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JANUARY 2014

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Working Both Streams

EXPERIENCE, EDUCATION AND TIMING PAY OFF FOR BARI WRUBEL OF MARYSVILLE, MICH.

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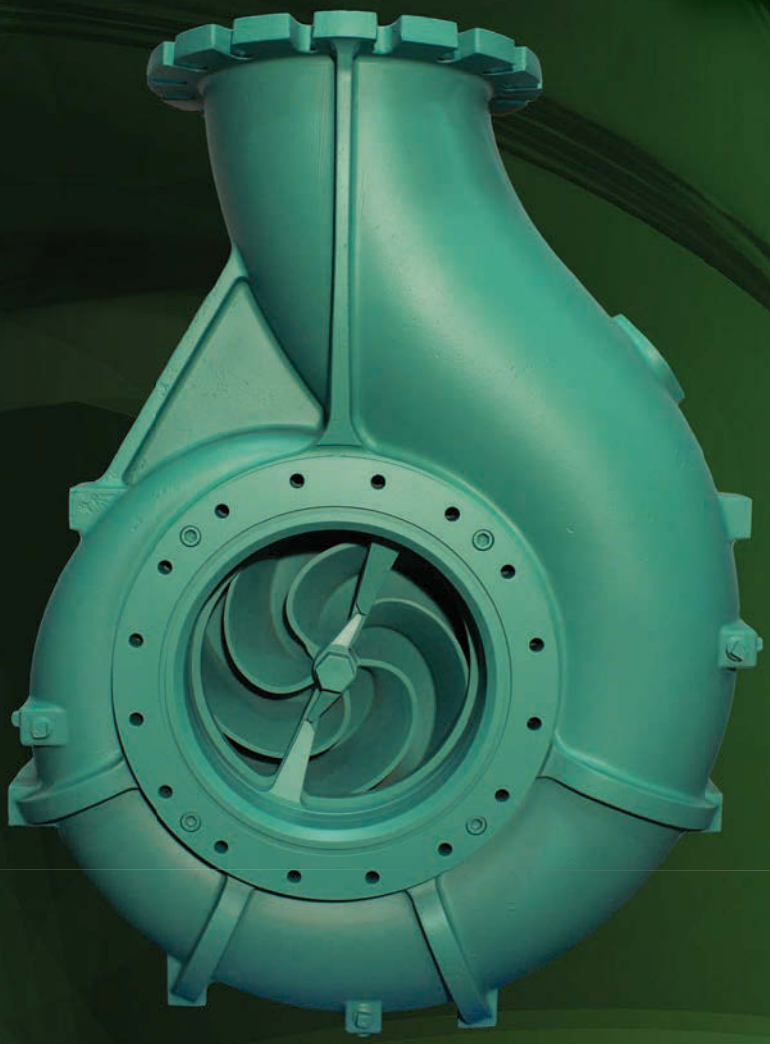
Bari Wrubel, Supervisor of Wastewater/ Water Treatment Plants, Marysville, Mich.

BIGGER IS BETTER



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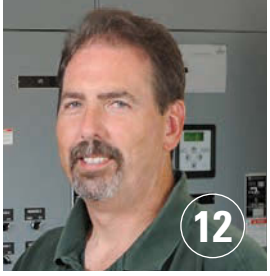

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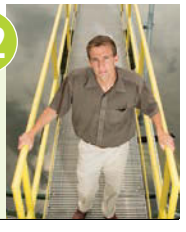
Bari Wrubel's story proves that hard work early on still pays off. Wrubel is supervisor of the wastewater treatment plant and the water treatment plant in Marysville, Mich. Nearly 20 years ago, he thought he wanted to be a mechanical engineer. (Photography by Jeffrey Sauger)



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What's in a Name? Or a Title?

WHAT'S THE POTENTIAL BENEFIT OF CALLING FACILITIES SOMETHING OTHER THAN 'WASTEWATER TREATMENT PLANT'? AND THOSE WHO WORK THERE SOMETHING OTHER THAN 'OPERATOR'?

By Ted J. Rulseh, Editor

In the same week recently I heard from two professionals — one each from the wastewater and drinking water sides — about the merits of calling treatment plants something else, and giving people who work there different titles.

From Jack Saltes, P.E., wastewater operations engineer for the Wisconsin Department of Natural Resources Bureau of Water Quality: "The Water Environment Federation now refers to all wastewater treatment plants as water resource recovery facilities [WRRFs]. Suggestions have been made that the DNR also change the title 'wastewater treatment plant operator' to 'water resource recovery specialist.' Do you have any thoughts or opinion about this repackaging?"

And from Sam Wade, deputy CEO of the National Rural Water Association: "The NRWA and state Rural Water Associations ... have launched the campaign to refer to the staff who operate water and wastewater systems as water or wastewater system operations specialists."

In both cases the thought is that these designations better reflect what water facilities do and the skills, knowledge and expertise plant staff members have. "Simply put," says Wade, "these positions are not just task-oriented jobs. They are professional career tracks that deserve to be recognized as such." (See the interview with Wade on the topic in this issue of *TPO.*)

IN CONCEPT, YES

Anyone who reads this magazine knows basically where I stand on questions like this. While many operators take great pride (and rightly so) in their titles as they exist today, I believe the term "wastewater operator" is a sort of reverse euphemism — an expression that takes something great and makes it sound less good than it is.

On the wastewater side, I have advocated for the terms, "clean-water plant" and "clean-water operator," on the grounds

the plants and people should be known for the wonderful end product they produce, not for the unpleasant raw material that comes in.

Now, the WEF's plant name is a bit of a mouthful and has a kind of bureaucratic feel, but it's also more inclusive than "clean-water plant" in that it speaks to resource recovery on both the solid and liquid sides. And energy production from biogas is increasingly important as our society looks toward cleaner energy to combat climate change. But then, "clean water" is just so nice and simple and, well, clean. That matters when trying to influence the general public. So either approach has merit.

We don't call a place where cows produce milk a "manure processing facility" to reflect the main input to the fields that grow the cattle feed. We call it a dairy farm, and that conjures images of wonderful things like milk, cheese and yogurt. So why do we call a facility that makes clean water a wastewater treatment plant or, worse, a sewage plant?

WHAT'S THE IMPACT?

More to the point, will changing the names of plants and the titles of professionals by itself change public perceptions of the industry? Not likely — but the names and titles we use now force the industry to swim upstream.

We don't call a place where cows produce milk a "manure processing facility" to reflect the main input to the fields that grow the cattle feed. We call it a dairy farm, and that conjures images of wonderful things like milk, cheese and yogurt. So why do we call a facility that makes clean water a wastewater treatment plant or, worse, a sewage plant?

The same general principle applies to the term "wastewater operator." To the uninformed, which means most members of the public, the term conjures images of guys in dirty jeans working in a disgusting place. Why let that image get in the way of the great service the plants and people provide?

SHARE YOUR OPINION

Wade has more to say about this issue in his interview — I hope you'll take time to read it. In the meantime, *TPO* is deeply interested in your thoughts. Please express your opinion by sending a note to editor@tpomag.com. I promise to respond, and we will publish a sampling of comments in a future issue. tpo

WaterPalooza included a coloring contest for kids.

IDEA OF THE MONTH:

WaterPalooza!

By Steve Frank, APR, WEF Fellow

On the last Saturday in September, St. Joseph (Mo.) Water Protection held its first WaterPalooza — part of a public outreach campaign crafted "to let the people we serve know how we're spending their money," says Sean DeWeese, environmental services supervisor.

WaterPalooza was held in the parking lot of the Remington Nature Center beside the Missouri River, on Smithsonian Museum Day when admission to the center was free. "We knew people would take advantage of the free day at the nature center," says DeWeese. "That helped us draw a crowd."

The event came three days after a ribbon cutting media tour that showed off an $18 million UV disinfection project at the wastewater treatment plant. News about the project's completion also mentioned WaterPalooza.

The utility's outreach contractor, Shockey Consulting Services, conceived the event and worked with utility staff for two months to plan it. Five Water Protection staff members and employees of engineering consultants working on projects for St. Joseph staffed booths and answered questions.

The event showcased watersheds, two creek separation projects, a water-quality testing station and the UV system. A grocery store sponsored a coloring contest for kids. Local merchants provided free food; Boy Scouts cooked and served it. Girl Scouts painted rain barrels.

"It was outstanding," DeWeese says. "It was raining that day, but turnout was good. Other cities have had similar events. Ours more or less grew organically."

One goal of the event was to help propel the utility's rebranding. "We are rebranding from 'water pollution control' to 'water protection,'" says DeWeese. "This gave us an opportunity to move that idea along." Such efforts can help further the aims of the Fire Chief Project:

- **Raise clean-water operators to the stature of the fire chief.**
- **Make kids grow up wanting to be clean-water operators.** tpo

Sean DeWeese, environmental services supervisor, conducted media interviews during WaterPalooza.

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How to Survive an Inspection

Escorting a regulatory inspector through your plant can be stressful. After all, no one enjoys being under a microscope. Learn how to make an inspection — whether announced or impromptu — a pleasant experience with these helpful tips and checklists.

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"It takes a lot of physical force to break apart most of these wipes. None of us have seen that kind of action in our sewers."

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THUMBS UP!

Report Says: Injuries Plummet

Injuries in the wastewater industry have declined, according to the 2009 OSHA report. Incident rates for the industry are still somewhat higher than the nationwide average, but they're improving. What made the difference? Read more about types of injuries and prevention measures and find out how treatment plants are making much-needed safety improvements.

