARON KELLY

Lewis says the purpose of the nature trail is to entertain visitors to the plant, educate the public about the wastewater process, and build awareness of the environment. The plant staff conducts tours often for the general public and for students at local schools.

Says Lewis, "We're proud of our job and we want the citizens to know what we are doing for them and the environment." tpo

Dropping In

DC WATER TEAMS WITH SCHOOLS, PARKS AND OTHER AGENCIES TO GET YOUNG STUDENTS INVOLVED IN WATER-QUALITY ISSUES

By Pete Litterski

Fikremariam Tesfai, water quality specialist from the Drinking Water Division aboard DC Water's mobile lab, explains why chlorine is added to water and how to test for chlorine.

The District of Columbia Water and Sewer Authority (DC Water) had been offering its Sewer Science program for high school students for more than five years when members of the outreach team hit upon a new idea during a 2010 meeting.

"Our programs for the K-8 children were still very new, and we were just getting into their schools," says Aleizha Batson, public outreach manager. "We realized younger children get more excited about special programs and take the messages back to their parents."

The outreach team saw merit in classroom visits but wanted to reach more students and get them more involved. That's when team members began talking about a special event they could take to venues where they could find large numbers of young students. Staffers contacted several schools to gauge interest in a festival-style approach. Ultimately, they teamed with the D.C. Parks and Recreation Department to host the first children's Water Drop Festival.

LOTS OF ACTIVITIES

The festival was held Oct. 28 at the Watkins Recreation Center, which runs an after-school program serving students from the nearby Watkins Elementary School in the Capitol Hill neighborhood. LaDawne White, a public outreach specialist, says the school was already scheduled to dismiss early that day, giving the festival organizers plenty of time to involve the students in activities focusing on wastewater treatment and environmental issues.

More than 80 students took part in the festival, and organizers kept them busy. DC Water personnel offered a Jeopardy game, engaging the children in an answer-and-question challenge dealing with the environment and water resources. There were also photo opportunities with the utility's Wendy the Waterdrop mascot, a wastewater treatment plant display, a water cycle re-enactment, a water-filling relay game, and a mobile water-quality lab where students tested water samples for pH, turbidity and total dissolved solids.

WORKING TOGETHER

In addition, the National Environmental Education Foundation presented a program on "Caring For Our Watersheds," the District Metropolitan Police Department Harbor Patrol demonstrated the work of its SCUBA divers who patrol the Potomac and Anacostia rivers, the U.S. Coast Guard offered a "Garbage Game" to demonstrate how trash must be cleaned from waterways, and the National Park Service presented a watershed model.

DC Water won positive feedback from partners, and most showed interest in being part of future festivals. "Plans are already under way to do a festival next spring at one school that considered doing it this fall, but couldn't fit it into the schedule," White says. "We've received several requests, and we're planning to take it to schools and other youth organizations."

Joe Bastian, a supervisor at DC Water's Blue Plains Advanced Wastewater Treatment Plant, knows from the Sewer Science program

Thea Browne-Dennis, asset management technician from the Department of Water Services, tests water samples with students.

Wendell Smith, chemical engineering technician in wastewater treatment, explains the treatment process to children using a simulated display.

PHOTOS COURTESY OF TED COYLE OF DC WATER

"It was more of a fun thing for the children than just a presentation in the classroom. It helped them see what water is all about."

WENDELL SMITH

that older students are interested in wastewater treatment. After the Water Drop Festival, he concluded, "The younger students seem to be more interested in the microorganisms involved in the process."

Bastian and Wendell Smith, a chemical engineering technician in the wastewater operation, joined the outreach team to work with the children, and both were impressed with the impact the festival seemed to have. "Talking about environmental science when you are outdoors just seems to make it more significant for the kids," Bastian says.

Smith found that the hands-on activities and games helped reach the students effectively. "It was more of a fun thing for the children than just a presentation in the classroom," he says. "It helped them see what water is all about."

STAR OF THE SHOW

A popular event was the Recycle Relay, where the students raced to pick up commonly discarded items and place them in the proper recycling bins. But the star of the show was a multichambered tank demonstrating steps in the wastewater treatment process. Students were intrigued by the concept of treatment plant operators as farmers who grow the microorganisms that consume waste in the treatment process.

The display simulates five stages of wastewater treatment. In the first stage, the "wastewater" contains shreds of toilet paper, cut-up plastic and ground-up pet food, and the students can see how these items settle. In the second stage, the tank simulates microorganisms interacting with the waste, and air is added to the process.

In the third stage, the "microorganisms" settle with the help of chemicals. In the fourth stage, they have settled to the bottom of the tank, and a filter is used to remove fine particles that are not dense enough to settle. The final stage of the tank simulates a receiving stream with fish.

"Our wastewater treatment staff brings actual sludge from the plant to allow students to see how microorganisms eat organic matter in the water," says Bastian. "When they are unable to bring a microscope, they show photos of the microorganisms and encourage students to use their imagination."

DC Water general manager George Hawkins and Wendy the Waterdrop, DC Water mascot, greet children at the festival.

Bastian and Smith say participation in educational programs can be gratifying. "When we talk to young people about our wastewater treatment plant, they're pretty amazed at what our system does," Smith says. White says it's also rewarding to know children are learning, while also sharing the message DC Water presents in its outreach programs.

"If we make it interesting enough and get them engaged," she says, "they're going to go home and talk about it, just like a movie." tpo

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.

One of the clarifiers at the Coatesville facility. (Photography by Amy Dragoo)

A Smooth *Transition*

EXPERIENCED OPERATORS IN COATESVILLE, PA., PROVIDE THE KEY TO PUTTING A NEW TREATMENT PLANT TO WORK WHILE SIMULTANEOUSLY RUNNING THE OLD ONE

By Trude Witham

WHEN THE 3.85 MGD COATESVILLE (PA.) REGIONAL Wastewater Treatment Plant needed to increase capacity and meet more stringent permit limits, owner Pennsylvania American Water built a $55 million 7 mgd treatment plant with the latest technology.

The long construction time challenged the operators, as the plant had to be built in the same footprint as the old one. "We had to construct the plant in phases, adding new pieces of equipment from May 2008 to June 2009," says company engineer and project manager Gerald DeBalko. "From June to July 2009, we had pieces of the old and new plants running at the same time. In August, we started demolishing the old plant as part of the final phase that continued through March 2010."

The plant, on 14.7 acres within the 200-year-old ArcelorMittal Steel property, is landlocked by the active steel mill and the west branch of Brandywine Creek. The city had purchased 6.7 acres from Lukens Steel in 1931, and in November 2007, Pennsylvania American Water bought eight more acres for the expansion. Yet, even with the extra real estate, much of the new equipment had to fit on the original acreage.

"We were literally running two processes at the same time," says Richard (Rich) Lutz, production supervisor. "We had to put in piping so we could have half the incoming wastewater going to the old plant and the other half to the new plant."

Challenges for the operators included working around an active construction site, collecting samples and maintaining equipment for both the old and new processes, and learning the new equipment and controls while keeping the old equipment working.

"Sampling was a bit of a challenge, but we continued to test daily for process control and twice a week for the permit, and we continued to meet all our limits," says Lutz.

AGING PLANT

Building the new plant was the only way around a worsening situation. "The old plant was barely meeting its limits and would not have met the new permit requirements for phosphorus, nitrogen and copper," says DeBalko. "In 2006, we were adding 400 to 500 houses a year, and the old plant would not have been able to meet this growth."

Even more serious were the maintenance issues with the old plant. "We were always worried about the coat hangers and duct tape" breaking at the old plant, says DeBalko. Lutz adds, "Since the old plant was built in 1932, with an upgrade in 1962 and 1988, we found it difficult to obtain parts. We often had to have parts made because they were no longer manufactured or kept in stock by suppliers. And if we couldn't get parts, we had to do whatever it took to make it work."

A view of the influent lift station. Some of the ArcelorMittal Steel plant can be seen in the background. This building houses three screw pumps that move the raw wastewater from the trunk line to a 54-inch pipe that leads to the plant. The three screws are alternated and used as flow demands. The station was built to house four pumps.

"We were literally running two processes at the same time. We had to put in piping so we could have half the incoming wastewater going to the old plant and the other half to the new plant."

RICH LUTZ

profile

Coatesville (Pa.) Regional Wastewater Treatment Plant

BUILT:
1932 (upgraded 1962, 1988, new plant 2010)

SERVICE AREA:
Coatesville and 10 surrounding communities

EMPLOYEES:
5

FLOWS:
7 mgd design, 3.544 mgd current average

TREATMENT LEVEL:
Advanced secondary

TREATMENT PROCESS:
Oxidation ditch/tertiary filtration

RECEIVING WATER:
West branch of Brandywine Creek

BIOSOLIDS:
Land-applied

WEBSITE:
www.pennsylvania amwater.com

GPS COORDINATES:
Latitude: 39°58′23.09″N; Longitude: 75°49′22.97″W

The plant uses pumps from Flygt – a Xylem brand, for return activated sludge (RAS) and waste activated sludge (WAS).

Coatesville Regional Wastewater Treatment Plant PERMIT AND PERFORMANCE

		PERMIT	EFFLUENT
$CBOD_5$		6.1 mg/l	2.45 mg/l
TSS		30 mg/l	2.11 mg/l
Ammonia	**May-October** **November-April**	1.1 mg/l 3.3 mg/l	0.142 mg/l 0.167 mg/l
Phosphorus	**April-October** **November-May**	0.82 mg/l 1.64 mg/l	0.55 mg/l 0.65 mg/l
Fecal coliform		200/100 ml	13.66/100 ml
Dissolved oxygen		5.0 mg/l	9.49 mg/l
pH		6.0-9.0	7.6
Residual chlorine		0.11 mg/l	0.0031 mg/l
Total nitrogen		Monitor/Report	8.99 mg/l
Total copper		0.013 mg/l	0.0044 mg/l

Plant manager Rich Lutz with the oxidation tanks where the wastewater is aerated. The anaerobic and oxidation tanks enhance biological nutrient removal. As a result, fewer chemicals are required in the treatment process.

Lutz credits the operators with keeping the old plant working as well as it did: The team collectively had plenty of experience with the primary clarifiers, trickling filters, aeration tanks, final clarification and UV disinfection.

IN WITH THE NEW

Started up in March 2010, the new secondary treatment plant includes:

- Three screw pumps (Lakeside)
- Automatic bar screen (Headworks)
- Eutek grit removal system (Hydro International)
- Two anaerobic selection tanks and oxidation ditch (Lakeside)
- Enviroquip SymBio control process (Ovivo)
- Three final clarifiers (Envirodyne)
- Eight CenTROL tertiary filters (Siemens)
- UV disinfection system (Trojan)
- Aerobic sludge digestion followed by gravity belt thickener (Ashbrook) and centrifuges (GEA Westfalia)

A SCADA system (integrator Allied Control Services) allows operators to monitor plant operations, including chemical feed systems, from a central location. Odor control is enhanced with the new system, which eliminated the primary settling tanks.

"Before we decided what equipment to purchase, we explored the different processes that we felt would meet our goals," says Lutz. "Then we visited several treatment facilities to see the various manufacturers' products and discuss their operation with the operators."

The team was able to salvage some of the old equipment. The primary and final clarifiers are now used as mud wells for the tertiary filters. The old aeration tanks were converted to aerobic digesters, and the alum storage tank remains in use, as does the old UV system (a second one was added). The old sludge handling building was expanded for the gravity belt thickener and centrifuges, and the garage is now used for storage and a maintenance workshop.

The plant serves 6,200 direct customers and four bulk wastewater customers in Coatesville and 10 surrounding boroughs and townships. The plant team oversees 79 miles of sewer main and 16 lift stations. Materials used to build the new plant included 20,050 cubic yards of concrete, 2,050 tons of rebar, and 15,750 linear feet of pipe.

The new facility is impressive, and it helps the operators do their work effectively. For one thing, the new plant is better able to handle I&I. "With the old plant, we experienced high flows from rain," says Lutz. "Now, we have new and modern equipment to handle I&I flows from rainstorms, and we also relocated a large section of sewer main that ran along the stream bed."

LEARNING CURVE

The new plant presented challenges to operators used to older technology and a completely manual process. "We went from a very manual plant to an automated facility, and there were many more pieces of equipment than we had before," says DeBalko. "The old plant was very simple."

As new equipment was installed, the equipment contractor trained the operators during startup. The manufacturers' representatives also helped with the training by reviewing the operation manuals during classroom

(continued)

The Coatesville team poses with their GapVax MC-1005 combination vacuum and jetting truck. From left, collections systems specialists Eric Taylor, Gary Parks and Mike Douglass, wastewater operator Dave Kelly, field operations supervisor Jim Kelly, plant manager Rich Lutz and project manager Jerry DeBalko.

sessions, conducting hands-on equipment training and providing training videos.

But, it wasn't easy to learn an entirely new, automated process. "Every piece of equipment, from the belt press to centrifuge to SCADA, was difficult," says DeBalko. "Most operators had never used computerized equipment with a user interface."

Adds Lutz, "Training in the wastewater field is a day-by-day process, as needed. A short training by the manufacturer is great, but it doesn't take the place of hands-on experience with equipment. Our operators quickly learned the basic operations, but we are constantly learning about the new process and becoming more comfortable with it."

ALL ABOUT TEAMWORK

Teamwork has contributed to the success of the new Coatesville Regional Wastewater Treatment Plant, from the planning process and construction, to startup and operation. "We celebrated this success by conducting a tour and inviting the municipal leaders of Coatesville and the surrounding communities," says Terry Maenza, director of communications and external affairs for plant owner Pennsylvania American Water.

The plant's operators are:

- Richard Lutz, production supervisor, Class A, E, subclass 1-4, 37 years of experience, 11 with Coatesville
- Roston Hicks, operator, Class A, E, subclass 1-4, 35 years, all with Coatesville
- David Kelly, operator, Class A, E, subclass 1-4, 22 years, 12 with Coatesville
- Scott Smith, maintenance/relief operator, Class E, subclass 4, 15 years, all with Coatesville
- David Butler, maintenance/relief operator, three years, all with Coatesville

Operators are responsible for opening the plant, running the process, collecting samples, and operating the equipment on site to meet requirements. The operators and the maintenance/relief operators share tasks such as changing the oil on equipment.

Vibration and ultrasound testing on the equipment is done yearly on all major pieces of equipment by American Water Maintenance Services. A subcontractor takes care of grounds work and plant cleaning. The plant uses an outside lab for NPDES permit requirements. The plant is staffed from 8 a.m. to 4 p.m., and Lutz is on call around the clock. If an alarm is triggered during off hours, he decides which operator to dispatch.

Says Lutz, "Without the team pulling together, we wouldn't be where we are today. You can't do it with just one person. You have to have everyone's support. We help each other."

ALWAYS ADJUSTING

They continually adjust the new process to obtain the best phosphorus and nitrogen removal in the oxidation ditch and effective dissolved oxygen and mixing in the aerobic digesters. They also program the set points to meet seasonal requirements.

After the new plant started up, operators had to fine-tune the equipment to keep alarms from sounding. "There were so many sensors and pieces of

(continued)

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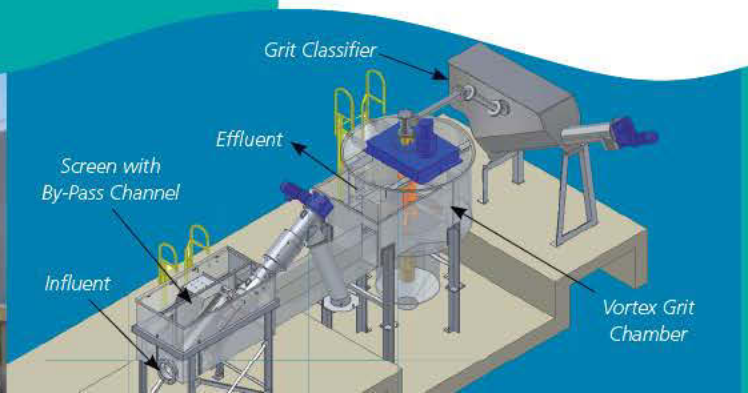

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"Training in the wastewater field is a day-by-day process, as needed. A short training by the manufacturer is great, but it doesn't take the place of hands-on experience with the equipment."

RICH LUTZ

equipment with alarms, and sometimes we would get false alarms," says DeBalko. "The manufacturers would have to come out and get rid of the bugs."

Says Lutz, "If there's a power failure, the alarms go off, and if a piece of equipment goes down, the alarms go off. There is backup equipment, so if a pump goes down another one will come on, but an alarm still needs to be investigated." All pieces of equipment have a backup, and SCADA automatically rotates the equipment weekly to keep it in top shape.

Operators take ongoing operations and safety training, and attend outside workshops if needed. Training includes day-to-day operations, arc flash protection training, OSHA 10-hour safety training, confined-space training, fire drills, emergency action planning, fire extinguisher training, defensive driving, chlorine safety, first aid/CPR, forklift training, drug and alcohol training, and security training for water and wastewater systems.

WHAT'S NEXT?

The plant is running at 3.5 mgd on average, and growth has been flat. "In the past, we had 400 to 500 new connections a year, but that has dropped and some factories have closed," says Lutz. "Growth has not increased as much as was projected, but when it does, we will be prepared."

The plant is sized to handle growth 10 years from now based on projections from the municipalities. The plant is also optimized to minimize power use. "The oxidation ditch has more controls that use power than the trickling filter did, but the SymBio control process reduces power by minimizing the amount of air in the aeration basin, and maximizes the effectiveness of the nutrient removal process," notes DeBalko.

Wastewater operator Dave Kelly works in the lab in the main facility.

A new biosolids processing facility, started up in August 2011, allows the beneficial use of the material for land application in place of landfilling. That means environmental benefits and cost savings.

"Right now, we're not sure how much we will land-apply, but it could be 70 to 80 percent, depending on business and weather conditions," says DeBalko. Some of the biosolids are being applied to a coal mine reclamation site, and the plant has hired a contractor to find out which farms would want biosolids.

As part of the permit, plant staff will be required to visit farms that use the biosolids to make sure regulations are followed. "Since I raise fish, I have a big interest in the environment," says Lutz. "As president of the Brandywine Trout & Conservation Club, and as someone who operates two trout nurseries, I am very proud that the wastewater plant is helping to improve the local environment."

EDUCATING OTHERS

Municipalities served by the Coatesville plant welcomed the new facility. "The old plant was limiting new growth and development," says DeBalko. "We have given them tours of the new plant, and after comparing it with the old plant, they were very impressed."

Brandywine Valley Association members have toured the plant, as have middle school students. "We bring students through and explain the impact on the environment," says Lutz. The plant staff also invites representatives from municipalities outside the region to visit and see the technology. "We like to help other plants the way they helped us when we were touring facilities and looking at different technologies," Lutz says. tpo

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DANGER

Plant operator Lou Zurcher checks pump station No. 10 near the Guemes Channel. (Photography by Steve Berentson)

Making the *Grade*

THE CITY OF ANACORTES TRANSITIONED FROM TWO PRIMARY PLANTS TO A NEW SECONDARY PLANT, MEETING PERMIT SPECIFICATIONS AND WINNING SIX AWARDS

By Trude Witham

WHEN THE REQUIREMENT FOR SECONDARY TREATMENT WENT INTO EFFECT IN 1992, primary treatment plants in Anacortes, Wash., could not meet the permit limits.

Just three operators ran the two plants, one built in 1954 and a smaller one built in the 1960s. In 1992, Anacortes upgraded to secondary treatment with a single plant to treat the entire flow. The city also built three new pump stations to bring wastewater to the plant, and added a few more pump stations as the city grew.

Today, the plant has nine operators, and the collection system has 23 pump stations. The plant easily meets its CBOD, TSS and residual chlorine specifications.

The plant was initially permitted for an average daily flow of 3.2 mgd; a new permit in 2005 authorized 4.5 mgd. The average daily flow is 2.0 mgd.

Although there is more equipment to maintain now, there are more operators to do the work. "The operators transitioned from two very old primary plants to a new process with a modern control system," says plant manager John Franz, who has been at the facility for 19 years and holds Group III wastewater and incinerator operator certification.

Most of the operators were hired during the last six months of construction. All were able to see the plant equipment as it was installed. Classroom and hands-on training from design engineer CH2M HILL helped the operators come up to speed, and the plant has since won six Outstanding Wastewater Treatment Plant awards from the Washington Department of Ecology (DOE) for 100 percent compliance.

BETTER PLANT

Situated on Fidalgo Island, between Seattle and Vancouver, B.C., Anacortes has a substantial tourist industry. "People come here for the beautiful scenery, the summer festivals, and boating and fishing, so we see a bump in the amount of waste we treat during the summer months," says Franz. Plant loading may increase from 2,600 pounds per day of BOD in winter to 3,700 pounds in summer.

profile Anacortes (Wash.) Wastewater Treatment Plant

BUILT:	1992
POPULATION SERVED:	15,860
EMPLOYEES:	14
FLOWS:	4.5 mgd design, 2.0 mgd average, 10 mgd peak
TREATMENT LEVEL:	Advanced secondary
TREATMENT PROCESS:	Activated sludge
RECEIVING WATER:	Puget Sound
BIOSOLIDS:	Incinerated
WEBSITE:	www.cityofanacortes.org
GPS COORDINATES:	Latitude: 48°31′4.47″N; Longitude: 122°36′26.41″W

The seasonal population doesn't stress the plant, but winter rains can cause inflow and infiltration (I&I) issues. "During heavy rainfall, the plant can pump 10 mgd, which is the maximum capacity, for hours, if not days," says Franz. "We've focused our efforts to reduce inflow on identifiable direct connections, and infiltration reduction on particular drainage basins."

The new plant meets the more stringent permit levels for CBOD (25 mg/l), TSS (30 mg/l), and residual chlorine. "With the old plant, the CBOD and TSS removal wasn't very good," says Franz. "With the new plant, our annual average CBOD is 6.2 and TSS is 9.4. We didn't used to have chlorine limits, but now our monthly residual chlorine limit is 189 micrograms per liter. At a monthly average of 9, we easily meet that."

Two influent screw pumps (Lakeside Equipment) lift sewage from 13 feet below grade to 12 feet above grade. The wastewater flows through three bar screens (FMC), and the flow is measured in Parshall flumes before traveling to grit removal and two primary clarifiers (ThyssenKrupp).

EXPERIENCED TEAM

The Anacortes Wastewater Treatment Plant is staffed 10 hours a day, seven days a week. A sophisticated SCADA system alerts the operator on call to any problems.

"We do most of our own design work, including determining the force main size and pump size," says John Franz, plant manager. "This has led to a dramatic improvement in reliability. Well-designed pump stations don't break down or chew up impellers and seals.

"Since we're considered a major discharger to Puget Sound, we test daily for temperature, pH, dissolved oxygen, TSS, chlorine residuals and ammonia. We test CBOD and fecal coliform four times a week, and BOD once a week." Tests are done on thickened and dewatered sludge every day the incinerator is run.

The operators work in three rotating three-person shifts. Each shift works a 10-hour day. The team members besides Franz are:

- Sylvia Cooper, secretary I, four years at the plant
- Steve Doebler, plant supervisor, maintenance, Group III certified, four years
- Becky Fox, plant supervisor, lab, Group III, 19 years
- Bob Hendrix, plant supervisor, operations, Group III and incinerator certified, 19 years
- Wayne Davis, operator, Group III and incinerator certified, 19 years
- Odilon Flores Jr., operator, Group IV and incinerator certified, 12 years
- Katy Wynn, operator, Group II, one year
- Ven Dean Johnson, operator, Group III and incinerator certified, 16 years
- Adam Veal, operator, Group III, two years
- Harry Whyte, operator, Group III and incinerator certified, 12 years
- Alan Bower, operator, Group III and incinerator certified, 19 years
- Allen Lindbo, operator, Group III and incinerator certified, 19 years
- Lou Zurcher, operator, Group III and incinerator certified, 19 years

OPPOSITE PAGE: The Anacortes team includes, from left, operations supervisor Bob Hendrix, plant operators Lou Zurcher and Wayne Davis, plant secretary Sylvia Cooper, plant operators Odilon Flores Jr. and Allen Lindbo, lab supervisor Becky Fox, plant operators Alan Bower and Katy Wynn, and plant manager John Franz. Not pictured: maintenance supervisor Steve Doebler and plant operators Ven Dean Johnson, Harry Whyte and Adam Veal.

"The operators have been very proactive in implementing new guidelines and taking pride in running the incinerator with less and less fuel. The changes really start with understanding how to run the activated sludge process to produce sludge that is conducive to good dewatering."
JOHN FRANZ

Secondary treatment is provided by conventional plug-flow activated sludge followed by two Envirex clarifiers (Siemens). Aeration is provided by two 150 hp blowers (Hoffman & Lamson) and one 75 hp hybrid blower (Aerzen), along with Sanitaire (Xylem) diffusers in one basin and AEROSTRIP (Ovivo) fine-bubble diffusers in the other.

The waste solids are sent to a gravity thickener, and the thickened material is conditioned with polymer and dewatered with a belt filter press. The solids are sent to a Zimpro (Siemens) incinerator, and the ash is dewatered on a vacuum filter before landfilling. The plant is controlled by Allen-Bradley (Rockwell Automation) programmable logic controllers and a SCADA system with Rockwell software.

STILL IMPROVING

The plant has seen some upgrades since it was built. Disinfection changed from gaseous chlorine to sodium hypochlorite with sodium bisulfite dechlorination in 1999. Changes also were made to solids conditioning and dewatering to improve efficiency and reduce incinerator auxiliary fuel use. "We've done as much as we can to keep the 20-year-old plant operating as efficiently as possible," says Franz.

Operators were trained on the new equipment once the plant went online. "Besides training from CH2M HILL, we contacted one of the best trainers around, Paul Klopping (of Callan and Brooks in Corvallis, Ore.), who is an expert on activated sludge plants, and asked him to train our operators," Franz says.

Klopping has trained operators at the plant and at regional training sessions held throughout the Pacific Northwest. Training classes are scheduled every year to keep operators up to date on technologies and to maintain their certifications.

"With today's tight budgets, training is almost always provided in-house with trainers brought in, so that all operators can benefit from the class," says Franz. "This also allows as much one-on-one, hands-on training as possible, at a lower cost than traveling to a seminar."

Even with the excellent training, operators found the plant's odor-control system challenging. The plant's three packed scrubbing towers formerly used hydrogen peroxide as an oxidant, but when that proved ineffective, operators switched to chlorine.

"The chlorine system had to be retrofitted in, and we also improved the controls for the odor-control system," says Franz. "But before we were able to make the system work, there were many difficult months with unhappy neighbors."

About the same time, the city started up three new pump stations. "One of the force mains is about two miles long, and the time the wastewater spends in the force main also creates odor problems," says Franz. "It took us a while to learn how to control the odors both at the plant and the pump stations."

OPERATING CHALLENGES

Although the plant has seen some issues with industrial wastewater, it has won the DOE awards in 1996, 1997, 2001, 2002, 2008 and 2009 for full

City of Anacortes Wastewater Treatment Plant PERMIT AND PERFORMANCE (monthly averages)		
	PERMIT	EFFLUENT
$CBOD_5$	25 mg/l	6.2 mg/l
TSS	30 mg/l	9.4 mg/l
Fecal coliform	200 cfu/100 ml	38 cfu/100 ml
pH	6.0-9.0	Compliant
Total residual chlorine	189 µg/l	9.0 µg/l


Plant manager John Franz.

compliance. "Events outside the plant can keep you from winning the award," explains Franz. "We have food processing plants that we have to watch closely."

He recalls the time one of the plant's gravity thickeners filled with cornmeal from a plant that breeds fish for fast-food sandwiches and frozen foods. "We worked with them to solve the problem," says Franz. "Another fish plant makes imitation crabmeat, and we showed them how to test their BOD so they could keep organic waste out of their wastewater. We can handle the BOD as long as they don't overload our system."

The industrial users are generally careful with their discharge, as they pay for the wastewater treatment. The Anacortes staff samples the industrial plants' wastewater discharges to help ensure compliance with pretreatment standards.


Lab supervisor Becky Fox.

Meanwhile, operating the plant itself takes a great deal of communication. "We talk through everything we do," says Franz. "Before we do a project, we get operator input and incorporate their suggestions. First thing every day, I meet with the staff to discuss projects and any issues."

What's unique about the Anacortes team is versatility, says Franz: "Everyone does everything. Operators rotate through the various job responsibilities, including the lab and operating the incinerator. We have upgraded the pump stations up to and including complete pump station replacements, removing the wet well and force main almost entirely with just our operating staff."

ENERGY EFFICIENCY

The plant team has been working on energy efficiency upgrades to reduce costs. "We will save $30,000 in annual electricity costs with the current process aeration system upgrade, which includes a new blower and diffusers, and by providing channel aeration with excess air from the process blower," says Franz.

The plant incinerates its biosolids and since 2007 the staff has been working to reduce the use of diesel fuel. The incinerator is permitted by the Northwest Clean Air Agency, and the plant received the Agency's Partners for Clean Air Platinum Award in 2010 and the Gold Award in 2011.

The mayor of Anacortes and the public works director presented the plant with an award of excellence in March 2010 for outstanding efforts to

> "Sometimes high school seniors will ask how I got my job. I tell them to get their foot in the door, work hard, and make sure they're valuable employees."
>
> **JOHN FRANZ**

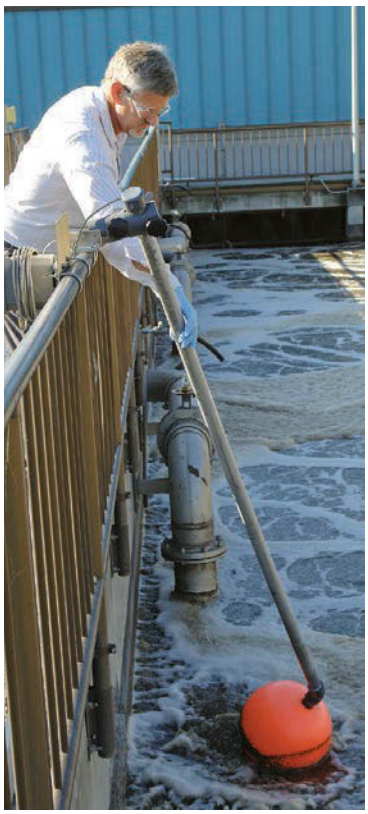
save energy and costs by reducing incinerator diesel fuel consumption, which dropped from 2,830 gallons per month in January 2006 to 310 gallons in January 2011. The savings were achieved mostly through operational changes.

"The operators have been very proactive in implementing new guidelines and taking pride in running the incinerator with less and less fuel," says Franz. "The changes really start with understanding how to run the activated sludge process to produce sludge that is conducive to good dewatering."

Operators discovered that making some operational changes to the gravity thickeners helped produce a drier material. They experimented with polymers and ultimately changed to a new polymer, adjusted polymer handling and application, and experimented with polymer/sludge mixers.

They also changed the way the incinerator is operated. "Anacortes is a relatively small community, so the incinerator is shut down every day," says Franz. "We implemented operational changes for startup and shutdown and also made adjustments to how the incinerator is operated while it is actually

Plant operator Wayne Davis services a dissolved oxygen probe in the aeration basin.



burning material. It took all these things to accomplish the remarkable reduction in fuel use."

The reduction in diesel fuel use also contributed to a decrease in CO2 emissions, from a high of 78 tons in January 2008 to about 43 tons in January 2011.