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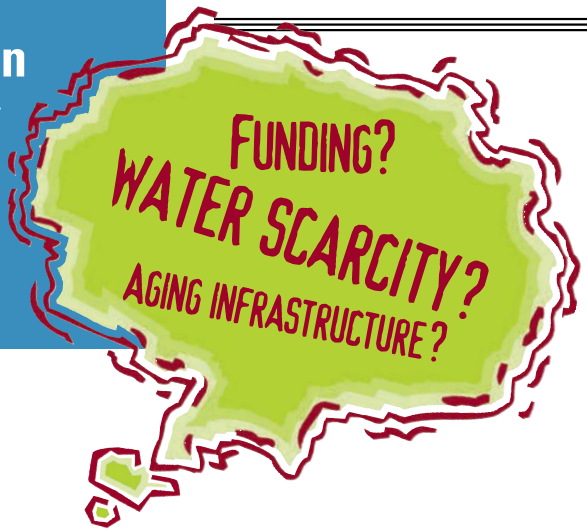

TOP 10 ISSUES

Wastewater Challenges

What are the greatest challenges for the wastewater industry? Funding, water scarcity and aging infrastructure top the list, according to one industry survey. Find out how professionals from across the country ranked their greatest concerns.

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The entrance to the Jamestown Wastewater Treatment Facility. (Photography by Dave Hansen)

A Vested *Interest*

DESPITE A TIGHT BUDGET, THE TEAM IN JAMESTOWN, R.I., STEPS UP TO DEAL WITH DROUGHTS AND HIGH WET-WEATHER FLOWS, EARNING PRAISE FOR EFFICIENCY

By Trude Witham

A TEAM OF THREE DOES IT ALL AT THE JAMESTOWN (R.I.) Wastewater Treatment Facility, from dealing with I&I and droughts to operating on a limited budget.

Jamestown is a picturesque island community on Narragansett Bay with 5,400 year-round residents. The treatment plant, established in 1979, has always been in compliance, but now operates much more efficiently, thanks to its close-knit and dedicated crew, led by plant superintendent Doug Ouellette.

"When I became superintendent in 2000, we began operating the plant by the O&M manual as designed, and we reduced our electric bill by almost half," Ouellette says. "We started matching the number of process units online to the amount of influent, whereas before, we sometimes had more units online than we needed."

A process equipment upgrade in 2007 helped make the plant even more energy efficient. "We upgraded the aerators, waste pumps, blowers and process unit that operates the clarifiers," says Ouellette. "From 2004 to 2007, we lined more than 18,000 feet of collection system pipe and replaced 6,000 feet with new PVC. We also replaced more than two-thirds of the manholes. But it's not done yet. Money is tight."

Still, he and the team persevere. The facility has won several awards, including the Most Efficient Secondary Treatment Facility award from the Narragansett Water Pollution Control Association (NWPCA) in 2009 and 2012. "We all live in town and are part of the community, so we have a vested interest in how the plant is run, and we take pride in it," says Ouellette. "We just want to do a good job."

> "We all live in town and are part of the community, so we have a vested interest in how the plant is run, and we take pride in it. We just want to do a good job."
>
> **DOUG OUELLETTE**

SMALL PLANT, BIG RESULTS

The plant's effluent is outstanding. In 2012, BOD removal efficiency averaged 98 percent, and TSS removal 97.6 percent. Treatment consists of coarse screening, a grit chamber, fine screening, extended aeration, clarification and chlorination. Biosolids are sent to contractor Waste Water Services for incineration.

David Green, assistant superintendent, opens a mud valve to supply flow to the 63,000-gallon secondary clarifier (Ovivo).

The Jamestown Wastewater Treatment Facility crew includes, from left, Paul Robertson, plant operator; David Greene, assistant superintendent; and Doug Ouellette, plant superintendent.

PERFORMING WITH PRIDE

The Jamestown Wastewater Treatment Facility's three operators are proud of the awards they have won over the past 13 years. They include U.S. EPA Regional Wastewater Treatment Plant Excellence Award, 2009; Atlantic States Rural Water & Wastewater Association Outstanding Operations Award, 2006; Narragansett Water Pollution Control Association (NWPCA) Most Efficient Plant Under 5 mgd, 2004; and the NWPCA Outstanding Achievement Award, 2000.

The Rhode Island Department of Environmental Management nominated the Jamestown plant for the EPA regional award — it was among six facilities in New England recognized for exemplary performance during 2009.

"It is great to be recognized by our peers, and also nice for the town to know that we're doing our best," says Doug Ouellette, plant superintendent.

Equipment includes secondary clarifiers (Ovivo), waste pumps (Penn Valley), RAS and pump station pumps (Flygt — a Xylem Brand), aerator drives (Infilco Degremont), Olympian plant and pump station generator sets (Caterpillar), septage/sludge pumps (Hayward Gordon) and chlorine system pumps (LMI Milton Roy).

The collection system upgrade ending in 2007 was long overdue. "It was built in the late 1800s of vitrified clay, with 2 foot sections and a lot of joints," says Ouellette. "The upgrade has reduced our I&I and the number of blockages we get, and it just keeps the collection system running better."

In the mid-1990s, the plant began recycling treated effluent to the town's golf course. "The town got a $1 million grant to build a retaining pond on the course, and we pump the effluent half a mile via high-density polyethylene piping," says Ouellette. "The effluent waters the entire course and flushes the toilets in the bathroom at the fifth hole."

In 2007, the plant installed a multiple-disk membrane filter (Aqua-Aerobic Systems) to help meet its reclaim requirements for the golf course. The

Just a few blocks from the Jamestown treatment facility, the Jamestown Golf Course uses up to 10 million gallons of water that has passed through a cloth media disk filter system for polishing.

"Our greatest challenge is I&I and an occasional drought. We either get too much water or not enough."

PAUL ROBERTSON

filter polishes about 300,000 gpd of secondary effluent. This effluent is pumped from the final contact tank to the filter, then flows by gravity to the golf course. The rest of the secondary effluent flows out of the contact tank to the outfall in Narragansett Bay.

MEETING CHALLENGES

Ouellette, a Grade 3 operator, started with the plant in 1989, and Dave Greene, also Grade 3, joined him in 1992. When Ouellette was promoted to superintendent, Greene was promoted to assistant superintendent. Paul Robertson, Grade 2, joined the team as an operator in 2004.

"You have no idea what you're in for when you take this job," says Ouellette. "It's a baptism of fire. You can read the O&M manuals and learn how the plant is supposed to operate, vendors can teach you about the process in the classroom, but you really have to learn by doing."

Robertson observes, "Our greatest challenge is I&I and an occasional drought. We either get too much water or not enough. The collection system

profile Jamestown (R.I.) Wastewater Treatment Facility

BUILT:	1979
CUSTOMERS SERVED:	1,200
EMPLOYEES:	3
FLOW:	0.73 mgd design, 0.3 mgd average
TREATMENT LEVEL:	Secondary
TREATMENT PROCESS:	Extended aeration, membrane filtration for reclaim
RECEIVING WATER:	Narragansett Bay
BIOSOLIDS:	Incinerated
ANNUAL BUDGET:	$600,000 (operations)
WEBSITE:	www.jamestownri.net
GPS COORDINATES:	Latitude: 41°29'39.50" N; Longitude: 71°22'36.56" W

"We've talked about putting solar panels on the south side of the plant if we can get a grant to fund it. We were looking at a wind generator, but the people on the island weren't all that receptive."

DOUG OUELLETTE

ABOVE: Doug Ouellette and his staff face a variety of challenges, including I&I, in operating the Jamestown plant. LEFT: The facility's cloth media disk filter system (Aqua-Aerobic Systems).

upgrade has helped reduce I&I. We switched to bigger pumps, which helped stop sanitary sewer overflows caused by I&I. The pumps can handle the increased flow entering the collection system."

During heavy rains, the team protects the biological process by isolating the aeration basins. "We have four 170,000-gallon basins, and we operate only the ones needed to handle current flows, which is typically two," says Ouellette. "When we see a rain event on the horizon, we plan accordingly by monitoring the flows. When the slug of I&I starts to affect the facility, we isolate the basins with the mixed liquor in them, and open the empty basins. This prevents a washout and loss of biomass."

Robertson adds, "The facility operates like a primary plant for awhile. When the rain stops and the flow slows down, we open the isolated aerators with the biomass intact, and the plant snaps right back."

Several years ago, the plant experienced a drought for most of the summer. "The flow dropped below 200,000 gpd and we were operating with one aerator and one clarifier," says Robertson. "We had to monitor our process, since we could have had too much detention time."

The team was especially creative in resolving an issue with a chlorine alarm. "While pumping to the golf course, especially during low flow, the chlorine contact tank would pump down below the chlorine probe, setting off the low-chlorine alarm," says Ouellette.

To solve the problem, the operators placed a sump pump in the contact tank about 4 feet below the effluent level. They took a recycling bin, drilled some drain holes and attached the bin to the tank's catwalk. "The chlorine

Jamestown Wastewater Treatment Facility PERMIT AND PERFORMANCE		
	PERMIT	EFFLUENT (2012 average)
BOD	30 mg/L monthly average 50 mg/L daily maximum	4.1 mg/L
TSS	30 mg/L monthly average 50 mg/L daily maximum	5.1 mg/L
Total coliform	200/100 mL monthly average 400/100 mL daily maximum	2.85 MPN/100 mL

probe hangs in the bin, the pump delivers chlorinated effluent into the bin, and the effluent passes over the probe," says Ouellette. "The drain holes allow the effluent to drain from the bin as the pump continues to pump new effluent in. This keeps the probe wet regardless of the tank level."

TYPICAL DAY

When not dealing with I&I or droughts, the operators' days are routine. They work 7 a.m. to 3:30 p.m. and are on call after hours. They sample for BOD, TSS, coliform (MPN), total nitrogen, nitrite, nitrate, and oil and grease, and send the samples to an outside laboratory. They perform routine maintenance and, when time permits, take outside classes.

"We're limited in local offerings, but the NWPCA and Atlantic States Rural Water and Wastewater Association offer classes," says Ouellette. "In Rhode Island, we're not required to get CEUs like on the water side."

Influent quality doesn't pose a huge challenge: "It's all residential and boatyards, and they generally don't dump bad stuff down the drain. The population doesn't increase much in the summer, so we don't have to deal with a population influx like they do on Block Island."

FUTURE IMPROVEMENTS

Ouellette has a wish list for future upgrades that includes a SCADA system: "We like being hands on, though, since we want to make sure that what we intended to do got done. We're kind of old fashioned that way.

"I would like to do more pipe lining and replacement if we can get the funds. I'd also like to expand our reuse program beyond the golf course, perhaps for the school's ballfield or other areas in town where they could use the water.

"We've talked about putting solar panels on the south side of the plant if we can get a grant to fund it. We were looking at a wind generator, but the people on the island weren't all that receptive."

In the meantime, Ouellette and his team are content: "We have the support of the town as well as the Rhode Island Department of Environmental Management. We enjoy doing what we do. It's a very positive thing for the community." **tpo**

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Water Scholars

AN EIGHT-WEEK CLEAN WATER UNIVERSITY IN SPRINGFIELD, ORE., GIVES FIFTH-GRADERS A CLOSE-UP LOOK AT THE IMPORTANCE OF WASTEWATER TREATMENT

By Pete Litterski

Graduation day is cause for celebration at Clean Water University.

Fifth-graders in Springfield, Ore., are the youngest allowed to tour the Metropolitan Wastewater Management Commission wastewater treatment plant, but Rachael Chilton says they ask some of the most interesting questions.

Chilton deserves some of the credit for the insightful students, since she founded and is the sole instructor for Clean Water University, offered for fifth-graders in Springfield schools. Chilton, public information and education specialist with the Environmental Services Division of the Public Works Department, works in the same role with the MWMC, a regional treatment operation serving the cities of Springfield and Eugene as well as Lane County.

Hands-on projects make water quality real for students.

EXPANDING SCOPE

Wastewater treatment was not part of her pilot program three years ago, but it soon became an integral part of Clean Water University. "I started the pilot program and it was centered mostly on storm water," Chilton says. The first program included planting trees at a city park and along the way Chilton reached out to a teacher at a nearby school: "She was very interested in it because the class's time for science has been greatly limited."

Chilton decided to develop the program but take a broader approach and make it more holistic.

She created an eight-week program that includes two sessions focused on operations at the Eugene-Springfield Water Pollution Control Facility in Eugene.

During the week of Clean Water University that focuses on wastewater treatment, Chilton spends the first one-hour session introducing students to the treatment process. A few days later, they take a half-day field trip to the plant where Chilton leads the tour and fields their questions.

In fall, the wastewater sessions are held in week two to avoid weather issues. In spring, those sessions move to week six for the same reason. With the benefit of five previous weeks of instruction, those students "are very clued in and really engaged," says Chilton. "They ask good questions based on everything they've been learning about water."

> "[Fifth-graders] just seem to be the perfect age for it. They're old enough for the science involved and young enough to be enthusiastic."
>
> **RACHAEL CHILTON**

HANDS-ON LEARNING

Although wastewater is the focus for just one week, many of the other sessions involve directly related issues. In one session, students test water samples that Chilton collects from streams near their schools for temperature, phosphates, nitrates, dissolved oxygen, pH and turbidity. "Then we talk about what kind of things could come from their neighborhood runoff, or what could be in the wastewater if it wasn't treated correctly," she says.

The teachers appreciate getting more science instruction into the classroom, and Chilton considers the curriculum a good fit for fifth-graders: "They just seem to be the perfect age for it. They're old enough for the science involved and young enough to be enthusiastic."

The program began with an emphasis on stormwater, but now students get an up-close look at a broader range of water-quality topics.

When the course begins in a classroom, Chilton adds, "Each student gets a little notebook. Each book has a page at the front for the stickers they get as they complete each session." There are makeup activities for students who miss a session. They are supposed to earn all their stickers and "graduate" from Clean Water University in a ceremony complete with caps and tassels.

HEAVY DEMAND

The city and the MWMC split the costs of the class materials, and the regional treatment system pays for busing students to the plant. Going into the program's third year, Chilton had about 550 total graduates. There might be more if she could handle all the requests from teachers: "I'm only able to do about 15 classes per year."

The program includes 10 one-hour sessions, plus the half-day plant tour. When in session, Clean Water University can occupy about 40 percent of her time. Chilton learned much of what she knows about treatment from a college professor who was keenly interested in the process. She leads tours for students in grades five through 12. "The operators are great, but I think they would just as soon have me handle the student tours," she says.

The Eugene-Springfield facility is an activated sludge aerobic treatment plant handling an average flow of 30 mgd and a peak flow of 200 mgd. In 2012, construction was completed on the first phase of a tertiary filtration installation with 10 mgd capacity. The MWMC is completing a study of what to do with that system's Class A effluent. **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 715/277-4094.**

Grease Is the Word

THE GRESHAM TREATMENT PLANT COLLECTS FOG FROM HAULERS AND CONVERTS IT TO BIOGAS THAT HELPS MOVE THE FACILITY TOWARD ENERGY SELF-SUFFICIENCY

By Doug Day

PHOTOS COURTESY OF CITY OF GRESHAM WASTEWATER TREATMENT PLANT

ABOVE: A hauler unloads at the Gresham FOG receiving station. Three haulers have contracted with the plant. RIGHT: Fine-bubble diffusers were installed in all aeration basins at the plant as one of several energy conservation projects.

Sometime this year, officials in Gresham, Ore. hope to be generating all of the 15,000 kWh needed to run the city's wastewater treatment plant every day. An expanded fats, oils and grease (FOG) program and a solar photovoltaic array are expected to save the plant about $570,000 a year on its electric bill.

Operated by Veolia Water NA, the plant serves the 119,000 people in Gresham and two nearby cities just east of Portland. The 20 mgd (design) activated sludge plant used a $40,000 grant from Oregon Economic and Community Development Department in 2010 for studying a FOG program. In the same year, the plant added a 420 kW fixed solar array.

The Oregon Association of Clean Water Agencies had included Gresham in its 2008 energy independence study. "The 2010 study really put some numbers to it," says Paul Eckley, Wastewater Services Division manager for Gresham. "We looked at revenues through tipping fees and avoided utility costs, and did the math. It showed a payback of three or four years."

STARTING SMALL

The Portland office of Carollo Engineers designed the FOG system, which began with a pilot program. "In 2012, we put in a 10,000 gallon tank and the pumps needed to unload tanker trucks and slowly inject FOG into our two 1-million-gallon anaerobic digesters," says Alan Johnston, P.E., senior engineer in Wastewater Services.

Two APG-Neuros turbo blowers (background) replaced two old centrifugal blowers to help cut energy consumption.

To keep FOG from solidifying, the tank includes a heat exchanger that uses heat from the facility's cogeneration system. "We didn't have to add much — just the equipment to get FOG out of the truck and pump it to the digesters," says Johnston. "No digester improvements were needed, and they had some excess capacity to handle the extra material."

Haulers began delivering grease in summer 2012. "We contract with three FOG haulers who clean grease traps and grease interceptors," says Johnston. "It's been very successful, so we are adding another tank and associated pumps to accept more FOG."

More grease in the digesters did not affect operations. "I think everyone was worried about that because you read a lot about how grease can cause foaming and other problems in digesters," says Johnston. "From the day we started injecting it, it was nothing but positive."

The 400 kW cogeneration system has operated since 2005, fulfilling about half the plant's electricity needs. The existing gas conditioning system can handle the increased gas production. The Caterpillar 3508 lean-burn engine-generator now runs at full output around the clock and provides up to 65 percent of the plant's power demand, saving about $250,000 a year.

Before the FOG program, the digesters produced about 180,000 cubic feet of biogas per day. Now, after completion of the first FOG program phase, they produce 280,000 cubic feet per day with addition of about 9,000 gallons of FOG daily.

MOVING AHEAD

A second phase of the program includes a second Caterpillar 3508 engine-generator and even more biogas. That could enable the plant to produce as much energy as it consumes by the end of the year, according to Johnston. A new net metering agreement with Portland General Electric also offers financial benefit. "Before November 2012, we couldn't send the cogenerator power onto the grid," notes Johnston. "We had to turn down the generator whenever it started to backfeed. Now we can run it at full power 24 hours a day."

At present, there is no plan to add gas storage. The digesters' floating covers provide 300,000 cubic feet of storage.

While providing a new source of biogas-fueled power, FOG has also created a new revenue stream. "We're getting about $22,000 a

PROTECTIVE PRETREATMENT

For the past six years, the Gresham Wastewater Treatment Plant has employed a full-time staff member to make sure restaurants and other producers of FOG follow ordinances that protect the city's sewer system.