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LOOKING AHEAD

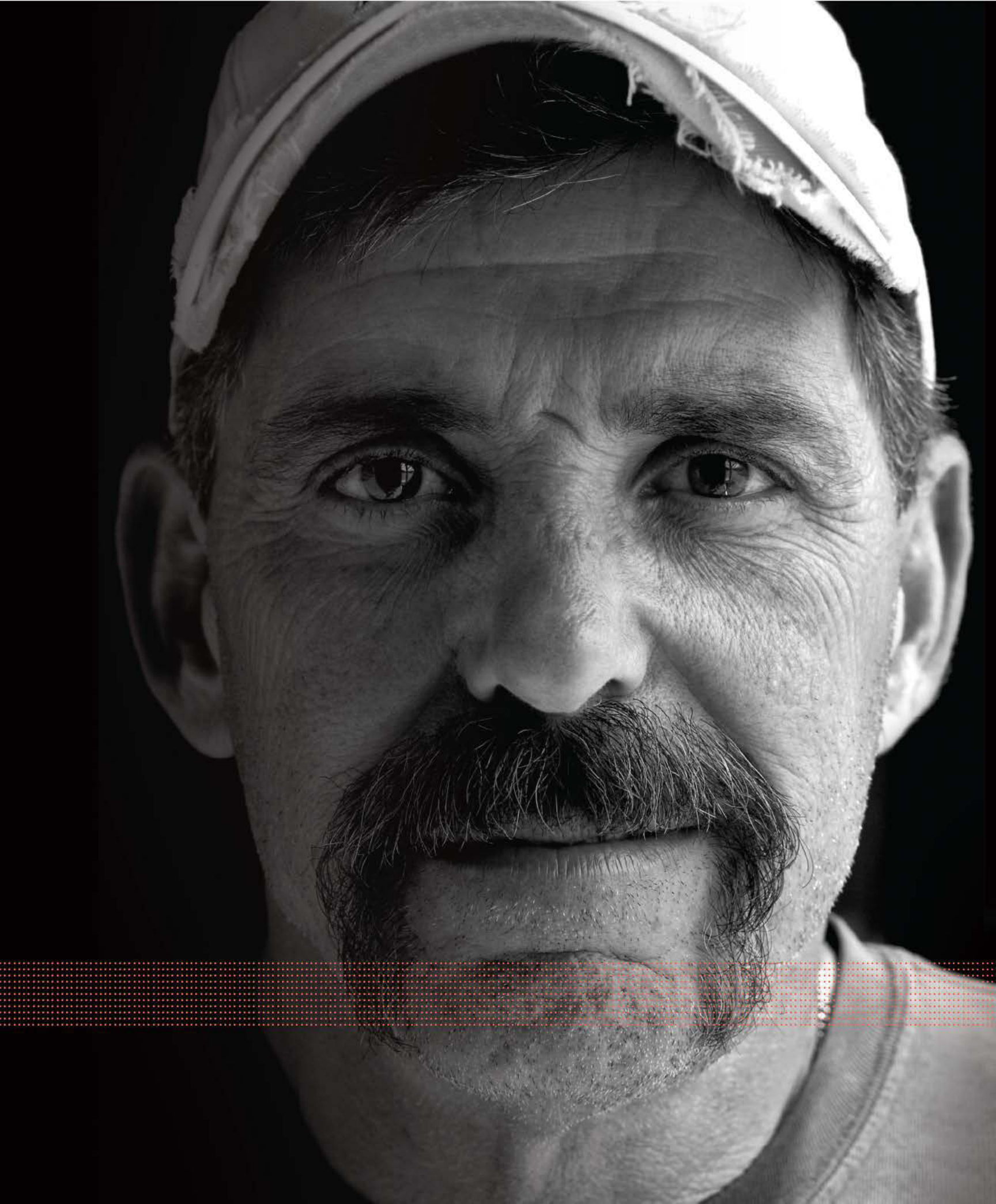
The plant may need to upgrade for future regulations. "There is pressure to improve the ecosystem of Puget Sound, the receiving water for our effluent," says Franz. "I suspect the first new requirement will be nitrogen removal. We have room on our property to add these processes if we have to." Until then, the plant is in fine shape.

In his spare time, Franz supports wastewater treatment education. He is a guest speaker at the Anacortes High School advanced placement environmental science class. "The teacher noticed that the students were missing the wastewater questions on a standardized test, so I started speaking in the classroom, and then they would tour the plant," Franz says.

He also advises the students on what it takes to succeed in the working world. "Sometimes high school seniors will ask how I got my job," he says. "I tell them to get their foot in the door, work hard, and make sure they're valuable employees."

With 30 years in the water and wastewater business, Franz started out with the City of Anacortes painting fire hydrants. He worked as a water plant operator for three years and then transferred to the wastewater plant, working up from operator to manager.

Franz offers some advice for other operators and managers: "Evaluate your system and make sure you're working on the most important things. But don't be afraid to fix things that don't work. Get a plan together and do it. tpo



The Johns Creek Environmental Campus houses a wastewater treatment plant and an education facility. The team includes, from left, assistant plant manager John Legendre, mechanic Kleve Smarr, education outreach program managers Debra Ewing and Cheryl McClellan, utility worker Dexter McDowell, plant manager Kevin Miller, administrative assistant Calandra Choates, project manager Doug Worsham, Fulton County Contract Oversight Ernst Jean-Pierre, and health and safety coordinator Mike Harshbarger. (Photography by Collin Chappelle)

It's All About *Control*

PLANT EQUIPMENT AND PROCESSES ARE OFTEN OUT OF SIGHT BUT NEVER OUT OF MIND AT THE STATE-OF-THE-ART JOHNS CREEK ENVIRONMENTAL CAMPUS

By Jim Force

IT'S NOT EASY OPERATING A WASTEWATER TREATMENT plant when you can't smell it or hear it, and most of it is out of sight. Yet that's the task facing the staff at the 15 mgd treatment facility at the 43-acre Johns Creek Environmental Campus in Roswell, Ga.

Located just a few yards from well-to-do neighborhoods, the brand-new 90,000-square-foot treatment and recycling facility is designed to be odorless and noiseless. Most of the process equipment is located underground.

"It's a highly technical operation," says Kevin Miller, who manages the plant for Veolia Water North America, the operations firm under contract with the plant's owner, the Fulton County Commission. "It's much different from other plants, and that poses a challenge."

Adding to the challenge, Johns Creek is the largest membrane bioreactor (MBR) plant in the United States. "We test for everything," says Veolia project manager Doug Worsham. "There's nothing in the plant that isn't tracked and trended by our SCADA system."

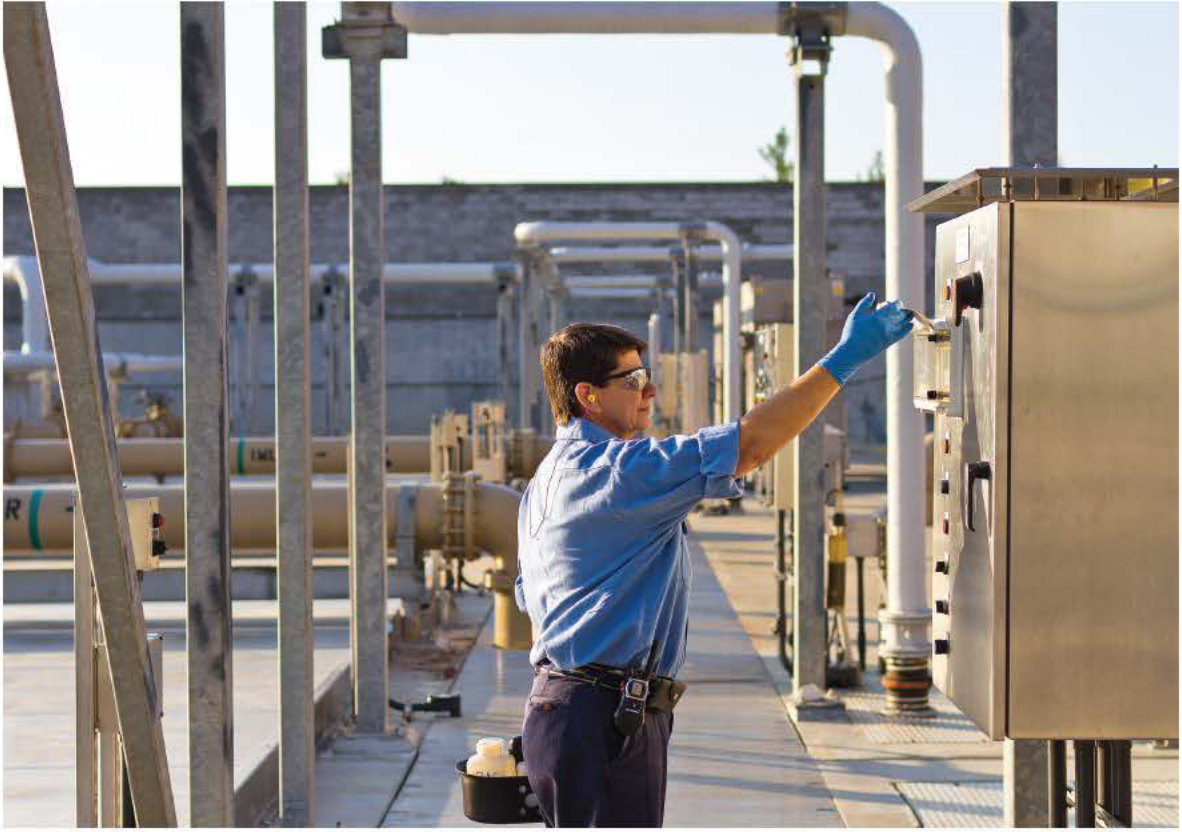
FORWARD THINKING

To keep pace with area growth and meet new standards for clean water, the Johns Creek Environmental Campus plant replaced a conventional activated sludge operation. The design-build team, led by Brown and Caldwell Engineers and Archer Western Contractors, developed acoustical models to ensure that the plant would not exceed pre-established noise levels at the

"It is definitely a lot easier to control a plant with inline equalization space and no secondary clarifiers, because most of a conventional wastewater treatment plant's problems come from hydraulic overload or settling issues. With an MBR, that isn't a factor."

KEVIN MILLER

The deck of the Johns Creek facility houses the aeration basins, primary clarifiers and membrane basins, all enclosed underground.



LEFT: Operator Julie Halstead makes rounds on the facility's deck to collect the morning samples for testing in the lab. ABOVE: Testing the morning's samples. Process sampling is done every shift.

fence line, and guaranteed the cost of the operation and treatment per million gallons. The costs were confirmed during a four-month period of startup.

The state-of-the-art operation is also designed with redundant process equipment at peak flows throughout the plant and can meet stringent effluent standards.

The uniqueness of the plant starts right at the influent station with a self-cleaning wet well. An "ogee" ramp causes the water to cascade, creating enough sweeping across the wet well bottom to keep any material suspended. The material is sluiced to the influent chopper pump (Vaughan), which discharges all of the accumulated material so the structure doesn't have to be cleaned manually.

The flow then passes through 6-mm coarse screens (Ovivo) and a pair of 50 mgd vortex grit removal units. Screenings and grit are washed, removed and landfilled.

Primary solids settle out in a battery of four rectangular clarifiers (one standby). Miller calls the tanks "activated clarifiers," in that a portion of the primary solids can be returned to the influent line to increase the production of volatile fatty acids (VFAs). The rest goes to aerobic digestion. About 70 percent of the primary solids are recycled.

After the primaries, the flow moves on to 2-mm fine screens (Ovivo) positioned ahead of the MBR. The biological system is a hybrid Johannesburg UCT process, consisting of anaerobic, anoxic, and oxic zones for biological phosphorus removal. These are followed by aerobic treatment, driven by fine-bubble diffusers (Sanitaire – a Xylem brand).

"In the swing tank we can mix or aerate the contents, depending on the needs of the plant," says Miller. "It follows the aerobic treatment step."

ULTRAFILTRATION

The submerged ultrafiltration membranes (GE Water & Process Technologies – Zenon) have a pore size of 0.4 microns. There are eight trains, with 11 cassettes per train, each containing 48 modules. A single train can produce about 2,600 gpm, but in actuality the flow is spread over four trains to take peak flow. "We have our plant currently set to add a train for every increase of 650 gpm," Miller notes.

Membranes are cleaned in several ways. After producing water for about 12 minutes, a membrane train will either relax or backpulse for about two minutes. "During a relax cycle, the train stops producing water, and air is sequentially blown up between the membrane fibers to shake off solids that may have accumulated," Miller says. "During a backpulse, the train stops producing water and water is pumped back through the membrane fibers to unplug any clogged fibers." (Goulds Water Technology) supplied the permeate and return activated sludge pumps.)

The membranes are controlled by a PLC program and are completely automated. When a membrane train is on standby or offline, a scheduled maintenance clean pulses chlorine or citric acid for a certain amount of time. A 1.5 percent hypochloride solution is used to eliminate organic fouling and citric acid for inorganic fouling.

Finally, recovery cleans soak the membranes for 12 hours in a hypochloride or citric acid solution after the tank is emptied of all solids. "We usually

profile

Johns Creek Environmental Campus, Johns Creek Basin, Roswell, Ga.

COMPLETED:	September 2009
POPULATION SERVED:	About 50,000 population in Johns Creek and parts of Roswell
TREATMENT LEVEL:	Advanced (for reuse)
FLOWS:	15 mgd design, 3 mgd average
TREATMENT PROCESS:	Membrane bioreactor
RECEIVING WATER:	Chattahoochee River
BIOSOLIDS:	Aerobic digestion, landfill
STAFF:	Doug Worsham, project manager; Kevin Miller, plant manager; 9 operators; 5 maintenance technicians
ANNUAL BUDGET:	$4 million (operations and maintenance)
WEBSITE:	www.fultonec.com
GPS COORDINATES:	Latitude: 33°58′36.55″N; Longitude: 84°16′0.80″W

QUIET HOURS

Treatment plants can be noisy places, and neighbors can be annoyed by the sounds of vehicles and equipment emanating from operations. That prompted designers of the Johns Creek Environmental Campus to take extra steps to keep things quiet.

First, under direction of the Fulton County Commissioners, the facility designers determined normal decibel levels around the property lines of the proposed plant and set a maximum of no more than three decibels above that when the plant went into operation.

Next, they developed an acoustical model that indicated what the sound levels would be from planned process operations. Then they developed a variety of sound controls to ensure that the decibel limits would not be exceeded. Some examples of the acoustical measures:

- Double-wall construction to provide a sound barrier around noisy process equipment
- Sound traps built into structures to prevent noise from reaching the outside
- Landscaping and vegetative buffers between noise sources and the community
- Placing certain devices (blowers, motors, pumps, membrane gallery) underground

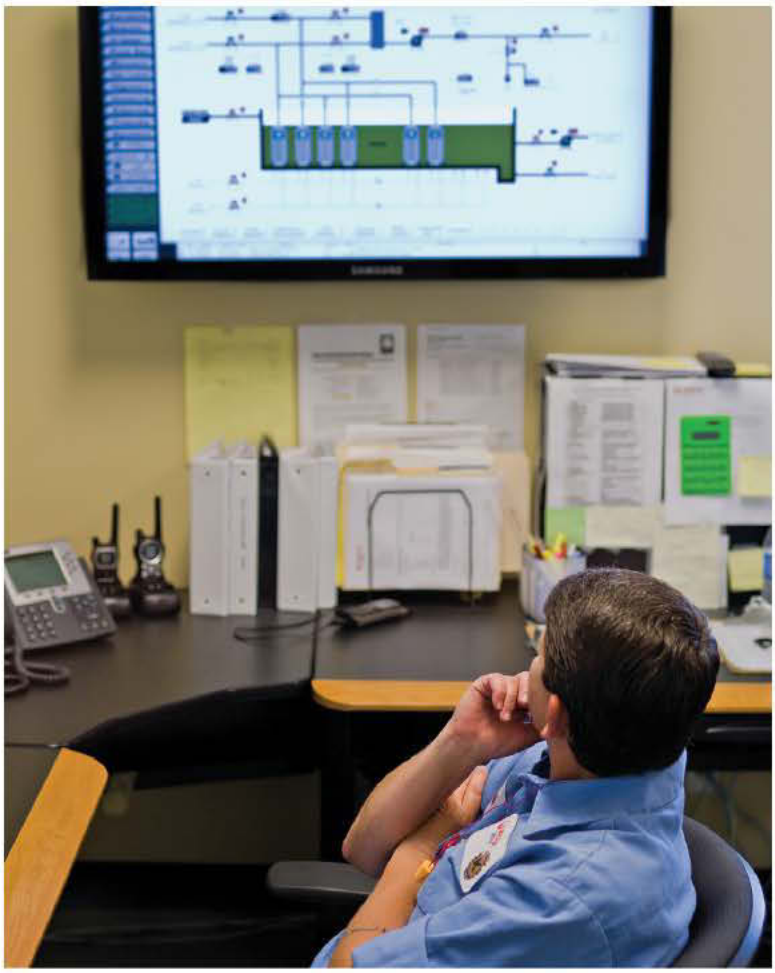
"A lot of thought went into controlling both noise and odors," explains Paul Williams, Fulton County deputy director for Public Works – Water Division. "For example, our emergency generators are behind vegetative buffers that trap and deflect the sound they make."

According to Brown and Caldwell project manager Kelly Comstock, "This design challenges the idea that wastewater treatment facilities are odorous and noisy with negative impacts on the surrounding community." Or as Kun Suwanarpa, director of Fulton County Public Works, put it as plans for the plant were announced, "We'll be a good and stable neighbor."

do these twice a year or as often as necessary based on train production and efficiency," says Miller. After the membranes are cleaned, solids are returned either to the return activated sludge line, or directly to the digester.