"That person inspects FOG facilities, ensures they have the proper treatment equipment, and that they keep it clean so it does what it is designed to do," says Alan Johnston, P.E., senior engineer in the Wastewater Services Division.

The city also has a grant program to help customers install and upgrade their grease interceptors and grease trap equipment. Customers can receive up to $5,000 per project. That has encouraged customers to stay in compliance.

"A lot of restaurants are resistant to putting in equipment because it can cost $20,000 or more," says Paul Eckley, Wastewater Services manager. "They've been eager to take advantage of our grant program, and it has helped get them onboard."

An updated Oregon Specialty Plumbing Code also helps by putting more teeth into the requirements. All devices in commercial kitchens now have to go through grease removal equipment. The efforts have paid off in immediate improvement in the collection system in areas where restaurants have added interceptors.

month in FOG tipping fees," says Johnston. "The haulers pay us 8 cents a gallon. Without those revenues, the million dollars we're spending on this wouldn't make sense. When we're all done, we think we'll be at about 12,000 gallons a day and about $300,000 dollars a year in FOG revenue."

If that materializes, the net savings and revenue increase will total more than $800,000 a year on an annual treatment plant budget of $4.5 million. "It's tough to stabilize rates," says Eckley. "This will keep rates from increasing as fast."

TAPPING OPPORTUNITIES

Since 2005, the Gresham plant used some $3 million in grants and other funding assistance, including money from the Oregon Energy Trust and Oregon Business Energy Tax Credits, accounting for about 30 percent of the costs of its various energy projects.

For the first-phase FOG equipment, the Energy Trust provided $40,000, and the Oregon Department of Energy (ODOE) provided $183,000 toward a construction cost of $760,000. The Energy Trust is funding another $40,000, and ODOE is providing $1 million toward the $2.9 million cost of the second phase. The Energy Trust also provided $500,000 to install the solar project, which provides about 8 percent of the plants electricity.

In addition to energy production, the plant has completed energy conservation projects that upgrade the digester mixing process by replacing three 40 hp gas compressors with a pair of 5 hp linear motion mixers. In addition, two centrifugal blowers for the aeration process were replaced with APG-Neuros turbo-blowers, and diffusers were switched to fine-bubble units.

Eckley notes that the city has the lowest home sewer rates in the area: "The residential rate is $26.30 a month. These kinds of projects help us maintain that." **tpo**

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 715/277-4094.**

WORKING BOTH STREAMS

BARI WRUBEL'S EXPERIENCE, EDUCATION AND TIMING PUT HIM IN THE RIGHT PLACE TO BECOME SUPERVISOR OF THE WASTEWATER AND WATER TREATMENT PLANTS IN MARYSVILLE, MICH.

By L.K. Williams

THE STORY OF BARI WRUBEL PROVES THAT HARD WORK EARLY ON CAN still pay off. Wrubel is the supervisor of the 3.6 mgd (average) wastewater treatment plant and the 9 mgd water treatment plant in Marysville, Mich. Nearly 20 years ago, he thought he wanted to be a mechanical engineer.

"When I graduated from high school, I took a summer job at the city," he recalls. "At that time, I was planning on going to the local community college to take two years and then transfer to Oakland University for my degree. But when I worked that first summer, I started realizing that city work is a pretty decent way to go." He worked at the wastewater plant over three summers.

Wrubel recalls that his father, a foreman at the city Department of Public Works, was able to take the family on vacations. "I knew we had a decent and secure life with his wage," he says. "Even at 18 years old, I knew that job security was a huge thing."

In his water career, Wrubel knew from the start that he wanted to be more than an operator. Besides ascending to supervisor of the treatment plants, he is an active member of the Michigan Water Environment Association, which honored him with the 2013 Public Utility Management Professional of the Year award. He also chairs the Huron to Erie Drinking Water Protection Network, which coordinates a near-real-time monitoring and notification system for possible spills or issues upstream.

Bari Wrubel, wastewater and water treatment plant supervisor, Marysville, Mich. (Photography by Jeffrey Sauger)

CHANGE OF COURSE

In his second year at St. Clair County Community College, Wrubel changed to an associate degree program in water purification. He completed basic courses at St. Clair and spent one year at Bay de Noc Community College in Escanaba, Mich., for the required specialty classes. "They have a great Water Resource Management program," he says.

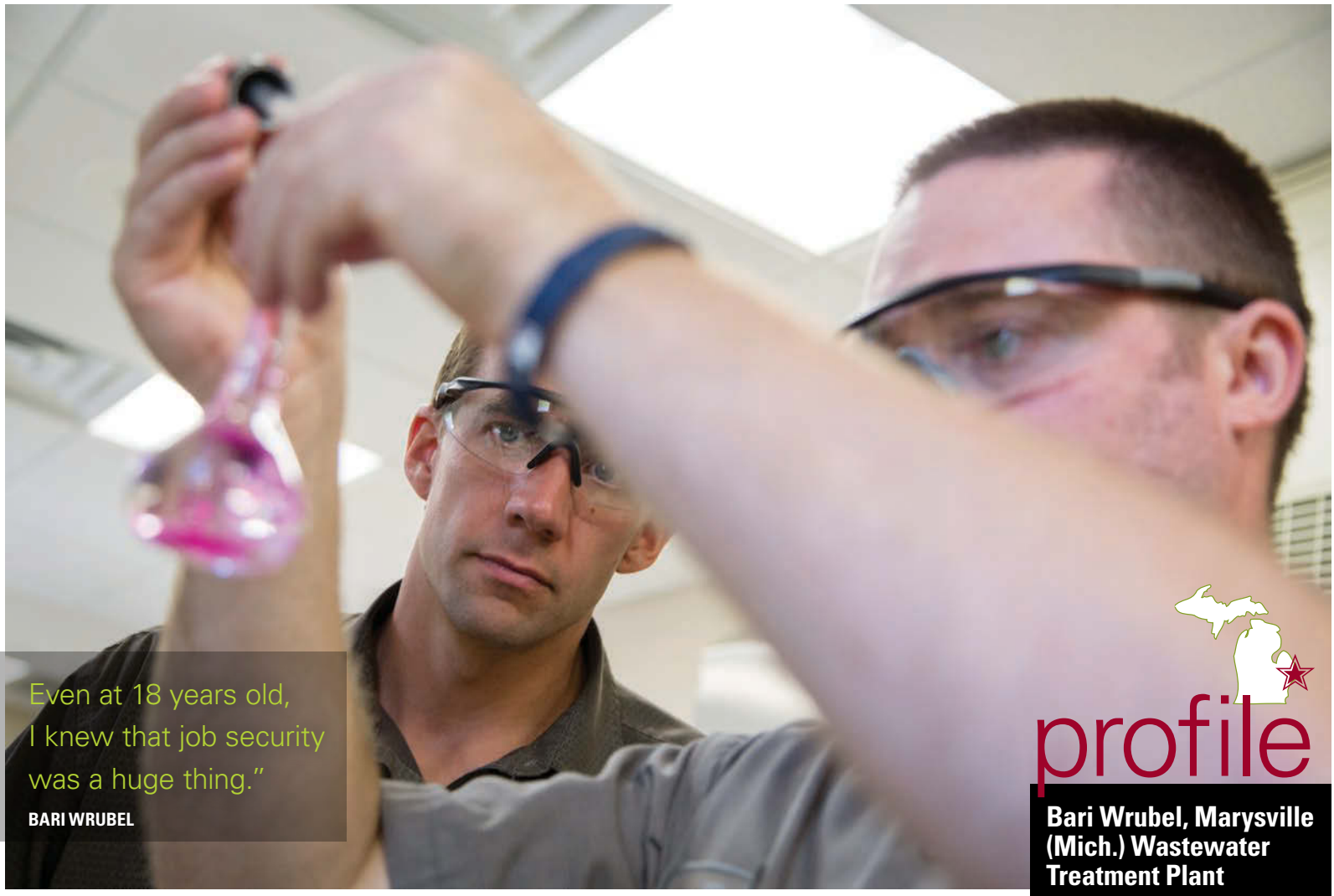
Most students finish in two years and then write their lowest level exams for water filtration, water distribution and wastewater treatment licensing.

With his Michigan Wastewater D, Filtration F-4 and Distribution S-4 licenses and four summers of wastewater experience, he hired on with the City of Charlevoix as an operator at the water and wastewater treatment plants. The winter of 1995 was cold. "Charlevoix is a beautiful city in northern Michigan, but I was there the whole winter, and I just couldn't adapt to the colder weather and increased amount of snow," Wrubel says.

By then, he had gained experience that served him well. When he heard hints of a position opening at Marysville, he made plans to return to his hometown. Within a few months, he was hired full time, and Marysville administrators capitalized on his education and experience. Because of upcoming retirements at the wastewater plant, they placed Wrubel on the fast track.

While working mostly at the wastewater plant, he helped develop a quality control plan for the laboratory and later did the same at the water plant lab. Once he had the necessary experience at the wastewater plant, he moved to the water side. He wrote his licenses up to F-1, S-1 and Class A (the highest levels), and in July 2003 was promoted to wastewater treatment plant supervisor.

Today, Wrubel works with wastewater operators Jim Miekszstyn and Tim Giles, also lifelong Marysville residents and plant employees for five and three years. Giles holds a Class D license and Miekszstyn a Class C.