EASIER TO CONTROL

Miller feels that the Johns Creek process allows for better control than a conventional plant. "It is definitely a lot easier to control a plant with inline equalization space and no secondary clarifiers, because most of a conventional wastewater treatment plant's problems come from hydraulic overload or settling issues," he says. "With an MBR, that isn't a factor."



Julie Halstead monitors the facility's treatment processes from a remote digital control room within the facility's main building.

The filtered effluent is UV-disinfected (WEDECO) and then cascades down a post-aeration channel to the Chattahoochee River and is reused for various uses around the plant. About 25 percent of the effluent is reused for washing, irrigation, flushing, and recharging the onsite pond. Recycled water is used for fire protection.

While water reuse is limited to in-plant use today, long-range plans allow for expanded use of the reclaimed water within the community. Paul Williams, Fulton County deputy director for Public Works – Water Division, says area golf courses might use the water for irrigation, and it could be made available to area industry and commercial users. "If a particular industry has an interest in using the water in the future, entering into a partnership is a possibility," he says.

Biosolids are aerobically digested, then dewatered to about 20 percent solids in an Andritz centrifuge. The resulting cake is landfilled.

NO SOUNDS OR SMELLS

The Johns Creek campus includes a park and interpretive nature trail, a cascading stream and pond system, and an educational facility with a lecture hall, classroom and teaching lab so that the community can learn about water quality and the local environment. With this open invitation to the public to visit the plant, it's not surprising that Johns Creek is designed to be both quiet and odor free. The noise control and odor abatement systems are state-of-the-art. "A lot of thought went into the odor and noise control systems," says Williams.

To remain quiet, the plant employs a number of innovative noise control measures, including landscaping (see sidebar). And to eliminate odors, designers implanted several features, including enclosed processes and odor scrubbing.

Mechanic Kleve Smarr checks one of the facility's turbidity meters from Hach in the underground membrane gallery.

Johns Creek Environmental Campus PERMIT AND PERFORMANCE

	INFLUENT	EFFLUENT	PERMIT
BOD	150 mg/l	BDL	2.9 mg/l
TSS	160 mg/l	BDL	5.0 mg/l
Phosphorus	4-5 mg/l	0.18 mg/l	0.30 mg/l
Ammonia	17-21 mg/l	BDL	0.50 mg/l

BDL = Below Detection Limit

"All tanks are covered, and negative pressures are maintained in all structures where odors could be an issue," says Miller. Those measures essentially eliminate the release of odorous air to the atmosphere. In addition, Johns Creek uses both wet scrubbers (HEE Environmental) and granular activated carbon scrubbing (Calgon Carbon) of air from the preliminary and primary sections of the plant.

A GRAND VISION

The Johns Creek Environmental Campus began as a vision of the late Fulton County commissioner Bob Fulton. In 2002, Fulton saw the need for a new facility and developed the concept that a wastewater treatment facility could be an educational tool and, with the right design and collaboration, an asset to the neighboring community.

Design and construction began in July of 2006 and took 40 months. The project used a design-build procurement method. It was designed by Brown and Caldwell and constructed by Archer Western Contractors. Startup began in July 2009, and Fulton County began operation on schedule in November 2009.

CLOSE CONTROLS

While much equipment is out of sight, it's not out of mind, thanks to a sophisticated SCADA system (GE Proficy iFIX) that not only tracks and trends data but also maintains a historical account of all process operations. "All equipment is seen and operated from our control room," says Miller. "There's nothing in the plant that isn't tracked and trended."

Miller and his staff especially like the historical data. "We have a complete history on every piece of equipment and process step in the plant, from startup," says Miller. In conjunction with the plant's process control testing laboratory, the Johns Creek staff can closely monitor plant performance to assure that the stringent effluent and other parameters are being met.

"We run solids tests on MLSS, RAS, and WAS samples," says Miller. "We also run PO4 (using a quick-check method with reagent and a spectrophotometer), NH3, and alkalinity tests on the permeate, MLSS and RAS." In addition, the lab staff runs pH, turbidity, and DO tests to cross-check online meters.

All this technology, however, does not dismiss the human factor in plant operations. "Although a good majority of our systems are automated, operators must not rely on SCADA alone to tell the story," says Miller. "You still have to double-check the actual conditions in the plant. After all, it's only a machine, and operators are the actual brains behind the operation of it!" **tpo**

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HIGH-SPEED TURBO BLOWERS PLAY A CENTRAL ROLE IN A TEXAS TREATMENT PLANT'S ENERGY EFFICIENCY UPGRADE PROJECT

By Pete Litterski

Operators at the Grace Creek Wastewater Treatment Plant in Longview, Texas, expect significant savings from an energy efficiency project that includes replacement of two of five older aeration blowers with high-speed, high-efficiency units.

The project is part of a $1,045,625 project that also includes a cogeneration power plant with a 65 kW microturbine that operates on digester methane. The projects were funded in part by a $781,900 Energy Efficiency and Conservation Block Grant from the U.S. Department of Energy, according to Shawn Raney, chairman of the city's Energy Management Committee. The grant was supplemented by money from the city Water Utilities Fund.

Scott Baggett, plant manager at Grace Creek, says the aeration blower project designed by KSA Engineers will offer many benefits. The new APG-Neuros NX 150 turbo blowers — a 125 hp unit and a 150 hp unit — operate on air bearings, making them energy efficient, low maintenance, and quiet. The blowers are now the primary units in the aeration system. The 150 hp blower can be routed to either of the two pairs of aeration basins at the plant. The 125 hp blower is routed to a pair of square basins next to the blower room.

SUPERIOR CONTROL

"The biggest thing they do is give us more control over our dissolved oxygen," says Baggett. "We're going to be able to keep the bugs happy."

Although the blowers are more energy efficient than the old ones, "The real savings will come because we're not pushing 7 or 8 mg/l DO when we only need 2 to 4," Baggett says. The greater control comes from the flexibility of the new blowers and the use of real-time monitoring. Controller units that constantly track the dissolved oxygen levels in the four aeration basins and then control the new pneumatic actuated K-Tork butterfly valves installed in the blower room and at the basins.

The aerator project included the upgrades of two controllers from Hach SC-100 to Hach SC-1000 units. Each of the controllers is linked to a pair of basins and connected to probes that track dissolved oxygen, pH and MLSS levels.

Once optimal dissolved oxygen levels are programmed into the system, Baggett says, the controllers can determine how far to open the valves. Each of the new blowers, which have variable-frequency drives, can modulate according to what the valve is allowing. "As the DO goes up, the valve closes down, and the pump responds to the lower demand," says Baggett.

With the new system, the controller can make real-time decisions that in the past would have required an operator's undivided attention.

Scott Baggett, plant manager at Longview's Grace Creek Wastewater Treatment Plant, looks at one of the new pneumatic actuated K-Tork butterfly valves that help operators maintain the proper airflow in the plant's four aeration basins. (Photos by Pete Litterski)

Before and After: Three of the old blowers at Longview's Grace Creek Wastewater Treatment Plant will remain available as backup units to the two new APG-Neuros NX 150 aerator blowers installed in part with a federal grant.

What's Your Story?

***TPO* welcomes news about environmental improvements at your facility for future articles in the Greening the Plant column. Send your ideas to editor@tpomag.com or call 877/953-3301.**

TRACKING THE SAVINGS

The energy savings are expected to be significant. The city contracted with the local electric utility, AEP-SWEPCO, to have the CLEAResult energy optimization company audit the aerator system before the two old units were taken offline. With that baseline in hand, the company returned after the new blowers were fully operational and performed another audit.

CLEAResult found the peak demand and energy usage reductions were higher than originally estimated because the VFDs allow the blowers to operate more efficiently, running at a consistently lower threshold, instead of intermittently spiking. Actual peak demand savings were 50.3 kW, versus the estimate of 26.4 kW. Electricity usage declined by 440,628 kWh per year, versus the estimate of 230,000 kWh.

The three older blowers still online have been relegated to backup status and will be used only during peak demand or when one of the new blowers has to be taken down for repairs or maintenance. If the

"The biggest thing the blowers do is give us more control over our dissolved oxygen. The real savings will come because we're not pushing 7 or 8 mg/l DO when we only need 2 to 4."

SCOTT BAGGETT

funding can be found for another project, Baggett would like to replace the rest of the older blowers with the new models.

HEATING AND POWER

The cogeneration system will deliver still more energy savings. Just a few feet from the stack where the plant once flared excess methane from four anaerobic digesters, the gas now makes a left turn to the turbine. Power from the system runs the biosolids press, but since the press only runs four days per week, the city sells surplus power to AEP-SWEPCO.

Raney says the city sells the excess power for about 50 percent more than it pays for electricity. "We pay 4.01 cents per kWh, but we sell the power at 6.1 to 6.2 cents," he says.

The methane is routed to the facility's digester control building, where a gas pressure transmitter and flowmeter track gas production. Raw methane is routed to the digester heaters as needed, and the rest is piped to an underground vault about 50 yards from the digester building.

At the vault, gas lines were reconfigured, giving operators the option of routing methane to the cogeneration system or, if necessary, to the flare stack. Since the cogeneration unit came online, the plant has not flared any gas. The cogeneration system is expected to reduce the plant's greenhouse gas emissions by more than 700,000 pounds per year.

CONDITIONED GAS

The engineer/project manager for the cogeneration system was Willard Jordan, P.E., of Longview-based Electrical Expertise. The installation contractor was James D. White Electric of White Oak, Texas. The skid-mounted cogeneration unit includes a gas conditioning system from Unison Solutions that filters, dries and compresses the raw gas.

Unit 3 in the blower room at Longview's Grace Creek Wastewater Treatment Plant is a new APG-Neuros NX 150 aerator blower that can be used to supply air to any of the four aeration basins at the facility.

The treated gas feeds a Capstone C65 microturbine generator that operates at 96,000 rpm. Near the generating unit, a concrete pad holds a programmable logic controller and a pair of chillers that deliver cooling water.

All the licensed operators at Grace Creek received training on the cogeneration system and can be called on to check its status and make necessary adjustments. The system also can be accessed remotely by support personnel at Unison Solutions and at Pumps & Services, a New Mexico company that provided the training on the cogeneration system. tpo

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Walking in Their Shoes

THE MAYOR OF A CONNECTICUT CITY USES JOB SHADOWING TO GAIN AN APPRECIATION FOR THE WORK WASTEWATER OPERATORS DO DAILY

By Ted J. Rulseh

PHOTO COURTESY OF GROTON POLLUTION ABATEMENT FACILITY

The Groton Pollution Abatement Facility team includes, from left, Steve Scarpa, senior operator; Josh Rezendes, senior operator and past intern; Jim Bowdy, lab technician; Marian Galbraith, mayor of Groton; Kevin Cini, chief plant operator; Kelsey Reeves, Grasso Technical High School intern; Eric Melason, operator helper and past intern.

"I wish they could spend a day walking in my shoes."

How many wastewater treatment operators have entertained that thought in connection with the public officials in their communities? A goodly number, no doubt.

Marian Galbraith, mayor of Groton, Conn., granted that wish for the team at the city's Pollution Abatement Facility — only they didn't have to ask. Galbraith, elected to her first term in May 2011, used job shadowing as a way to get more familiar with the work of all city departments and their employees.

Her comments on the experience raise a question: Why shouldn't clean-water plants around the country encourage a similar experience for their mayors, village presidents, council members, and other elected and appointed officials? Job shadowing goes a big step beyond the standard treatment plant tour, as it lets the visitor truly experience the operators' roles and appreciate what they know.

Galbraith talked about her experience as "operator for a day" in an interview with *Treatment Plant Operator*.

"People come to me regularly and say, 'Why doesn't the city do this? Why doesn't the city do that?' Well, it's hard to answer those questions if you really don't know what it takes on a day-to-day basis to run the city."

MARIAN GALBRAITH

tpo: What was your background before becoming mayor?

Galbraith: Politically I had been on the city council for nine years, but my occupation was teacher. I taught eighth grade language arts for 35 years.

tpo: How did the job shadowing venture come about?

Galbraith: Our city has the "strong mayor" system – I am not only a representative of the council, but also the chief executive officer for the city. It was very important for me to understand what it is that people do in the different jobs that contribute to the running of our city.

I know our city is a great place to live in major part because of the services we enjoy here. And those services are delivered not only through taxpayer dollars but through the hard work of our employees. I wanted to understand what those employees do on a daily basis to make the city work.

Also, people come to me regularly and say, 'Why doesn't the city do this? Why doesn't the city do that?' Well, it's hard to answer those questions if you really don't know what it takes on a day-to-day basis to run the city.

tpo: So the job shadowing was largely your idea? And you did this with a number of departments and occupations?

Galbraith: My very first job shadowing was on the sanitation truck, and I spent five hours picking up trash during collection day. I have done work with the electric linemen, I have directed traffic with the police, I have worked at the treatment plant, I have read water and electric meters, I've worked at the Customer Care desk, and I've done service calls with our cable company. I've also gone out with the Building and Zoning officials, and I have more on the agenda.

tpo: Did anything in your background inspire you to take this approach?

Galbraith: Having come from education, I always valued people in the higher echelons of the field who had a very good understanding of what happens in the classroom. This seemed to me to be a parallel.

tpo: How did you go about arranging your job shadowing at the Pollution Abatement Facility?

Galbraith: I had said at a department meeting and also at one of our employee breakfasts that I wanted to do this and I had asked people to invite me. My administrative assistant, Heidi Comeau, does the scheduling for me. I had asked that when I visited, I didn't want to watch people. I wanted to do some of the work. I don't have the skill sets that they have, but I wanted to be involved that day in the work they did.

"The staff did a great job of preparing me for each job I did and explaining why they did each thing they did. I also observed that the people just keep going. There is something to do all the time down there. People are working, working, working."

MARIAN GALBRAITH

tpo: How would you describe the day you spent at the treatment plant?

Galbraith: [Chief plant operator] Kevin Cini invited me and put together a day's agenda for me. I usually do this as half a day so I can get back to the office and do other work. But Kevin put together a program so I could see all different levels. I think I worked with everybody who was down there that day [July 14].

I went around with the intern in the morning and read the meters on all the different equipment. I got to run the sludge thickener. I helped the person who tests the influent that comes in and the effluent that goes out. I got to go down to the pumping stations and look at the meters down there.

I was actually able to participate in those activities. It was important to me to do more than watch. I'm more hands-on than that.

tpo: What kind of impression did the experience leave with you? How did your impression change from what it was before?

Galbraith: As city council members, we regularly get the opportunity to visit the city departments, so I had been to the treatment plant and had seen what the process was. But first of all, through shadowing, I saw that there was a lot of very intricate work involved. I wasn't familiar with the level of intricacy that there is in testing, for instance. I wasn't fully aware of some of the safety issues.

For example, at the pumping stations, when you need to go into a confined space, it was interesting to see how you read the gas meters and how they work and how they have to be kept up to date. I wasn't allowed to enter the pumping station because I don't have that kind of training, but I handled the gas meter. I understood what we were looking for and what we were being careful of.

The staff did a great job of preparing me for each job I did and explaining why they did each thing they did. I also observed that the people just keep going. There is something to do all the time down there. People are working, working, working.

tpo: What was your general impression of the operating team?

Galbraith: There were things I always knew that were reinforced. I know the people who work in our Pollution Abatement Facility have an incredible level of ingenuity to make things work. I knew that before. Our people are known for figuring out solutions to things. This time I got to see how they were doing that.

Later on we had an issue come up at the plant, and I knew what that was about. I knew the kind of thinking they were going to put in to solve that problem, because I had seen the ways they used their ingenuity in the plant. Was this something I hadn't known about before? No. Was it something that was strongly reconfirmed? Absolutely.

I also came away very impressed with our intern program. We had a young person over the summer, a junior from Grasso Technical High School, and first thing in the morning they had me go around with her.

What was wonderful was that she was able not just to show me what to do but to explain to me why we were doing each thing. Two of the other people I worked with that day are former interns who are now employees. So I could see how that intern program feeds

into the professionalism we have. I could really see the value of that program.

tpo: Having done shadowing, how will that affect your approach to dealing with the Pollution Abatement Facility in the future?

Galbraith: Now when they come to me and say 'We need to update this,' or 'This is equipment we need to look at,' I know what they are talking about. I don't want to imply that after a day I know what they know, but I know how the equipment fits into the system and how important it is. As I worked with them, they were able to point out to me things we might want to do in the future that would keep us as efficient as we are.