> Even at 18 years old, I knew that job security was a huge thing."
>
> **BARI WRUBEL**

ABOVE: Wrubel (left) watches Tim Giles, operator, perform a phosphorus test in the lab at the wastewater treatment plant. BELOW: Wrubel and operators Jim Miekszyn (left) and Tim Giles head off to monitor the chlorine level in the wastewater effluent discharge to the St. Clair River.

profile

Bari Wrubel, Marysville (Mich.) Wastewater Treatment Plant

POSITION:
Supervisor of wastewater and water treatment plants

EXPERIENCE:
18 years

DUTIES:
Oversee 10.2 mgd wastewater treatment plant and 9 mgd water plant

EDUCATION:
Associate of Applied Science – Water Purification Technology, St. Clair County Community College

CERTIFICATIONS:
A-1 wastewater treatment, F-1 water treatment, S-1 water distribution

GOALS:
Achieve the aims of projects completed; eliminate SSOs and basement backups

GPS COORDINATES:
Latitude: 42°54'23.62" N; Longitude: 82°28'06.46" W

Bari Wrubel (right) inspects the chlorine diffuser panel with operators Tim Giles (left) and Jim Mieksztyn. The biosolids discharge trestle is above in the background.

IMPROVING THE PROCESS

In recent years, the city has made substantial improvements to the wastewater treatment plant. In 2011 a new headworks screen and a sludge storage tank were added. "Up until then, with the comminutor, under a normal flow pattern, the influent pumps would get plugged up every three to four weeks," Wrubel recalls. "When we would have a rain event, the three pumps would get plugged at least once or twice a day. We would try to clean them out at 3 o'clock, just before the shift was over, to make sure they would last as long as they could. Otherwise I'd get a call in the middle of the night because they were plugged up again.

"We've had the screen in operation for over two years now, and we haven't had to clean one pump yet. We inspect them annually as part of our preventive maintenance plan, and each time the impellers have been completely clean. It's been literally amusing that we have not had a pump issue since the screen was installed. The downstream process units are also benefiting from the screen's efficiency."

Before the solids storage capacity was expanded, the plant never had good settling. A contractor had to haul away as much as 900,000 gallons of biosolids per year. The additional storage tank allows Mieksztyn and Giles to decant more water. That means lower volume being hauled and less money spent. "Now it's much, much better," Wrubel says. "Concerning operational improvements, the storage upgrade ranks in importance right next to the new screen system."

A BETTER WATER PLANT

Bari Wrubel has three operators working two shifts and overtime on the weekends at the Marysville water treatment plant. They still find time to perform *E. coli* sampling of drinking water for St. Clair County Health Department laboratory.

But that's not all. The city invested $12,000 in training for one of his operators to perform internal instrumentation work.

"In the first seven months, we already made the money back," he says.

Marysville also is part of the Huron to Erie Drinking Water Monitoring Network, which coordinates a near-real-time monitoring and notification system for possible spills or issues upstream. Other communities pay an engineering company for their network calibration and maintenance service.

"In Marysville, we are doing our own," Wrubel says. He credits the initiative for the network members voting him in as chairman.

Old age has taken its toll on the water plant, which was built in 1937 and upgraded and expanded in 1968 and 1973. The city recently took bids after the council approved a $5 million renovation budget. The work includes sand filter media replacement, a sediment basin sludge vacuum system, heating and ventilation rehabilitation, a settling basin roof replacement, clear water reservoir valving and pipe work, and a renovated SCADA system.

Says Wrubel, "This will bring our instrumentation and control system up to date with the latest technology."

MORE CAPACITY

After two consecutive 100-year storms in May 2004, the city increased its wastewater plant capacity. Wrubel says the storms "changed the landscape of the city." During those events, stormwater and wastewater flooded homeowners' basements. The city created a plan to prevent recurrence and, in October 2012, residents toured a new 10.2 mgd design flow plant.

The system has a new 2-million-gallon sanitary sewer overflow (SSO) basin in addition to the existing 900,000-gallon wet-weather storage tanks. Existing pumps (Flowserve) feed the new basin, which has six channels, each equipped with flushing gates (GNA).

The city also upgraded the plant with a third primary clarifier, a third trickling filter and a third secondary clarifier. The $20 million upgrade was financed with $8 million from the 2009 American Recovery and Reinvestment Act and $12 million from a low-interest loan through the Michigan State Revolving Loan Fund. Consulting engineers Hubbell Roth & Clark oversaw the project; construction was done by 3-S Construction and Brencal Contractors.

The treatment process starts with an Aquaguard mechanical screen that drops debris into an auger press (both from Parkson). Pumps (Flygt – a Xylem Brand) move wastewater through a flowmeter (ABB) into the grit system. Blowers (Tuthill) aerate it in a coagulant mixing tank.

The three primary clarifiers use augers and flights (E & I Corp). From the primary effluent wet well, the wastewater is pumped to the three trickling filters (arms by WesTech Engineering; media by Brentwood Industries). The three secondary clarifiers use Westech drives, sweep arms, inlet baffles and discharge weir systems.

The system uses an induction unit to add sodium hypochlorite in a chlorine contact chamber. The sodium bisulfite dechlorination process includes a monitoring system (Severn Trent Services). An 800,000-gallon solids storage tank includes a trestle for easy truck loading. Effluent wastewater discharges to the St. Clair River.

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"Not that we had problems or violations before, but looking at our lab data, you can see our treatment is simply better. Also, without worrying about SSOs like we used to, you can sleep better at night during a storm."

BARI WRUBEL

OPERATING CHALLENGES

Operating the plant during the upgrade was challenging, and it changed the focus from repair to regular maintenance, says Wrubel. "The drives are different with oil lubricant, not grease," he says. "The maintenance is a little more finicky, so you have to stay on top of it. The team was trained pretty well on site. We adjusted the plant to get things running right, but there was a learning curve."

The team runs daily lab tests and makes quality-control checks on the lab. "As soon as we start to see a problem, we get on it," Wrubel says. "In all honesty, right now the plant's been pretty much trouble-free. It's going from two tanks of everything up to three, and at the average daily flow levels we have, it's almost hard not to treat properly."

The upgrade has made things easier to manage. "Our water quality is a lot better," Wrubel says. "Not that we had problems or violations before, but looking at our lab data, you can see our treatment is simply better. Also, without worrying about SSOs like we used to, we can sleep better at night during a storm."

BEING OF SERVICE

The city promoted Wrubel in July 2006 to supervise the water plant. While keeping the two plants running, he ventured into industry service. As an MWEA member, Wrubel serves on the Part 5 Advisory Group Committee, which is revising the rules that govern oil and various pollutant regulations to protect Michigan's waterways and sewer systems.

He has presented a report on Marysville's community resiliency and water security at a roundtable workshop coordinated by the St. Clair County Homeland Security – Emergency Management Office.

In his spare time, Wrubel coaches Little League baseball (his son is on the local team) and sits on the local league board. He also plays volleyball and volunteers as an assistant coach for his 10-year-old daughter's volleyball team.

As for his professional life: "I wanted to be in a spot to make a difference. I like taking the plant under my own wing, tweaking it and making things better and more efficient. I enjoy finding ways around problems, making the team look good, and putting people in place who are happiest with their duties." tpo

Virtual Reality

A FLIGHT SIMULATOR FOR WASTEWATER TREATMENT PLANTS GIVES USERS A HANDS-ON APPROACH TO TROUBLESHOOTING OR MAKING CHANGES TO THE TREATMENT TRAIN

By Scottie Dayton

As a trainer for the Ministry of the Environment's mandatory certification renewal courses, the Ontario Clean Water Agency (OCWA) in Toronto developed curriculum for municipal and First Nations' community wastewater treatment operators.

In 2012, OCWA worked with Hydromantis Environmental Software Solutions to configure SimuWorks, a hands-on approach to training and troubleshooting, to fit the agency's specific requirements. "Operators are accustomed to sitting in front of computer monitors to change treatment processes," says compliance training consultant Sylvia Murcia-Jones. "The software simulates that environment, making the transition from classroom to real-life scenarios easy."

The Sewage Simulator Solutions course targets operators with one year of experience. Since the agency incorporated it, plant managers have returned only positive reports on how much their operators enjoyed the program and the learning experience.

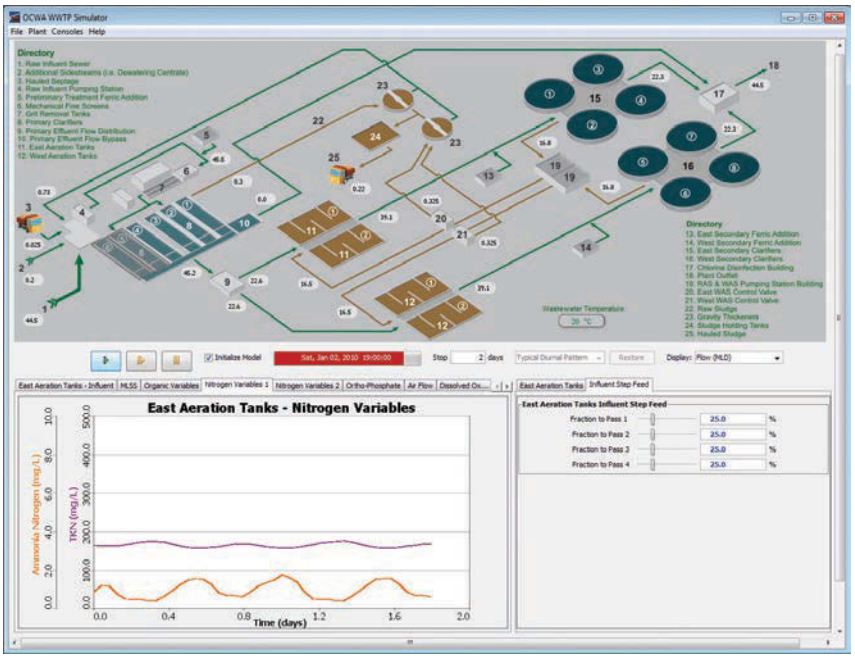


PHOTO AND GRAPHIC COURTESY OF ONTARIO CLEAN WATER AGENCY

SimuWorks software from Hydromantis Environmental Software Solutions shows the summer step-feed aeration screen for a facility operated by the Ontario Clean Water Agency.

Operators at the Belleville (Ontario) Water Control Plant work on a troubleshooting scenario during a Sewage Simulator Solutions course taught by Sylvia Murcia-Jones, compliance training consultant with the Ontario Clean Water Agency.

BUILDING THE FOUNDATION

Hydromantis programmers can configure the basic simulator to replicate any wastewater treatment plant's SCADA and human-machine interface (HMI) systems. It lets users review and test various inputs/outputs, equipment status, chemical dosage rates, aeration settings and other components against normal operation, equipment failures and wet-weather events. The tool helps operators and managers identify and validate plant optimization and cost-saving strategies, analyze projects and operational risks, and forecast plant capacity and maintenance needs.

Before loading licensed copies of the basic simulation program, the agency deleted all the games, Internet connection and other software on 10 laptop computers. "This is an educational environment, not a course where participants ignore the instructor and play solitaire," says Murcia-Jones. "We prefer one student per laptop, but we encourage them to work as a team to duplicate interactions with people at their facilities."

Murcia-Jones is a Class 2 water treatment and distribution operator and an operator-in-training for wastewater treatment and collection. "Instructors with practical experience in the industry understand students' questions better and use the simulator properly," she says.

Before taking the six-hour, three-module course, the agency asks participants to think about problems at or questions about their facilities. The first module then recaps the conventional activated sludge process to make sure everyone understands the terminology and treatment train. That takes 1 1/2 to two hours, depending on the students' levels of understanding.

The second module introduces the simulator's various screens, components and capabilities. Then Murcia-Jones takes students through subtle process simulations. "I show them how to simulate coarse-bubble diffusion versus fine-bubble diffusion, step-feed versus tapered aeration, and increases in coagulant dosages and their effect," she says.

At the end of the second module, Murcia-Jones summarizes alternative treatments, such as extended aeration, complete mix, contact stabilization, sequential batch reactors and biological nutrient removal. "No matter the method, students learn that the treatment process is essentially the same," she says. The second module also takes 1 1/2 to two hours.

TROUBLESHOOTING

The third module introduces troubleshooting techniques. "We talk about young and old sludge and whether it has poor settling capabilities, a high food-to-microorganism ratio, or low sludge volume index," says Murcia-Jones. "To help students connect the dots between theory and practical application, we ask them to think about how these conditions would look. What type of foam would it create? What would be the color and density? What would it look like during settling tests?"

Five scenarios follow the introduction, allowing participants to manipulate the simulator's different components. Murcia-Jones gives them operational parameters, then shows how to set up scenarios simulating certain types of wastewater entering the headworks. The attendees' goal is to ensure that effluent meets the province's certificate of approval limits.

> "To help students connect the dots between theory and practical application, we ask them to think about how these conditions would look. What type of foam would it create? What would be the color and density? What would it look like during settling tests?"
>
> **SYLVIA MURCIA-JONES**

"Some students become very excited and want to begin fixing the problem right away," says Murcia-Jones. "However, they must be patient and learn the step-by-step setup procedures first." At the end of each scenario, she allows the students to work in pairs or by themselves, following an outline of the steps projected on a screen.

After they set up the scenario, Murcia-Jones asks the group what operational changes they would make to remain compliant. She writes their suggestions on a flipchart, after which they discuss different options and their results. "It's a wonderful activity because people begin working together and brainstorming," she says.

In a few instances, students become finger-happy and click the mouse so rapidly that the program can't catch up and occasionally freezes. "That really upsets them," says Murcia-Jones. "The lesson is to click one parameter at a time, make subtle changes and wait for the reaction."

BOOKS CLOSED

A 10-question multiple choice quiz with books closed follows each module. The final test consists of five multiple choice troubleshooting questions and five more questions on how students solved the problem. The final mark is their cumulative score. The Ministry of the Environment rated the course for 0.6 continuing education units (CEUs).

While the class is basically for junior operators, senior operators sometimes take it out of curiosity or for training hours. When this occurs, Murcia-Jones pairs senior with junior operators. "The dynamic between them is wonderful, because here is where we see the transfer of knowledge," she says.

Participants receive a digital copy of the manual or presentation on their jump drives or have the items sent to them as email attachments. The agency mails print manuals upon request. **tpo**

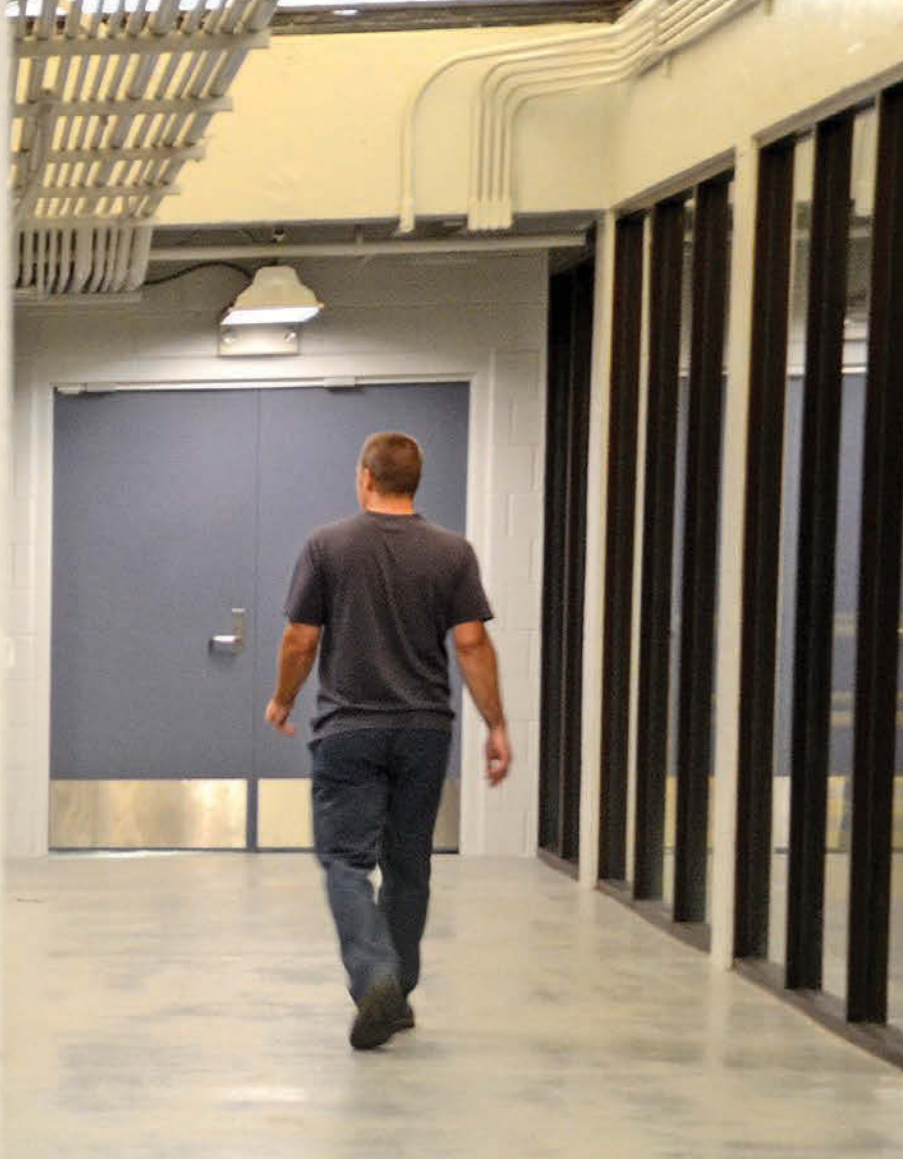
Options Open

A TREATMENT PLANT ON LAKE SUPERIOR MANAGES BIOSOLIDS WITH A FLEXIBLE PROCESS AND A BENEFICIAL USE PROGRAM THAT RESPONDS TO SEASONAL DEMANDS

By Ted J. Rulseh

"We did a presentation to educate the township in what we were proposing. The better people understand what biosolids are, the more at ease they are."

CURT GOODMAN



The biological phosphorus removal (bio-P) tanks at the Marquette Area Wastewater Treatment Facility. (Photography by Cory Dellenbach)

WHEN FARMLAND IS SCARCE, GROWING SEASONS

short and winters cold, as in the northern rim of Michigan's Upper Peninsula, what's to be done with a growing volume of biosolids?

The Marquette (Mich.) Area Wastewater Treatment Facility answered the question with a flexible solids process that yields either Class B liquid or cake, and with diverse options for applying material in the field.

"I'm all for beneficial use of biosolids," says Curt Goodman, the city's water and wastewater superintendent since 1994. "I refuse to landfill it. We've always got that option as a last resort, but it's something I just hate to do."