> "Now when they come to me and say 'We need to update this,' or 'This is equipment we need to look at,' I know what they are talking about."
>
> **MARIAN GALBRAITH**

We're going to be doing an optimization study for the Pollution Abatement Facility to look at where we need to modernize and what issues need to be addressed. Now when they talk about the equipment, I know what it is. I also know the importance of moving forward, and I know what some of the issues are that need to be addressed.

tpo: What advice would you give to other mayors or city administrators about doing job shadowing as you have?

Galbraith: I'm not sure I am in a position to give advice. But let me say what it has given me that improves my ability to be an effective administrator. It gives me an insight to what our employees do and what their workdays are like. I think that's very important. It's very easy for us sometimes to say 'You should do more.' But I think we need to know what our people are doing now.

I now know what our people are doing all the time. I wasn't with anybody who was sitting. I was with people all day long who were working. That was very important for me to know. It's also important for me to know the challenges that each department faces. In this case I needed to know the challenges the Pollution Abatement Facility team is living with and using their ingenuity work around.

It's important for municipal leaders to balance what we would like to do and what we need to do with what we can afford to do. Being able to understand what the challenges are, and which ones are the most immediate, and which ones we can work around, helps me be able to make sound decisions.

tpo: What would you say to treatment plant managers or operators in other communities about inviting their officials to do job shadowing?

Galbraith: I would absolutely encourage them to do it. Someone like me who is in a full-time position should be able to make the time to come down and learn the job. I also think it's very important for them to ask their council members and the people who make decisions that affect their work and their budgets to come and see what they do and understand the conditions of the facilities and understand the work that's being done.

tpo: What would you offer as a final word about your experience?

Galbraith: I learned that our people have a lot to crow about. I'm able to crow about them, too. tpo

Attack of the Free-Swimming Ciliates

AN INFESTATION TURNS SECONDARY CLARIFIER EFFLUENT A MILKY WHITE. AN INCREASE IN DISSOLVED OXYGEN AND OTHER ADJUSTMENTS CURE THE PROBLEM.

By Ron Trygar, CET

A troubleshooter receives a phone call from a frantic operator who has described a very unusual condition at his wastewater treatment plant.

Operator: Can you come out to our treatment plant and give me some advice about an unusual-looking effluent?

Lab Detective: Sure. What seems to be the problem? Can you describe the unusual effluent?

Operator: Well, the effluent is all white. Very cloudy-looking, mostly white. Must be some kind of solids. My effluent filters are clogging up with this stuff. It looks like cotton going over the weirs.

Lab Detective: How long has this been happening?

Operator: It started a few days ago. It's got our plant out of compliance with the reuse regulations and we can't discharge to the reclaimed water system that the local golf course uses for irrigation. I've never seen anything like it. How soon can you be here?

TWO PLANTS IN ONE

That conversation kept playing through the lab detective's mind. A white, cloudy effluent that looks like cotton. Very strange indeed. The detective arrives at the plant about two hours later that same day. The plant is a 0.35 mgd conventional activated sludge facility. It is made up of two plants, one built just recently as part of an expansion.

FIGURE 3. Photomicrograph of *H. spirostomum,* a large free-swimming ciliate. (Photo courtesy of Encyclopedia of Life (www.eol.org), taken by William Bourland.)

The facility upgrade added effluent filtration, filter dosing and backwash water tanks, and an influent flow equalization tank, along with a 100,000-gallon aeration tank and secondary clarifier. The original treatment plant is a precast concrete structure with rectangular settling tanks.

The facility uses the flow equalization tank to split flow between the two plants. The effluent from both facilities enters the effluent filter dosing tank for polishing and undergoes high-level disinfection with chlorine before going to reclaimed water storage and ultimately application on the golf course.

When the effluent does not meet effluent reuse regulations, it is directed into a reject storage pond and recycled back through the plant. That is the current mode of operation, since the effluent is very high in solids.

FIGURE 1. Solids rising and extending across the clarifier surface. (Photo by Ron Trygar)

FIGURE 2. White, cloudy effluent leaves the secondary clarifier. (Photo by Ron Trygar)

SOLIDS ALIVE

The operator meets the lab detective and gives a short tour of the plant. The detective observes that the secondary clarifier of the new plant looks very bad. Solids are popping up throughout the clarifier, rising and dispersing across the tank surface (Figure 1). The liquid around the rising solids is very turbid and seems to have a white color. The water flowing over the weir is off-white and milk-like in density (Figure 2).

The plant operator describes the flow pattern through the plant and notes that the old treatment plant does not seem to have the problem the new plant is having with the white, cloudy secondary effluent.

The detective collects a sample of the milky effluent for closer study and notices that the solids are large enough to be seen with the naked eye. When the sample beaker is viewed from the side, the solids appear to be moving — actually swimming in the liquid.

The treatment plant has a very old microscope in the makeshift lab/office, so the detective sets up several wet-mount slides. The microscope offers a limited view of the solids, but the evidence is clear enough. The organisms appear to be long and wormlike and fill the field of view under low-power magnification. They look and act like nematodes — long and round, actively swimming in the liquid on the slide.

What's Your Lab Story?

The Lab Detective feature in *TPO* will help operators learn analytical techniques that help diagnose and solve treatment problems. Are you struggling with a process issue?

Send a note to editor@tpomag.com. Your question may become the topic of a future column.

LOW DO READINGS

The old microscope does not allow a closer look, so the detective takes another walk to collect more samples for study and see how these critters are affecting treatment. Once the influent is split between the two treatment trains, the influent mixes with return sludge from each plant's secondary clarifier as the flow enters the aeration tanks.

The new treatment plant aeration tank is a round, metal structure built on site from square panels with metal reinforcing bands circling the perimeter. A small blower provides diffused air for the aeration tank, but the airflow is so low that little mixing is apparent, and DO readings are consistently below 0.5 mg/l. The new secondary clarifier is made from the same material and has a motor-driven scraper mechanism mounted at the end of the clarifier bridge structure.

The offending organisms are not nematodes at all, but a large species of free-swimming ciliate called *Heterotrich spirostomum.* This omnivorous creature can grow to lengths greater than 1 mm, can contain high amounts of intracellular calcium and seems to prefer low-DO environments.

The effluent from the two treatment trains blends in a filter dosing tank before filtration. The water directed to the filter is very cloudy, and the effluent from the filter looks as turbid as the water applied. The filtered water flows to a chlorine contact tank where a minimum of 1.0 mg/l total chlorine residual is normally met. The solids flowing into the contact tank exhibit such high chlorine demand that no residual is realized, even with the chlorine equipment feeding at maximum output.

The filters are trying their best to capture the effluent solids, but the headloss is so great that the filters are continually backwashing. The backwash water flows into a plant drain lift station, then back into the influent flow equalization tank. The influent flow is split between the two plants, and the whole process repeats itself. The old treatment train does not seem to have the problematic cloudy clarifier and has no white-colored effluent.

MAKING THE DIAGNOSIS

The lab detective recommends increasing the DO in the new plant's aeration system and leaves with several samples of the cloudy effluent. After giving one of the samples to a local university's biology professor, he returns to his lab where he can observe the organisms under higher magnification.

The offending organisms are not nematodes at all, but a large species of free-swimming ciliate called *Heterotrich spirostomum.* This omnivorous creature can grow to lengths greater than 1 mm, can contain high amounts of intracellular calcium and seems to prefer low-DO environments (Figure 3). The sample given to the university professor was not opened or observed for more than one week. When they finally looked at it, the biology professors and students were astounded to see such a large amount of *H. spirostomum* in one sample and thriving in zero-DO conditions.

The detective relayed the information to the plant operator about a week later during a return visit to the plant. The operator thanked the detective for the advice given during the first visit, since it seems to have worked. The effluent leaving the new treatment train secondary clarifier is now clear.

An additional blower with higher airflow was placed online, and DO levels climbed to over 1.5 mg/l. Nitrification seems to be occurring. The plant operator had also applied 65 percent granular chlorine (HTH) to the filter dosing tank and the filters themselves to kill the free-swimming ciliates living in the filter media.

No reason for the *H. spirostomum* infestation was ever found, and they have not been seen at that treatment plant since. The lab detective has observed *H. spirostomum* in small numbers in other treatment plant MLSS samples, but never to the extent that caused a cloudy, milky clarifier effluent.

ABOUT THE AUTHOR

Ron Trygar is senior training specialist in water and wastewater at the University of Florida TREEO Center and a certified environmental trainer (CET). He can be reached at rtrygar@treeo.ufl.edu. tpo

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"I came back with some really good ideas."

The 2011 Expo was Billy Bell's first, and he attended with five colleagues. "The most impressive thing was the new technology – the cameras, sewer cleaning equipment and rehab equipment on the exhibit floor," he says. "New technology has helped us tremendously. It's amazing how far it has come from the past. The sales representatives were very helpful. Any of questions about the products, they could answer. You really have to see this for yourself."

February 27th – March 1st, 2012

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Education Day

Monday, February 27th

SSCSC — Southern Sections Collection Systems Committee

8 a.m.	Rust into Gold
9:30 a.m.	Maintaining Collection System Easements
11 a.m.	Sanitary Sewer Overflows: What To Do When It Is Flowing Down the Street
1:30 p.m.	Finding Success and Growth in the Pipeline Cleaning Business
3 p.m.	Evaluating and Optimizing the Efficiency of a Combination Truck
4:30 p.m.	CCTV Inspection Essentials

NAWT — National Association of Wastewater Transporters

8 a.m.	What I Need to Know About Trucking Safety
9:30 a.m.	Setting the Dose, Establishing the Pump Delivery Rate & Relative Control Sensor Adjustment
11 a.m.	Certification and Septic System Inspections
1:30 p.m.	Is There Value in Processing My Own Sludge?
3 p.m.	Maintenance Frequency Standards and Requirements
4:30 p.m.	Working with Small Communities: System Management

NASSCO — National Association of Sewer Service Companies

8 a.m.	Sewer Ops and CMOM - Leveraging the CMOM Process for Operational Benefit
9:30 a.m.	Larry Keist - Developments in Water Main Linings
11 a.m.	Culvert Rehabilitation: Have It Your Way
1:30 p.m.	Manhole Lining: The Secret to a Successful Installation
3 p.m.	Inspection of Pipelines Under Full Flow Conditions
4:30 p.m.	Sewer and Industrial Equipment Rental - What are the Options?

WJTA — WaterJet Technology Association

8 a.m.	Accessorizing Your Vacuum Unit
9:30 a.m.	Good Craftsmen Have Heavy Toolboxes
11 a.m.	Waterjet Technology: Applications and Equipment

PSAI — Portable Sanitation Association International

1:30 p.m.	Cost Analysis: Delivery, Removal, Moves and Tip-Overs - Part 1
3 p.m.	Cost Analysis: Delivery, Removal, Moves and Tip-Overs - Part 2

NOWRA — National Onsite Wastewater Recycling Association

8 a.m.	Aerobic or Anaerobic - Which One Is Better?
9:30 a.m.	Mound Systems – Not Just for Wisconsin!
11 a.m.	Dead Bacteria - How Overuse of Cleaners and Household Products KILL
1:30 p.m.	Onsite Electrical
3 p.m.	Managing Commercial Wastewater Treatments
4:30 p.m.	Choosing the Right Float to Control Your Pump

NEHA — National Environmental Health Association

8 a.m.	Promoting Competence: What's in It for Me?
9:30 a.m.	Septic Tank Science
11 a.m.	Advanced Treatment - What Does That Mean?
1:30 p.m.	Successfully Dosing Pipe Networks
3 p.m.	Pump Replacement
4:30 p.m.	The State of the Industry: The Forecast, The Strategy, The Tools

BUSINESS TRACK — General Business - Scott Hunter

8 a.m.	Keeping Employees and Customers Happy - Part 1
9:30 a.m.	Keeping Employees and Customers Happy - Part 2
11 a.m.	Keeping Employees and Customers Happy - Part 3
3 p.m.	How to be Successful and Profitable in Any Economy - Part 1
4:30 p.m.	How to be Successful and Profitable in Any Economy - Part 2

WASTEWATER EDUCATION — in Association with NOWRA

8 a.m.	Social Media: Friend or Foe?
9:30 a.m.	Taking it to the Web, Infinity and Beyond!

DETAILED SESSION INFORMATION AVAILABLE AT:

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Indianapolis 2012

Tuesday Sessions

February 28, 2012

MUNICIPAL TRACK

8 a.m. Inspecting and Locating Laterals
Edward A. "Digger" Diggs – CUES, Inc.

9:30 a.m. Get Quality Results From Your Inspection Management Program!
Rod Thornhill, Cori Griss – Infrastructure Technologies

11 a.m. Using Chemical Grouts to Protect Mainlines, Laterals, Manholes and Lift Stations
Daniel Magill – Avanti International

SEWER AND DRAIN TRACK

8 a.m. Contractors Need to Improve Jetting Sales
Nick Woodhead, Ken Bryson – US Jetting

9:30 a.m. Lift Station Backup Pumping
Majid Tavakoli – Thompson Pump

11 a.m. Optical Advancements Improve Range and Clarity of Pipeline Zoom Inspection
Richard Lindner – Envirosight

BUSINESS TRACK

8 a.m. Market Like the Green Bay Packers
Jerard Nighorn – Lenzyme, Inc.

9:30 a.m. Training is the Key to Unclogging a Messy Business
William Raymond – Nexstar Network

11 a.m. How to Make Profits That Drop Straight to the Bottom Line
Jenny Alday – One Biotechnology

PORTABLE RESTROOM TRACK

8 a.m. How Your Portable Toilet Company Can Save Money By Saying "No"
Joel Smith - Clear Computing

9:30 a.m. New Emission Standards for Service Trucks
John Olson – Satellite Industries

11 a.m. New Portable Restroom Products
David Roncadori – J&J Chemical Co.

LIQUID WASTE TRACK

8 a.m. What You Should Know About ATUs and How to Evaluate and Service Them
Doug Dent – Ecological Labs

9:30 a.m. From the Kitchen to the Grease Trap to the Landfill
Dennis Brunetti – FloTrend

11 a.m. The Evolution of Effluent Filters
Theo Terry – Bear Onsite

ADVANCED INSTALLER COURSE

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Wednesday Sessions

February 29, 2012

PIPE RELINING TRACK

8 a.m. Advances in Monitoring Technology Help Ensure Proper Liner Cure
Jake Wells – Pipeline Renewal Technologies

9:30 a.m. UV Cured Fiberglass Pressure Liner
Richard Montemarano – LightStream

11 a.m. New Braunfels Utilities Performs Manhole-to-Manhole Lining in-House
Travis Bohm – Perma-Liner Industries

INSTALLER TRACK

8 a.m. Installation and Operation of Float Switches
Brett Wilfong – SJE-Rhombus

9:30 a.m. STEPping Up
Dennis Hallahan P.E. – Infiltrator Systems

BUSINESS TRACK

8 a.m. Septic, Sewer & Portable Business Valuation Basics
Jeff Bruss – COLE Publishing

9:30 a.m. Inexpensive Marketing, Promotion & Advertising Ideas for Septic, Sewer & Portable Companies
Jeff Bruss – COLE Publishing

11 a.m. Making the Most of Mobile Marketing
Jeff Bruss – COLE Publishing

GAS, OIL AND MINING TRACK

8 a.m. Vacuum Equipment in the Marcellus Shale Region
Mark Nixon – MORO USA

9:30 a.m. How to Vacuum More Efficiently with a Positive Displacement Blower
Jeff Peterson – Hibon, Inc., a division of Ingersoll Rand

11 a.m. Why Choose Hydroexcavation? Opportunities in the Oil and Gas Exploration Industry
Neil McLean – Hydro Excavation Consulting Unlimited

INDUSTRY SAFETY TRACK

8 a.m. Cross Bores, Deadly but Preventable – Your Actions Can Save Your Life
Mark Bruce – Can Clay

9:30 a.m. Is the Air in Your Manhole or Confined Space Safe to Breathe?
Ed Fitzgerald – Jack Doheny Companies

11 a.m. OSHA: Introduction to Soil Analysis
Gary Hooks

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February 27th – March 1st, 2012

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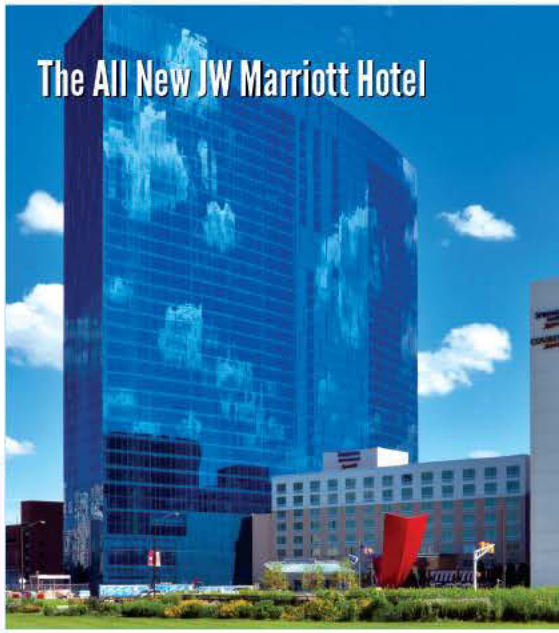
TUESDAY NIGHT *Industry Appreciation* ★ PARTY ★



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Biosolids/ Headworks

By Briana Jones

LONG-LASTING PIPE

Basalt lined piping from Abresist Kalenborn

Basalt lined piping from Abresist Kalenborn lasts five times longer than 1/2-inch wall cast iron. Pipes, elbows and fittings are custom engineered for each application and can be provided in a variety of end connection arrangements to easily retrofit into existing systems or install in new ones using flanges, grooved couplings, compression couplings or welded attachment. Most coating systems can be applied to the carbon steel outer casing. The piping is well-designed for abrasive slurry systems and pneumatic systems in pressure or vacuum conditions. **800/348-0717; www.abresist.com.**

KLAMPRESS belt filter press from Ashbrook Simon-Hartley

BELT FILTER PRESS

The KLAMPRESS belt filter press from Ashbrook Simon-Hartley achieves specific dewatering goals and can be provided as an extended belt press, as a three-belt press with gravity belt thickener, as an extended high-solids belt press, as a vertical Z-Type belt press with horizontal gravity belt thickener, and as other configurations. It offers low cost of ownership and trouble-free operation. **800/547-7273; www.as-h.com.**

FULL PENETRATION BAR SCREEN

FlexRake FPFS from Duperon

The FlexRake FPFS from Duperon for wastewater installations uses Thru-Bar technology, ensuring that scrapers fully penetrate the bars and eliminate the issues of wrapping and clinging debris. Multiple scrapers discharge once per minute, further minimizing debris accumulation.

The manufacturer says the unit's configuration of custom tear-shaped bars provides a 50 percent screening efficiency advantage over rectangular and circular-shaped bars (based on 0.25-inch bar openings). This delivers improved flow, reduced slot velocity and decreased headloss. Controlled by fractional horsepower, it runs on 0.25 hp. Hourly, this expends 0.186 kWh, with an average cost of $1.75/hour. **800/383-8479; www.duperon.com.**

GRIT REMOVAL SYSTEM

Full Circle vortex grit systems from Envirodyne Systems are 360-degree designs using the Hercules drive, which allows for inline entry and exit. All parts are designed for long service. The systems offer low headloss, coarse to fine grit removal, custom designs for all applications, no submerged parts, removal of grit with low organic content and designs to accommodate varying flows.

Full Circle vortex grit systems from Envirodyne Systems

Laminar flows are introduced tangentially into the grit chamber and are directed along the outside of the tank by an inlet baffle into a rotational current. A mechanized impeller forces a vortex, creating a shear zone that separates lighter organics from heavier grit. An outlet is provided inline, but at a higher elevation to prevent short-circuiting. Grit collects towards the center of the tank, where it settles into a lower grit storage hopper. Water and air scour lines or mechanical means can be supplied to fluidize the grit. A variety of grit pumping options are available, including airlift, vacuum-primed and self-priming. **717/763-0500; www.envirodynesystems.com.**

L4-D dynaBLEND liquid polymer blending system from Fluid Dynamics

POLYMER BLENDING

The L4-D dynaBLEND liquid polymer blending system from Fluid Dynamics is lightweight and available in three sizes: L4-300, L4-600, L4-1200. Five diaphragm pump models are available (0.4D, 1.0D, 2.5D, 4.5D, 8.0D) with polymer flow rate ranges from 0.02 to 8.0 gph. The L4-600 2.5D model fits polymer blending applications with 60-600 gph of dilution water and 0.1-2.5 gph of polymer. The unit requires a water supply able to provide a maximum pressure of 35-50 psi greater than the water pressure at the point of use. All L4 and L6 models can handle operating pressures to 100 psi and run on single-phase 115 VAC standard power. **215/699-8700; www.dynablend.com.**

INLINE DISINTEGRATOR

Super Shredder inline disintegrator from Franklin Miller

The Super Shredder inline disintegrator from Franklin Miller reduces tough solids directly in sludge or raw sewage lines. The unit combines grinding capabilities with streamlined features. The design provides a large open area to fluid flow for applications requiring a heavy-duty size reduction processor that can handle high flows with minimal headloss. The unit stops pumps and valves from ragging and plugging, protects filter presses from punctures and incomplete dewatering, and enhances and protects centrifuge operation.

The device features a spherical shredding mechanism that cuts and shears sludge and sewage solids into fine bits. The hard-faced stainless steel cutters resist wear. With two replaceable one-piece cutters and fewer moving parts, less maintenance is required than with banks of cutter disks. An S-250 auto-reversing control system that senses jam conditions is included. **800/932-0599; www.franklinmiller.com.**

BlackBelt live-bottom trailer from Henderson Products

BIOSOLIDS HAULER

The BlackBelt live-bottom trailer from Henderson Products hauls processed sludge to its final staging area. The weight of the material creates a seal inside the unit during transport. The corrosion-resistant, stainless steel unit is 100 percent cab-controlled for

safety. With the load sense tensioning drive system, the conveyor belt discharges the biosolids out the rear. Planetary drive provides 71 percent roller to belt engagement, eliminating belt slippage and guaranteeing a smooth discharge. Because there is no tipping, exact material placement is achieved, reducing airborne particles generated during unloading. **800/359-4970; www.hendersonproducts.com.**

MODULAR HEADWORKS PLANTS

Modular headworks plants from Hi-Tech Environmental

A full line of modular headworks plants from Hi-Tech Environmental treats flows from 150 to 2,300 gpm. Major components are constructed from 304 or 316 stainless steel for long life. Every modular plant features screening, grit removal and optional grease removal along with a PLC control system for fully automated operation and minimal operator attention. Outdoor weather protection is available for colder climates. Every system comes in a self-contained stainless steel tank with flanged inlet and outlet. **800/264-7005; www.hi-techenv.com.**

Hydro-Sludge screen from Hydro International

SLUDGE SCREEN

The Hydro-Sludge screen from Hydro International is a durable pressurized screen that separates material from sludge and dewaters screened materials for landfill in one operation. The horizontal, inline coarse material separator has an inlet screening zone and a pressing (compaction) zone. The enclosed system reduces odors and has no washwater requirements. Sludge passes through the perforated stainless steel screen while material larger than 5 mm is captured and conveyed to the compaction zone.

Coarse materials are compacted in the regulating cone, and screenings are discharged for disposal. The unit can be used for pumped feed or on direct discharge from a septage truck and can be used in primary, secondary or combined sludges. It is fully automatic for continuous or intermittent screening. **866/615-8130; www.hydro-international.biz.**

DRUM THICKENERS

IFT rotary drum sludge thickeners from IPEC consist of a cylindrical drum with progressive series of screen elements. The drum rotates on four wheels mounted on a structural housing. The smallest openings are used to screen the influent, followed by coarser elements as the material thickens. The screens are used to remove free liquids from a variety of sludges, including those with microbial particles. Sludge contains 0.5 to 3 percent solids and can be thickened to 3 to 15 percent.

IFT rotary drum sludge thickeners from IPEC

Sludge is pumped to the thickener where polymer is injected before the material enters a tank. A vertically mounted mechanical mixer agitates for up to one minute to aggregate the fine solids into a tightly held floc. The conditioned sludge flows into the distribution headbox and is fed into a screen cylinder. The floc are retained on the screen surface as the liquid flows through the screen opening. Liquid filtrate is collected and directed to a bottom outlet. Solids are transported by flights along the cylinder and discharged out the open end, exiting through the discharge chute. A shower bar along the top section applies an intermittent cleaning shower to keep screen openings clean. **800/663-8409; www.ipec.ca.**

AUTOMATED BIOSOLIDS PRESS

Dehydris Twist biosolids press from Infilco Degremont

The Dehydris Twist biosolids press from Infilco Degremont uses the Bucher Unipektin hydraulic piston press technology. The automated process consists of a rotating cylinder and moving piston that continuously squeezes the material, allowing the water to pass through flexible drainage elements made of porous woven cloth. The resulting cake is retained inside the cylindrical shell and automatically discharged. The unit provides up to 30 percent reduction in bulk volume. Digested biosolids can be dewatered to autothermal conditions before incineration. Maximum dry substance content is achieved for chemically untreated and denatured material. **804/756-7600; www.degremont-technologies.com.**

Grit classifier from JDV Equipment Corp.

LOW-MAINTENANCE CLASSIFIER

The grit classifier from JDV Equipment Corp. is a low-maintenance system with high-efficiency features to handle flows up to 800 gpm. The system traps small, inorganic materials such as sand, silt, gravel, ashes and coffee grounds and delivers them dewatered to the solids discharge for disposal. The optional hydro cyclone increases the overall capacity by reducing the amount of water flowing to the classifier and diverting excess water to plant flows, but passing the grit through to the classifier. **937/366-6556; www.jdvequipment.com.**

FILTER PRESSES

Filter presses from Johnson Screens

Filter presses from Johnson Screens produce filter cake with a solids content up to 75 percent. They come in five configurations: sidebar, overhead I-beam, membrane, high-speed and mobile. The presses are available with capacities from 0.4 to 670 cubic feet, with plate sizes from 320 by 320 mm to 2,000 by 2,000 mm and with multiple cake thicknesses. The user can choose the level of automation.

The units are available with 100 or 225 psi feed pressure ratings; stainless steel sidebar caps fitted standard; polypropylene filter plates, both gasketed and non-gasketed; electric/hydraulic and air/hydraulic operating systems integrated into the press frame; and technical support. Options include automatic plate shifters; air blowdown and cake washing configurations; filtrate leakage collectors; automatic washing systems; PLC automation packages with HMI interface, SCADA monitoring and data logging capabilities; automated pump controls; light curtains and safety shut-off alarms; and sludge hoppers, screw augers and conveying systems. **800/833-9473; www.johnsonscreens.com.**

(continued)

SLUDGE GRINDER

Sludge Monster grinder from JWC Environmental

The Sludge Monster grinder from JWC Environmental protects sludge pumps, heat exchangers, centrifuges and other dewatering equipment from clogging with rags and debris. The inline unit uses the same low-speed, high-torque design as the Muffin Monster, but in a compact package. The energy-efficient grinder includes a 2 hp motor, improved solids reduction using 11- or 13-tooth alloy steel cutters, hardness of Rockwell 60-65, top and bottom shaft supports to prevent shaft deflection, and automatic reversals. There is no cleanout trap to maintain, and the unit can be designed and built for a 4-inch flange specification. The grinder processes 274 gpm and can also be used in scum line applications. **800/331-2277; www.jwce.com.**

EXELYS thermal hydrolysis system from Kruger USA

THERMAL HYDROLYSIS

The EXELYS thermal hydrolysis system from Kruger USA, used with Kruger's DLD (digestion-lysis-digestion) configuration, optimizes energy production and solids reduction. DLD is the combination of double digestions separated by EXELYS. Sludge is fed to the first digester, which can operate in a mesophilic or thermophilic state. The material is then dewatered and fed to the EXELYS system. The heat is recovered for steam generation and heating of the first digester. The hydrolyzed sludge is then digested again in the second mesophilic digester. All of the solids solubilized in the unit are converted to biogas. **919/677-8310; www.krugerusa.com.**

ALL-IN-ONE PLANT


Raptor septage acceptance plant and complete plant from Lakeside Equipment Corp.

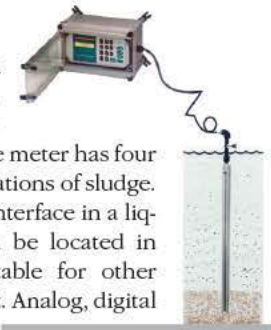
The Raptor septage acceptance plant and Raptor septage complete plant from Lakeside Equipment Corp. remove debris and inorganic solids from municipal, industrial and septic tank sludges. The heavy-duty machines incorporate the Raptor fine screen for screening, dewatering and compaction. Accessories include grit and rock removal and security access and automated accounting systems. With the addition of aerated grit removal, the acceptance plant is offered as the complete plant. **630/837-5640; www.lakeside-equipment.com.**


Smart Conveying Technology (SCT) from seepex

PUMP TECHNOLOGY

Smart Conveying Technology (SCT) from seepex provides fast pump maintenance, assembly and dismantling. Progressive-cavity pumps with SCT do not have to be removed for maintenance, and there is no dismantling and reassembly of piping or removal of other components. The integrated retensioning device and a readjustment of the stator increases the service life of the stator and rotor. **937/864-7150; www.seepex.com.**

SLUDGE METER


Model 602 sludge depth meter from Markland Specialty Engineering

The Model 602 sludge depth meter from Markland Specialty Engineering measures sludge levels in DAFs, SBRs, inclined plate clarifiers, decanting tanks and clarifiers. The meter has four power levels to adjust for different concentrations of sludge. It also can be used to find the level of any interface in a liquid. The optical beam means sludge can be located in obstructed or constricted areas not suitable for other meters. The PVC probe is corrosion resistant. Analog, digital and relay outputs are available. **905/873-7791; www.sludgecontrols.com.**

GRINDER SYSTEM


M-Ovas Grinder System from NETZSCH Pumps

The M-Ovas Grinder System from NETZSCH Pumps protects downstream pumps, pipelines, belt presses, centrifuges and digesters from blockages. The single shaft design cuts and conditions debris-laden fluids into a homogenous sludge. Other debris like stones and metal parts fall out of suspension and accumulate in an integrated stone trap, making it easy to access and dispose of settled matter.

The compact design allows high flow rates with low energy consumption. The grinder allows for maintenance in place without disconnecting any piping. The quick-release hinged lid gives access to the cutting blades and plates. The cutting blades are simple to change, and the cutter plate is reversible. A variety of cutter plates and control panels are available. **610/363-8010; www.netzschusa.com.**

COMPACT FAN PRESS


Rotary Fan Press from Prime Solution

The Rotary Fan Press from Prime Solution simplifies dewatering performance for sludges and slurries using continuous pressure differential technology. With a rotational speed of less than 1 rpm, the unit is portable and enclosed and offers a long service life. Several capacities are available to meet various flow applications. Skid-mounted systems include control panel, feed pump, chemical prep, inline mixing and plant integrated controls. The compact designs can be configured for portability with mobile systems containerized or trailer mounted. **269/673-9559; www.psirotary.com.**

GRIT SLURRY TREATMENT

The Grit Classifier from Schreiber washes and dewaters grit slurry from grit removal systems, enabling easy handling and transfer for disposal. It is effective over a wide range of grit particle sizes. The slurry is transferred to the grit classifier, where the inlet flow is directed downward. The grit settles into the bottom of the hopper. A shaftless screw rotates, lifting the grit from the bottom of the hopper up the trough, further washing and dewatering the grit.


Grit Classifier from Schreiber

The decanted water flows over a weir and returns to the waste stream, and the dewatered grit is discharged into a container. The system is fully enclosed and is made of 304 stainless steel for long life and corrosion protection. A hardened steel shaftless

screw provides durability and requires no submerged bearing. The device is available in 12-inch diameter for flows up to 150 gpm, and 20-inch diameter for flows up to 300 gpm. **205/655-7466; www.schreiberwater.com.**

LIME/SLUDGE MIXER

MBV lime/sludge mixer from Sodimate

The MBV lime/sludge mixer from Sodimate has orientable blades that allow efficient mixing of the lime and dewatered sludge coming from dehydration systems. The small unit eases maintenance when paddle blades need to be replaced. It is possible to combine the mixer with sludge conveyors, sludge pumps and lime feed systems for biosolids stabilization (Class B).