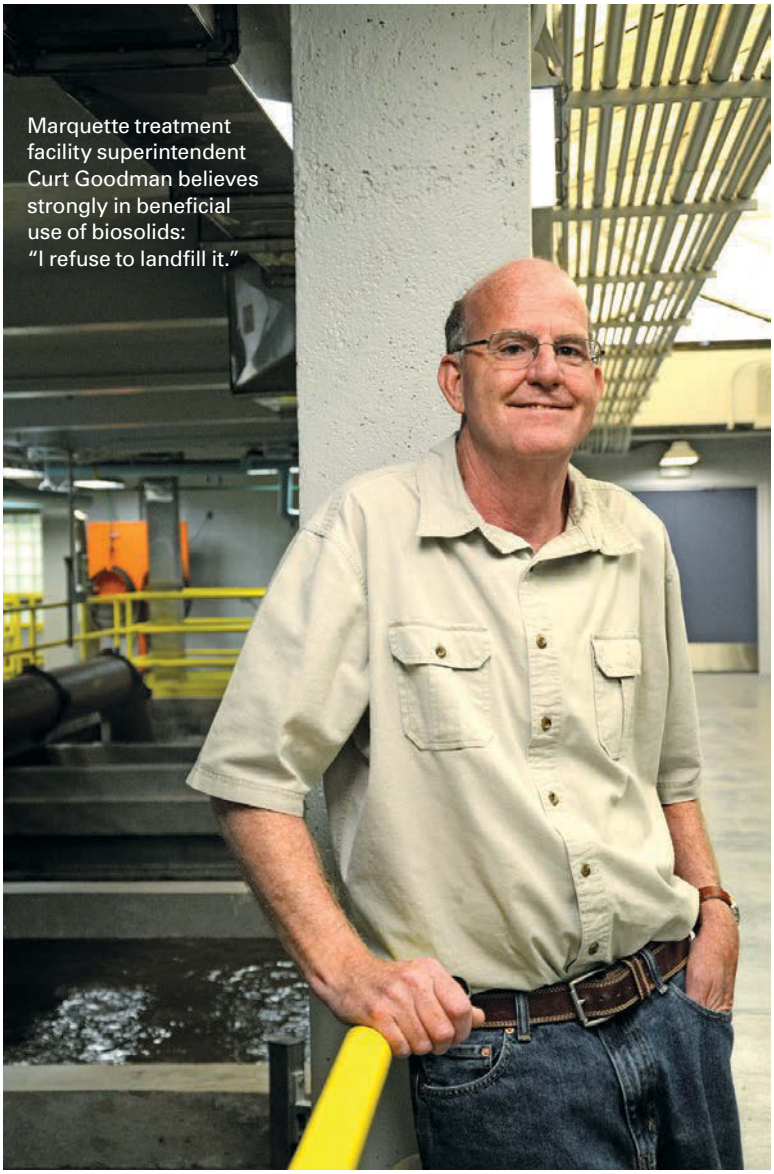
Therefore, the city's biosolids go to fertilize hay ground, to help reclaim and vegetate dikes around iron mine tailings basins and, most recently, to support growth of trees on a brownfield site once used for taconite storage. It all comes down to what is the most cost-effective option at a given time of year — and Goodman has pegged those costs carefully on a per-dry-ton basis.

PART OF THE PROCESS

Marquette, a city of 21,000, lies on the shore of Lake Superior, in Upper Michigan's snow belt. Winters are long, and the land application season is short. That makes it necessary to store a significant volume of biosolids during the long wait for spring. And even in season, a scarcity of farmland can mean long hauls to the hay fields.

In view of all this, the biosolids process is not an afterthought. It was an essential component of a major plant upgrade completed in 2008. For 30 years previously, the plant had used rotating biological contactors (RBCs) for secondary treatment. However, a new permit for discharge to Lake Superior tightened limits on ammonia, which the RBCs were not designed to remove.

"We started planning for the upgrade in 2000 and were very fortunate to have good backing from the city to do the project right," Goodman recalls.



Marquette treatment facility superintendent Curt Goodman believes strongly in beneficial use of biosolids: "I refuse to landfill it."

PHOTO COURTESY OF MARQUETTE AREA WASTEWATER TREATMENT FACILITY

profile

Marquette (Mich.) Area Wastewater Treatment Facility

POPULATION SERVED:	21,000
FLOWS:	3.85 mgd design, 2.7 mgd average
TREATMENT PROCESS:	Activated sludge/biological phosphorus removal
BIOSOLIDS PROCESS:	Anaerobic digestion, gravity thickening/ belt press dewatering
BIOSOLIDS VOLUME:	400 dry tons/year
BIOSOLIDS USE:	Land application/mine reclamation
WEBSITE:	www.mqtcty.org
GPS COORDINATES:	Latitude: 46°31′1.68″ N; Longitude: 87°23′2.61″ W

"We didn't want to piecemeal it. We evaluated activated sludge and a couple of other processes and did a lot of work in-house. Before we brought an engineer on board in 2006, we had a good idea what direction we wanted to go."

The upgrade saved substantial money by using and repurposing nearly all existing concrete structures, including tanks that held the six RBC trains. The new plant has a three-basin conventional activated sludge process with high-efficiency magnetic-bearing blowers (ABS) outfitted with variable-frequency drives, along with fine-bubble aeration (Environmental Dynamics International). Dissolved oxygen is controlled on a feedback loop (Hach oxygen sensor).

Between primary and secondary treatment, a bio-P (biological phosphorus removal) process supports permit compliance and achieved a 3 1/2-year payback by sharply reducing use of sodium aluminate for phosphorus reduction.

RIGHT FROM THE START

Biosolids preparation actually starts at the headworks with a Step Screen (Huber Technology) for fine screening, retrofitted to the existing influent channels in 2000. "We wanted a system where the operators would not have to physically handle the material," says Goodman. "It was one of the most important projects we did for solids handling. The last thing you want is all the plastic items in your biosolids.

"That was a huge problem we had in the 1990s. Operators had to go out into the field to deal with complaints. The public perception was awful. Of course, our digesters suffered from the plastics — we had to clean them on a yearly basis. Since we installed the fine screening system, we have a much more efficient operation. It's all automated. Once a day, the operators basically come up and take out the garbage. In 13 years of operation, we've never needed major maintenance on it."

The plant has four primary settling tanks, one of them converted to a sidestream equalization tank. Filtrate from the dewatering press, decant from the digesters and biosolids storage tanks, and other sidestreams are conveyed to that tank and delivered to the influent stream at an even rate around the clock, avoiding slug loads of highly concentrated wastewater that could upset the treatment process.

MAKING BIOSOLIDS

The plant has two digesters for primary sludge, each fed around the clock by an air diaphragm pump (Gorman-Rupp Co.). "The best way to feed a digester is 24/7," says Goodman. "You get thicker material, less volume and less solids to deal with." A digester for waste activated sludge also serves as a gas holding system, and a clarifier from the old plant now provides 400,000 gallons of waste activated sludge storage.

"You can't beat anaerobic digestion because of the methane gas byproduct," Goodman says. "We have two redundant dual-feed boilers [Bryan Steam] that burn our methane to heat the plant and heat the digesters. We've been doing that since 1978." A system of heat exchangers and recirculation pumps maintains digesters at 94 to 95 degrees F. Digestion reduces volatile solids by up to 60 percent.

A combination gravity belt thickener and belt filter press (Komline-Sanderson) provides dewatering. The gravity belt thickener mode raises the sol-

ids content of sludges to 4.8 percent before delivery to the digesters. Digested liquid material is transferred to two 400,000-gallon storage tanks, and biosolids are drawn directly from them for spring and fall liquid application to mine sites. Before winter arrives, the tanks are empty.

The belt filter press mode dewaters digested biosolids to produce cake at 18 to 19 percent solids. "In winter, we have storage space for 1,200 cubic yards of cake," says Goodman. "We'll fill it up starting in November. Come April, as soon as weather permits, we can have it all emptied. The cake really helps lower our costs. And doing both liquid and cake gives us flexibility to fit the time of year and the fields available."

The staff at the Marquette facility includes, from left, Neil Traye, plant operator; Lyle Michaels, lab technician; Curt Goodman, superintendent; Mark O'Neill, plant supervisor; Neil Hayward, maintenance mechanic; and Bernie Stanaway, plant operator. Not pictured: Dan Johnston.

TACKLING THE PROBLEM

The combination of liquid and cake Class B products gives the plant significant flexibility for beneficial use. Farms near the treatment plant are hard to come by, especially since many are excluded because their soils are high in phosphorus from years of commercial fertilizer applications.

"We have 400 permitted acres 50 miles away, so it's cheaper to do the cake application out there," says Goodman. "We deliver the material, and the farmer does surface application using a manure spreader. We are also working to secure some land about 20 miles from here; we're working with the farmer and plan to open that site up soon." The long-term goal is to have farmers pick up the material and do their own hauling.

Meanwhile, the plant continues a mine reclamation project, launched in 1994, when biosolids storage was extremely limited and reaching a breaking point. "At the time, we had just enough storage to make it to the spring," says Goodman. "The mine project enabled us to do land application throughout the year, except in winter. That probably helped keep our old plant going for another 10 years.

> "The best way to feed a digester is 24/7. You get thicker material, less volume and less solids to deal with."
>
> **CURT GOODMAN**

"It's a liquid application program, and it has been very successful. That's a site-specific project where we worked with regulators to get approval. It required a lot of research on the front end. You just don't take the material out there and dump it. However, the application is not limited to agronomic rates.