Stainless steel construction makes it versatile for harsh applications. It comes in different sizes and mixes from 0.5 to 15 tons/hr of material. The mixer can also be mounted into trailers for remote treatment areas and used for demonstrations and trials. The resulting product is a homogenized and stabilized biosolids with up to 30 percent solids, convenient for transport, storage, landfill or use as fertilizer. **773/665-8800; www.sodimate-inc.com.**

DYNAFLOW tubular chain drag conveyors from Spiroflow Systems

TUBULAR DRAG CONVEYORS

DYNAFLOW tubular chain drag conveyors from Spiroflow Systems are designed for heavy-duty conveying. The mechanical drag conveyor-type system operates in the confines of a pipe. Heavy-duty disks connected by articulated metal links or chains move material. The durable discs are made from steel or cast iron to withstand extremely hot conditions.

The conveyors offer totally enclosed, dust and contamination-free handling and self-feeding with most flowable materials. They require minimum horsepower and energy consumption. The units permit complex circuits, operate in two or more planes, and can have multiple feed and discharge points within a circuit without the need for a baghouse. They provide gentle conveying action, do not separate blended material and minimize material buildup. **704/291-9595; www.spiroflowsystems.com.**

WASTEWATER SCREENING

CleanFlo Monoscreen from WesTech Engineering

The CleanFlo Monoscreen from WesTech Engineering provides high-efficiency wastewater screening with a durable drive system that uses few moving parts with no chains or submerged bearings. The low-profile design allows easy access and inspection. The unit uses a progressive step shape and motion that minimizes flow surges during operation and evenly distributes the screenings on the face of the unit. The result is a screenings capture ratio (SCR) of 82.5 percent.

Combined with the optional CleanWash SWP/CPS for dewatering, the machine maximizes screenings capture while minimizing screenings volume for disposal. The improved solids washing reduces odor generation, and the high-efficiency internal counterpressure screw produces lighter, drier screenings. **801/265-1000; www.westech-inc.com.** tpo

 By Scottie Dayton

Simple package improves dewatering

Problem

An upgrade to the Groton (N.Y.) Wastewater Treatment Plant from 0.35 to 0.5 mgd included sequencing batch reactors followed by tertiary treatment. The Public Works Department also wanted to replace the aged and undersized drying beds with a more efficient dewatering system. In summer, the beds averaged cake at 12 percent solids. In winter, they became storage ponds with insufficient capacity.

Solution

Engineers selected the **3012 DSP screw press from BDP Industries** for its compact footprint and ability to dewater tramp material. A positive displacement pump transfers feed slurry from the aerobic digester to the rotary drum thickener. Thickening the slurry before dewatering increases throughput capacity. The slow-turning dewatering mechanism and few moving parts reduce maintenance costs.

RESULT

Dewatering results exceeded the department's expectations of 12 percent solids. The press turned feed sludge at 0.5 to 0.7 percent solids into cake at 15 to 17 percent solids. **518/527-5417; www.bdpindustries.com.**

Bar screens simplify maintenance

Problem

Weekly greasing of the climber screens at the 80 mgd Donald C. Tillman Water Reclamation Plant in Van Nuys, Calif., was tedious and hazardous. Operators set up fans and put on hazmat gear before climbing down into a 9.5- by 5-foot-wide confined channel with poor air quality and working conditions. Other maintenance included replacing broken misaligned rakes, freeing clogs, and dealing with corrosion on carbon steel components.

Solution

Maintenance supervisor Pritpal Jhaj reviewed alternatives and selected 46 mgd stainless steel **Mahr bar screens from Headworks.** Multiple rakes keep debris flowing from the screen troughs and drain lines to prevent clogging, while the self-reversing feature automatically dislodges material. The variable drive maintains the appropriate water level.

RESULT

"Inspection and maintenance are completed at ground level," Jhaj says. "Operators can walk up to the observation doors and see the equipment working." The channels also are covered to prevent accidental falls. The custom-fit bar screens installed smoothly into the existing space. The operators have since recommended the equipment to sister facilities. **877/674-6667; www.headworksusa.com.**

New filter belts restore efficiency

Problem

Operators at the Franklin Regional Wastewater Plant in Murrysville, Pa., struggled with belt blinding and sludge throughput on the belt filter press. Although they used a polymer belt cleaner and power washed the belt daily, the press failed to reach design capacity. Plant superintendent Gene Greco tried different polymers, cleaning methods, and increasing the washwater pressure, but saw no improvement.

Solution

Greco decided the press needed a new cloth and ordered **Nano Green belts from National Filter Media.** Molecular changes in the fiber decrease blinding, increase throughput, and heighten resistance to abrasion.

RESULT

After installing the belts, dewatered biosolids were 2 percent drier, throughput was back to design levels, and the belts required little maintenance. "This is the greatest belt life that we have ever experienced," says Greco. **800/321-5223; www.nfm-filter.com.**

Membrane process pre-thickens biosolids

Problem

Suffolk County, N.Y., paid more than $100,000 annually to haul 1.1 million gallons of liquid biosolids from the Woodside Wastewater Treatment Plant to the Bergen Point wastewater treatment facility. Officials looked for a solids handling process to minimize hauling expenses.

Solution

Operators retrofitted a **membrane thickening process from Ovivo** into two sludge holding tanks. The Kubota flat-plate membrane pre-thickened the material to 3.5 percent solids.

RESULT

The process reduced hauling by more than 57 percent, saving the county $60,000 annually and achieving a return of investment in 2.5 years. **801/931-3000; www.ovivowater.com.**

Screening protects membranes

Problem

The wastewater treatment plant in Lancaster, Ohio, was unable to meet the expected growth in waste loading from industrial customers, so officials decided to build a new facility. Consulting engineers proposed using membrane bioreactors, but needed to protect the highly sensitive membranes from stringy materials.

Solution

Engineers chose two **Rotomesh pre-membrane screens from Parkson Corp.** The rotating drum screens with perforated plate media have a high capture rate for stringy materials.

RESULT

The plant has been operating successfully for several months without a membrane failure caused by solids bypass. **888/727-5766; www.parkson.com.**

(continued)

Drying facility increases process efficiency

Problem

Emission and odor issues at a 52 mgd wastewater treatment plant caused the Greater Lawrence Sanitary District in North Andover, Mass., to shut down the biosolids incinerators. Officials then used costly private contracts to transport the material to distant incinerators and landfills. The district hired a consultant to identify the best biosolids management options.

Solution

The plant upgrade included anaerobic digesters to thicken the material and a centrifuge to dewater it. Officials selected **NEFCO to design, build, and operate a drying facility** using digester gas and convert sludge cake into biosolids suitable for fertilizer.

RESULT

Two drying trains are designed to process more than 76 wet tons each per day at 25 percent solids. Dryer exhaust is treated by scrubbing, condensing, exhaust recirculation, and thermal oxidation. **617/773-3131; www.nefcobiosolids.com.**

Facility upgrade adds dewatering efficiency

Problem

The Biosolids Recycling Center at the Philadelphia (Pa.) Water Department processed 30 percent of the city's biosolids into Class A product. They transported the remaining material to a landfill or land-applied it. Increased tipping fees, escalating fuel costs, and stricter regulations added to issues of odor control and insufficient capacity.

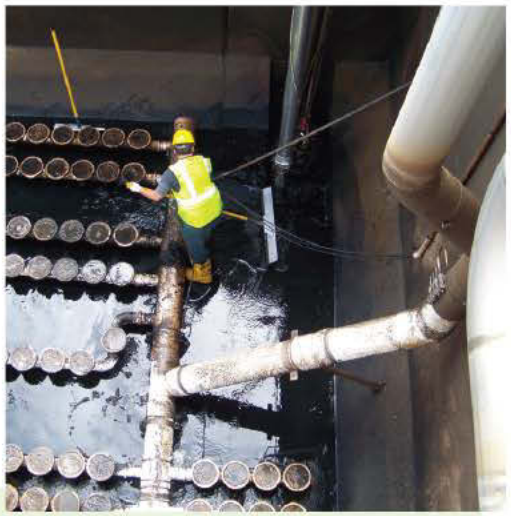
Solution

Officials decided to upgrade the plant to process 100 percent of the biosolids into Class A product. The department selected **Synagro Technologies** and partners Andritz Separation, King Engineering Associates, and TN Ward Co. for the work. During the interim operations phase, Synagro assumed operations of the dewatering facility.

RESULT

The new facility uses thermal drying or pelletizer technology. It processes up to 65,000 dry tons per year of biosolids and meets Class A requirements. **800/370-0035; www.synagro.com.**

Cleaning tool saves $11,000 for treatment plant



Problem

The 84 mgd (average) Metro Wastewater Treatment Plant in Syracuse, N.Y., serves 270,000 people. The plant staff was facing high labor costs for cleaning sludge and grit from 22 tank floors, cleaning the outfall troughs, and handling spills.

Solution

The plant's mechanical maintenance coordinator tried the **Waste Blaster hybrid hand tool** for annual cleaning and maintenance inspections of the tanks. Workers found them efficient, durable, and easy to use. During cleaning, they push and pull the tool with its aluminum rubber-edged blade. Personnel report that the tool speeded up jobs and reduced worker stress and strain. The 24-inch-wide version worked well in tight places and for clearing the outfall troughs. The handles quickly disconnect from the blade for cleaning and storage.

RESULT

Using the tools, the plant cut tank cleaning time by one-third, saving an estimated $11,000 ($500 per day times 22 tanks) and cutting out squeegee costs. The staff also reported using one-third less water. The plant owns 11 of the tools and expected to purchase more in 2012. **315/569-9974; www.waycoolproduct.com.** tpo

VISITORS

Vacation Time

By Briana Jones

The U.S. Virgin Islands aren't just a vacation stop for humans any more. Chickens have made a home at the Mangrove Lagoon Wastewater Treatment Plant on the island of St. Thomas. They can be seen hidden near pumps or sunning themselves in the clarifiers.

"Mongoose and wild dogs would chase the chickens and occasionally one would fly up into the SBR tanks and grab onto the guy wires for the floating mixers," says Ron Trygar, previous education and training coordinator for the company that ran the plant. "It was no big deal to (the operators) to have goats, chickens, cows and hogs around the treatment plant … it was all just a part of the landscape and the culture there on the island."

One hen made a nest behind a small blower for an aerated grit chamber. It seems like a noisy place to raise a family, but maybe the gentle hum of the equipment kept the baby chicks at ease. It sounds as if a trip to the islands would be a relaxing getaway. tpo

Show us your visitors

***TPO* invites you** to show us the wild creatures that visit your plant property. Mammals, birds, reptiles, amphibians — send a picture or two and a brief description of when and where the visitor appeared to editor@tpomag.com.

Godwin Pumps Changes Name to Xylem Dewatering Solutions

Godwin Pumps of America Inc. changed its name to Xylem Dewatering Solutions Inc., effective Jan. 1. Godwin will remain the brand name for the company's Dri-Prime series of pumps.

Radiodetection Sponsors Locate Rodeo

Radiodetection is a Diamond Sponsor of the 10th Annual International Locate Rodeo. The event recognizes the competitive skills of locate technicians in the United States and Canada. Each competitor must perform three locates in a division of their choice (gas, water, power, telcom). A bonus three-minute event tests the skills of competitors on a complex line locate, involving at least three different lines.

Cummins Opens Acoustical Testing Center

Cummins Power Generation opened its Acoustical Testing Center at its Fridley, Minn., headquarters. By eliminating any external noise interference or input, the ATC enables the company to precisely measure the noise output from fully assembled generator sets, pinpointing sources to design quieter products.

Star Pipe Names CEO, President, Managers

Star Pipe Products named Ramesh Bhutada chief executive officer and chairman, promoting Dan McCutcheon to president. Navin Bhargava was promoted to executive vice president in charge of procurement, while Jason O'Nan was promoted to vice president in charge of sales and marketing. Pete Lisowski was promoted to national sales manager, Doug Allen was promoted to Southeast Division manager, Rich Mazur joined the sales team as territory manager for New England and upstate New York. Brian Pokropski joined the company as territory manager for the Mid-Atlantic area, Brian Kilgore joined the sales team as territory manager for Arizona, Southern Utah and Nevada and Jerry Hughes joined the sales team as territory manager for the Mid-Central area.

BLACOH Fluid Adds Regional Managers

BLACOH Fluid Control Inc. added two regional managers as part of its continued expansion in domestic and international markets. Brandon Dairymple was named business development manager for the U.S. Northeast Region and OEM business worldwide. He will be located in Indianapolis, Ind. Cristian Rohde was named business development manager for the company's Latin American Region. He will be based in Buenos Aires, Argentina.

Stahlin Names Wood to Inside Sales Position

Chris Wood

Stahlin Non-Metallic Enclosures named Chris Wood to its inside sales position. He brings several years of sales experience to his position.

Xylem Launches Water Technology Company

Xylem Inc. completed its spinoff from ITT Corp. and has begun operations as a $3.2 billion stand-alone global water technology company. Xylem serves a $30 billion segment of the global water equipment and services market. The management team includes Gretchen McClain, president and CEO; Mike Speetzen, CFO; Mike Kuchenbrod, president, water solutions; and Chris McIntire, president, analytics.

Trojan Technologies Acquires OpenCEL

Trojan Technologies Group acquired the business assets of OpenCEL of Glencoe, Ill., supplier of environmental biotechnology utilized to pretreat wastewater sludge prior to anaerobic digestion.

Pump Solutions Acquires RedScrew Pump

Pump Solutions Group, a business unit operating within the Dover Fluid Management Segment of Dover Corp., acquired Tianjin RedScrew Pump Manufacturing Technology Co. Ltd. of Tianjin, China. The company manufactures twin and triple screw pumps, as well as multiphase and specialty pumps.

Torrey Pines Releases 2012-13 Catalog

The 2012-13 catalog from Torrey Pines Scientific Inc. includes programmable, multiposition and single-position digital stirring hot plates, programmable chilling, heating HPLC column ovens, large surface analog multiposition and single-position stirring hot plates, as well as digital and programmable chilling/heating benchtop incubators, column ovens, mini circulators and variable-speed mixers.

Neptune Releases Hydraulic Series Brochure

Neptune Chemical Pump Co. released its Hydraulic Series brochure, providing customers with tips for sizing and selecting metering pumps. Copies can be downloaded at www.neptune1.com/pumps/images/neptunehydraulicseriespumps.pdf.

Sterlitech Launches Glass Fiber Website

The Glass Fiber Store from Sterlitech Corp., www.glassfiberstore.com, features different brands and grades of filters, including products from Advantec, MFS and Munktell, as well as Sterlitech.

NYC Launches Operational Excellence Program

The New York City Department of Environmental Protection launched Operational Excellence (OpX) to enhance services and reduce costs for the 9 million customers who rely on DEP for water and wastewater services. Veolia Water has been hired as a consultant to develop recommendations to streamline workflows, boost productivity, identify opportunities for efficiency gains and keep future water rate increases as low as possible. DEP spends approximately $1.2 billion annually on operations and maintenance and hopes to achieve $100 to $200 million in annual savings through the program. tpo

Deer Island Plant to get new human machine interface system

The Massachusetts Water Resources Authority (MWRA) will replace outdated human machine interface (HMI) systems at its Deer Island Wastewater Treatment Plant with Ovation technology from Emerson Process Management. The new interface will make it easier for operators to control daily operation and ensure regulatory compliance.

The plant, in operation since 1995, is the second largest in the United States. It serves 43 Boston-area communities and is the centerpiece of MWRA's $3.8 billion program to protect Boston Harbor against pollution from the metro sewer systems.

When installed in March 2012, the Ovation solution will manage and integrate the plant's legacy systems and numerous processes, including influent pumping, grit screening, primary clarification, oxygen-activated sludge secondary treatment, secondary treatment clarification, sludge digestion, sludge thickening, odor control, disinfection and effluent discharge. In all, it will manage 30,000 I/O points.

Treatment plants order turbocompressors

Siemens Energy has received several orders for turbocompressors for wastewater treatment in the U.S. and Mexico. The Southeast Wastewater Treatment Plant in Rolla, Mo., will install direct drive turbocompressors to provide compressed ambient air to meet biological oxygenation needs. Aguas Tratadas del Valle de Mexico S.A. de C.V. ordered 18 compressors for the PTAR Atotonilco treatment plant in Atotonilco de Tula in the province of Hidalgo. The Northwest Wastewater Technology Plant demonstration site in Springfield, Mo., will install a single STCDO turbocompressor. The City of Springfield will operate the plant.

DC Water breaks ground on Clean Rivers Project

The District of Columbia Water and Sewer Authority (DC Water) broke ground in October on a massive construction project to nearly eliminate combined sewer overflows. The groundbreaking ceremony and first construction projects in the series occur at the Blue Plains Advanced Wastewater Treatment Plant. The $2.6 billion Clean Rivers Project creates giant tunnels more than 100 feet underground that will store combined sewage during heavy rainstorms. The first tunnel will run along and under the Anacostia River.

Little Blue Valley district adds TrojanUV disinfection

Little Blue Valley Sewer District (LBVSD) in Independence, Mo., selected the TrojanUVSigna open-channel wastewater UV disinfection system from Trojan Technologies. The system is designed for large-scale wastewater disinfection. Trojan will supply three channels of UV banks with TrojanUV Solo Lamp technology. LBVSD treats wastewater from Kansas City and surrounding cities and counties at the 52 mgd Atherton Wastewater Treatment Plant.

Ithaca embarks on performance contract

The City of Ithaca, N.Y., and the towns of Ithaca and Dryden have selected Johnson Controls to implement an energy savings performance contract to maximize the energy efficiency at the Ithaca Area Wastewater Treatment Facility. The project is supported by more than $400,000 of American Recovery and Reinvestment Act (ARRA) funding. Upgrades began in September and will be complete in 16 to 18 months.

The project includes enhancements that will reduce energy and operational costs. They include modernizing the facility's aging infrastructure, upgrading the cogeneration system, and replacing the digester cover, digester mixer and a boiler. Benefits are projected to include $9 million in energy and operational savings over 20 years, reduction of greenhouse gas emissions by 961 tons CO_2 equivalent per year, creation of $15 million in economic development and spending, and creation of 80 jobs. **tpo**

1. ROCKWELL AUTOMATION AC DRIVES

Allen-Bradley PowerFlex 755 AC drives from Rockwell Automation have an extended power range of 900 kW/1,300 hp and 600/690 volt ratings. The common DC bus option enables users to connect the drives to a common DC bus configuration, which acts as a common energy source that feeds energy from a generating load to a motoring load. Features include embedded Ethernet port and five option slots. Option modules include I/O, feedback, safety, additional communications and auxiliary power supply. **800/227-6143; www.ab.com/drives/powerflex/755.**

2. FCI ST100 GAS FLOWMETER

The ST100 Series air/gas mass flowmeter from Fluid Components International LLC features analog and bus communications with the ability to be field changed and upgraded. Outputs utilize a modular plug-in card system. The thermal dispersion flowmeter is designed for use in aeration basins, digester gas systems, digester gas-to-cogen or CHP systems as well as in ozone and other disinfection gas systems. The unit has a backlit LCD that continually displays all process measurements, alarm status and user defined field and, when needed, instrument health and service diagnostics. Models include flow, temperature and pressure measurements. **800/854-1993; www.fluidcomponents.com.**

3. WAHL BLACK BODY CALIBRATION

The Black Body line of calibration sources from Palmer Wahl, designed for the calibration and verification of infrared temperature instruments, is available in 22 models. Both cavity and hot plate types feature dull black surfaces to achieve an emissivity as close to 1 as possible. Models with built-in or stand-alone temperature controllers are available. Communication ports are available on some models, enabling the user to set points for automatic test applications. **800/421-2853; www.palmerwahl.com.**

4. XYLEM GODWIN NON-CLOG PUMPS

Godwin NC Series portable pumps featuring non-clog Flygt N-technology from Xylem Inc. are made for sewage and bypass pumping. Designed to allow stringy solids to pass, the 3-, 4- and 6-inch pumps are available for rent or purchase. Models NC80, NC100 and NC150 are capable of flows up to 1,750 gpm and available with diesel engine or electric motor on a highway trailer or skid base. Quiet enclosures for use in residential areas are available. **704/409-9700; www.xyleminc.com.**

5. MEMBRANA-CHARLOTTE LIQUI-CEL MEMBRANE CONTACTOR

The 14- by 40-inch Liqui-Cel deaeration membrane contactor from Membrana-Charlotte utilizes polypropylene hollow fiber, contains 4,015 square feet of membrane area and has a maximum capacity of 550 gpm. It has a pressure rating of 60 psig and is NSF/ANSI 61 compliant. **704/587-8888; www.liquicel.com.**

6. NEXTTEQ GASTEC SULFIDE DETECTOR TUBES

The Gastec Sulfide Ion in Solution Detector Tube No. 211 from Nextteq provides a quick and easy method for detecting sulfide ion levels in solution. No technical training is necessary to perform the test accurately. The detector tubes are available in four ranges for specific measuring, with a total range of 0.5 to 1,000 parts per million. No mixing of chemicals is required. The direct-reading tubes produce a quantitative color-stain that pinpoints problem areas in two to three minutes. The calibration scale, printed directly on each tube, provides easy-to-read, on-the-spot results. The tubes save time by avoiding laboratory turnaround time. No color comparison chart or laboratory equipment is necessary to determine results. The color-stain ends with a clearly defined line of demarcation. **877/312-2333; www.nextteq.com.**

7. MOYNO INC. 500 SERIES PUMP

The 500 Series 301 pump from Moyno Inc. is designed for chemical dosing and transfer applications. Features include a reverse covered seal design between the rotor shaft that eliminates metal exposure to fluids. Phenolic housings and rotors are corrosion-resistant. Hose connections, resilient cushion and cradle mounting provide easy installation, maintenance and replacement. Suitable for direct or belt drive, the pumps have a pumping range of 0.45 to 13 gpm and pressures up to 25 psi. **877/486-6966; www.moyno.com.**

8. SENSOREX PH/ORP SENSOR

The flat-surface, self-cleaning S656CD pH/ORP electrode from Sensorex combined with the CPVC S675 insertion assembly enables pH measurements to be made in pressurized tanks and mainlines. The electrode features HT gels and reduced breakage potential, with four protective pads to reduce pH glass breakage. Its flat surface measuring glass design reduces coating and buildup in turbulent flows to extend electrode life and reduce maintenance. **714/895-4344; www.sensorex.com.**

9. XENON CELLULAR CONTROL

The T925 wireless cellular control from Xenon Inc. is designed for connecting remote sites with central control and monitoring stations through cellular networks. The remote network eliminates the need to make hardwired Ethernet connections to the Internet or to an intranet at each remote site and at the central control and monitoring station. The network operates from any location with cellular coverage. **866/571-8595; www.xenoninc.com.**

10. BINMASTER PRO REMOTE

The Pro Remote capacitance probe from BinMaster enables the sensor's electronic components to be mounted 75 feet away from the sensing probe. The point level indicator is designed for hostile applications, including high temperatures and excessive vibration. The remote can be used for high, mid and low level detection of solids, liquids or slurries using a variety of probe options. **800/278-4241; www.binmaster.com.**

U.S. ENERGY MANAGEMENT SYSTEM

The H2Oversight Service water and wastewater management system from U.S. Energy audits, monitors and tracks in-and-outbound water usage. The service uses a closed loop waste and wastewater tracking system that captures historical and current water and wastewater invoice data, conducts an analysis of pricing and usage to identify abnormalities, ensuring that the optimal rate structure is being billed. The service also identifies all possible savings on credits, tariffs, bypass opportunities and operational savings, producing a customized plan for each client. **763/543-4600; www.usenergyservices.com.** tpo

product spotlight

BIO-Cel MeurerMBR membrane bioreactor from Meurer Research

Membrane Bioreactor Filters Without Chemicals

By Ed Wodalski

The BIO-Cel MeurerMBR flat-sheet membrane bioreactor with 0.04-micron pores from Meurer Research provides chemical-free filtration and clean discharge in a small footprint. Producing effluent free of biomass, bacteria and particles, the bioreactor meets California Title 22 and the EU Bathing Water Standard and is suitable for effluent recycling or use with nanofiltration, reverse osmosis, UV and other treatments.

"For the last 10 to 20 years, membrane manufacturers have been trying to figure out a way to cut costs," says Chris Thiel, director of sales and marketing. "A fouling layer develops on the membrane, whether it's hollow fiber or flat plate. And to clean that, chemicals have been required. We developed the mechanical cleaning process (MCP), which uses thousands of mineral-filled polyproprolene beads to remove the fouling layer without chemicals."

The filtration system, available in four models (BC10, BC50, BC100 and BC400), features two UP-150 membranes made of polyether sulfone (PES) and pressure-fused to a woven polyester core that can be backpulsed at up to 2.2 psi without breakage, tearing or ballooning. The modular system enables both new and retrofit plants to be custom designed to meet specific filtration needs, Thiel says.

The module includes membrane cassettes and frames with diffusers. Screened wastewater enters the reactor basin, is treated by a highly concentrated activated sludge process, and flows to the filtration basin, equipped with submerged flexible flat-sheet membrane modules. Suction pulls permeate through the continuously air-scoured pores, and clean effluent is discharged.

The concentration of bacteria in the aeration process speeds up biodegradation, allowing for a smaller aeration tank and eliminating settling basins. Computerized control provides automatic operation, reliable output, and cost-efficiency.

The BC400 provides up to 4,300 square feet of membrane area and measures 62 inches long by 46 inches wide by 109 inches tall. In some applications the system takes about half the space of other membrane modules, according to Thiel.

The continuous cleaning process also results in minimal maintenance and downtime. "When you use chemicals, you have to take the membranes out of service, which means you need more membrane area to compensate for what you're losing," Thiel says. **303/279-8373; www.meurermbr.com.**

TPO CLASSIFIED ADVERTISING

FEBRUARY

DEWATERING

20 YD DEWATERING FILTER BOX: Complete roll-over tarp system with fiberglass bows, filter media, center wall, loading manifold, drain and wash-out ports, rear door with quick release handle and quick close latch. Also complete polymer system available. $18,000. Call for more info. 863-984-8994 or visit www.idsfilterboxes.com, FL. (CMPToBM)

ALAR 660 AUTOVAC DEWATERING PLANT. HUGE SAVINGS ON DISPOSAL COSTS!!! MUST SELL. Price reduced to $10,000 obo. Moving Sale, must sell! Complete plant, like new. Vac skid with electrical control panel, fully automated system. Grease interceptor and septic separation primary use. All electric, location plans, manuals. Too much to list! CALL TODAY. 808-848-1569. (P02)

Are you considering purchasing OR are you frustrated with your current Dewatering Box?? I have a better way! Call me to learn more. 317-539-7304. (P02)

22-yard dewatering box with steel rolling tops. Does not include filter media or polymer injection system. Asking $18,000. 770-917-0377, GA. (PBM)

DRAINFIELD RESTORATION

Soil Shaker 2000. Universal skid steer attachment for drainfield restoration. Buy factory direct $6,250. www.soilshaker.com or call 320-293-6644. (P01-12)

TERRALIFT FOR SALE: 1995 LT 11 model, recently rebuilt and painted. Very well maintained and runs great. $10,500. Contact Brian 218-428-0391, MN. (PBM)

EDUCATION

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

MISCELLANEOUS

UV DISINFECTION EQUIPMENT: Attention: Small wastewater treatment plant owners and operators. Very easy installation and affordable. Brand new product. US patent pending. 614-207-9030 or callagher@sbcglobal.net, www.thefecalfighter.com. (oBM)

worth noting

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

people/awards

Pierce County (Wash.) wastewater workers received the **Governor's Life Saving Award** at the annual Industrial Safety and Health Conference in Tacoma for their part in helping rescue a worker who was swept into a sewer pipe:

Tom Cornwall	John Dusek	Clint Sumerall
Jason Robinson	Mandel Hardy	John Crest
Erick Sund	Mark Newport	Tyler Robertson
Bob Atkinson	Scott Roth	Tom Purcella
Larry Butner	Kurth Cushman	Mark Emery
Richard Lonzak	Nick Palermo	Paul Hargrove

The following received awards from the National Council for Public-Private Partnerships:

- **New Orleans Wastewater facilities**, Infrastructure Award
- **City of Fayetteville, Ark., and CH2M HILL,** Partnership Service Award

education

Canada

The Maritime Provinces Water & Wastewater Association will hold an annual seminar, "The Earth Is Our Island: How We Protect It," in Charlottetown, PEI, April 22-25. Visit www.mpwwa.ca.

Michigan

The Michigan Water Environment Association has a Lagoon Seminar in East Lansing on March 22. Visit www.mi-wea.org.

Minnesota

The Central States Water Environment Association-Minnesota will hold an Innovative Approaches to Wastewater Operational Problems Seminar in St. Cloud on Feb. 15. Visit www.cswea.org.

Texas

The Texas Water Utilities Association has these courses:

- Feb. 14 – Distribution, Longview
- Feb. 29 – Safety, Mineola
- March 13 – Wastewater Collection, Carrollton
- March 19 – Management, Texarkana
- March 20 – Safety, New Braunfels
- March 27 – Safety, Longview

Visit www.twua.org.

Utah

The Water Environment Association of Utah has a Biosolids 101 seminar on Feb. 15. Visit www.weau.org.

Virginia

The Virginia Water Environment Association has an Industrial Waste and Pretreatment seminar March 5-6 in Charlottesville. Visit www.vwea.org.

WEF

The Water Environment Federation has a Wastewater Treatment Modeling seminar Feb. 26-28 in Mont-Sainte-Anne, Quebec. Visit www.wef.org or www.modeleau.org/WWTmod2012.

Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering these courses:

- March 26-27 – Upgrading Your Sanitary Sewer Maintenance Program, Madison
- March 28-30 – Wastewater Pumping Systems and Lift Stations, Madison
- April 24-26 – Nutrient Removal Engineering: Phosphorus and Nitrogen in Wastewater Treatment, Madison

Visit www.epdweb.engr.wisc.edu.

The Wisconsin Department of Natural Resources is offering these courses:

- Feb. 1-2 – Ponds and Lagoons: Introduction and Advanced, Fennimore
- Feb. 6-10 – General Wastewater Treatment: Introduction and Advanced, Madison
- Feb. 21-22 – Anaerobic Digestion: Introduction, Burlington
- Feb. 23 – Anaerobic Digestion: Advanced, Burlington
- Feb. 27-29 – General Wastewater Treatment: Introduction and Advanced, Green Bay
- March 6-7 – Ponds and Lagoons: Introduction and Advanced, Manitowoc
- March 13-14 – Disinfection: Introduction and Advanced, Green Bay
- March 19-23 – General Wastewater Treatment: Introduction and Advanced, Chippewa Falls
- March 26-27 – Mechanical Sludge Handling: Introduction and Advanced, Oconomowoc
- April 11 – Wastewater Math, Chippewa Falls
- April 16-17 – Activated Sludge: Introduction, Madison
- April 18-19 – Activated Sludge: Advanced, Madison
- April 23-24 – Phosphorus Removal: Introduction and Advanced, Madison
- April 25-26 – Lab: Advanced, Madison

Visit www.dnr.state.wi.us. tpo

CALENDAR OF EVENTS

Feb. 5-8
New York Water Environment Association Annual Conference and Exhibition, New York Marriott Marquis. Visit www.nywea.org.

Feb. 6-8
Hawaii Water Environment Association Annual Conference, location to be announced. Visit www.awwa-hi.org.

Feb. 7-8
Michigan Water Environment Association and Michigan Section of the American Water Works Association Joint Expo, Lansing Center. Call 517/627-0913 or visit www.mi-wea.org.

March 13-14
Georgia Association of Water Professionals Industrial Conference & Expo, Callaway Gardens Convention Center, Pine Mountain. Visit www.gawp.org.

March 19-22
Illinois Water Environment Association and the Illinois Section of the American Water Works Association Joint Annual Conference, Crowne Plaza Hotel, Springfield. Visit www.iweasite.org.

March 21
Wisconsin Wastewater Operators Association Spring Biosolids Symposium, Stevens Point. Visit www.wwoa.org.

March 24-28
Missouri Water Environment Association Annual Conference, Osage Beach. Visit www.mwea.org.

March 25-28
Water Environment Federation Residuals and Biosolids 2012: Advancing Residuals Management: Technologies and Applications, Raleigh (N.C.) Convention Center. Visit www.wef.org.

April 16-19
Illinois Association of Water Pollution Control Operators Annual Conference, Crowne Plaza Convention Center, Springfield. Call 815/303-3745 or visit www.iawpco.org.

April 17-20
California Water Environment Association Annual Conference, Sacramento Convention Center. Visit www.cwea.org.

April 17-20
Water Environment Association of Utah Annual Conference, Dixie Center, St. George. Visit www.weau.org.

April 29-May 2
Arkansas Water Works & Water Environment Association Annual Conference, location to be announced. Visit www.awwwea.org.

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