"If we're starting from scratch on a tailings basin dike with no vegetation, we apply about 8 to 10 dry tons per acre, incorporate it, seed and mulch it, and pray for rain. If we get vegetation started, we do a secondary application of 4 to 5 dry tons per acre. Once vegetation is established, we do a maintenance application of 1 to 2 dry tons per acre. The application contractor has specialized equipment to control the amount applied. We find that applying liquid at about 6 to 7 percent solids works best.

"We developed the program with a local contractor who is a genius. He grew up on a farm and can do anything. He designed a machine that extends out onto the dike slopes and incorporates the biosolids into the sand.

"I call it a process. We're building soil essentially from beach sand. It takes about three years to get vegetation established. When the mining com-

FIGHTING FOAM

Like many newer activated sludge plants with biological phosphorus removal and anaerobic digestion, the Marquette Area Wastewater Treatment Facility struggled at first with digester foaming. Curt Goodman, water and wastewater superintendent, and his team worked with the Water Environment Research Foundation as part of a two-year study that looked at a number of plants in hopes of finding the cause of foaming.

"They couldn't pinpoint it exactly in our situation," Goodman recalls. "We looked at our process control strategy, our feed rate and other factors, but no one, even the experts, could find anything we were doing wrong operationally."

Among other problems, the foam entered the lines that feed digester methane to the dual-fuel boilers (Bryan Steam) that heat the plant and the digestion process.

"We went through a winter without being able to use the methane, and our natural gas bill for that year was $89,000, versus about $18,000 normally," Goodman says.

Unable to isolate the cause, "We decided to deal with it in a mechanical way. A friend who is a semi-retired engineer helped design the system, which we call the Foam Destroyer. We installed two dedicated pumps that draw material from the bottom of the digester and deliver it through a two-inch nozzle down on top of the digesting sludge."

The concept is similar to using a kitchen sprayer to get rid of detergent foam after washing a sink full of dishes.

"We did a hydraulic calculation to make sure we had the proper spray," says Goodman. "We've been using it successfully for three years. We also have mechanical mixers in the digesters, but we don't use it at this time. It takes too much power, and we find we don't need that additional mixing. The additional gas production we would get by running it doesn't warrant its use."

(Continued on page 33)

Ducks and many other birds are seen on and around the ponds, including herons, loons, swans, egrets, terns, hawks and geese.

From Rare to Common

TREATMENT LAGOONS IN BATAVIA, N.Y., ATTRACT A WIDE ASSORTMENT OF WATERFOWL, SHOREBIRDS AND WILDLIFE — AND LARGE CROWDS OF WATCHERS

By Jeff Smith

Nine lagoons make up the natural treatment system in the City of Batavia in western New York. On a 500-acre site just southwest of the city, they treat about 3 mgd (5.5 mgd design flow) and also serve as a destination for birdwatchers from all over the region.

"Recently we had a whole flock of birders in here because they could get a front-row seat to view a red-necked phalarope [a small migratory wading bird]," says Rick Volk, chief operator. Birders find the plant unique for viewing for lack of trees and brush. The berm around the ponds provides an excellent angle from which to view waterfowl and shorebirds.

BETTER TREATMENT

Volk was on staff when the natural treatment plant was built in 1990 to replace an undersized and underperforming activated sludge facility, since decommissioned.

"When it was built, it was the largest lagoon system east of the Mississippi River," he says. "It probably still is because most municipalities would have a hard time committing that much real estate to a treatment plant."

Residence time in the lagoons varies from six to nine months. Primary-treated influent moves into one of three aerated and neoprene-lined ponds, each about 10 acres and 20 feet deep. Flow then passes through a tunnel under railroad tracks into two 46-acre, 8-foot-deep settling ponds, from which it is lifted about 10 feet into the first of four tertiary ponds, each 30 acres.

The stream is then divided. A portion passes through a series of three constructed wetlands for final polishing, then join the remainder before post-aeration and outfall into the Towanda Creek. Twenty-six acres of wetlands that are not part of the treatment process were built to mitigate 8 acres of natural wetlands destroyed during plant construction.

LOTS OF WILDLIFE

More than 5 miles of 10-foot wide gravel roadway surrounds the ponds. All four plant operators take part in maintenance, which includes mowing, snow plowing and mechanical system repairs. They also take care of a parking area at a hiking trailhead near the wetlands.

Besides attracting migrating birds, the lagoons attract deer, coyotes, foxes, woodchucks and raccoons. The ponds are stocked with flathead minnows, first introduced to control nuisance midge flies (Chironomid). They have multiplied so prolifically that the plant contracted with a fish-bait dealer to trap them. "It helps to control their population, and the city gets a little bit of income from it," Volk says.

Hunting and trapping are not allowed on the site, except for a retired state biologist who traps more than 100 muskrats each year. The muskrats thrive and build tunnels in the wetlands and under the roadways. The city receives nothing through the arrangement except added assurance about road collapses.

More than 180 species of birds have been documented in and around the ponds. Some, like the two-eared grebes (a species of duck), are rarer than others. Other ducks, plus herons, loons, swans, egrets, terns, hawks and geese, are more common.

ALWAYS WELCOME

Volk and his staff welcome visitors and have been recognized with a certificate of appreciation from the New York Ornithological Association. Birders register with plant staff to gain access and sometimes get tips or advice about recent sightings. First-time visitors receive an aerial map that shows the topographical features of the plant site.

Public support and participation are important to Volk, as is pride in his staff. "I have three of the most versatile New York certified operators in the state, and each one has a niche in which they excel," says Volk. For instance, while Volk's forte is process knowledge, Dave Petersen, operator, has an extensive electrical background. John Senko, operator, is mechanically inclined. Volk's son, Kevin, has a degree in chemistry and is good with mathematics.

"I am very fortunate to have the staff that I have," says Volk. "Everyone here seems to complement one another in all that we do." **tpo**

(Continued from page 31)

PHOTO COURTESY OF MARQUETTE AREA WASTEWATER TREATMENT FACILITY

ABOVE: A truck applies liquid biosolids as part of a mine reclamation project. LEFT: The facility also produces cake biosolids, dewatered to 18-19 percent solids on a belt filter press (Komline-Sanderson).

pany started to see good results, they took it upon themselves to start planting the trees. So when they leave the mine area, it's all going to be reclaimed as a very nice forest."

GETTING CREATIVE

Recently, Goodman found another use for liquid biosolids: brownfield restoration. He contacted the owner of a barren 3,000-acre property, about 12 miles away in neighboring Negaunee Township, next to an iron mine and worked with him through the state permitting process. "We did a presentation to educate the township in what we were proposing," says Goodman. "The better people understand what biosolids are, the more at ease they are.

"This is a demonstration. We only asked approval for 22 acres. We wanted something manageable to start with because we want to prove to the owner and the Department of Environmental Quality that it's going to work. We've worked on that project for three years, doing a couple of applications a year.

"What I want to do now is go into silviculture. I want to plant some hybrid poplars and willows. Northern Michigan University here just built a new biomass-fueled heating plant. If I can grow the trees and sell them to the university as biomass, that takes reclamation and beneficial use full circle." tpo

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Operator? Technician? Specialist?

A SCHOOL OF THOUGHT SAYS IT'S TIME TO CHANGE THE JOB TITLES BY WHICH WE REFER TO THE PEOPLE WHO RUN WASTEWATER AND DRINKING WATER SYSTEMS

By Ted J. Rulseh

Clean-water plant workers attach a lot of pride to the job title "operator." There are state and regional operator associations, and they are tight-knit communities of people deeply serious about their profession.

But does the term "operator" fail to do justice to the nature of the work and the quality of the people in the clean-water profession? Those who think so include Sam Wade, deputy CEO of the National Rural Water Association.

It isn't just Wade's opinion: The NRWA and its state affiliated organizations have issued a proclamation that says they will endeavor to project the workforce position of operations personnel as Water System Operations Specialist and Wastewater System Operations Specialist in publications, reports and verbal communications.

Why make this change? Do people in the professions want it? And how will it make a difference? Wade explained in an interview with *Treatment Plant Operator*.

tpo: What is the reasoning behind promoting a change in the job titles of operations professionals?

Wade: The purpose is to project the skills, knowledge and expertise that's required to do these jobs today. I got involved in 1972 in Belgrade, Minn., a little town of 800. That job was truly the definition of "operator." It was before the Safe Drinking Water Act, and my training basically was, "You turn this valve and open this up," and so forth. You couldn't get a job in this profession today with the limited skills I had back then.

> "In our industry, we talk to ourselves and feel comfortable with the term. Outside, the perception of 'operator' is someone running a piece of machinery. On both the wastewater and water sides, the work in our industry is much more technical than that."
> **SAM WADE**

Today the regulations are far more stringent, the technologies are more advanced, and there are legal liabilities involved. People in this industry today are much more knowledgeable with much more expertise. On the wastewater, they are the first line of defense in the protection of our lakes and streams. On the water side, they produce a product that every human being consumes every day.

tpo: How did this initiative to change the job titles get started?

Wade: As we looked at the Baby Boomers retiring in our industry, we saw a need to gain the attention of a younger generation toward the water industry as a professional career. Our 30,000 members are predominantly small communities. Large metropolitan systems are members, too, but we focus on utilities that serve populations of 10,000 or less. We recognize that we have to attract a qualified workforce for the future. We started looking at this seriously about five years ago, and our proclamation for rebranding was completed last year.

Sam Wade

tpo: Is this part of a bigger initiative to attract people to the profession?

Wade: It is. For example, we're working with the Veterans Administration to make veterans aware of the potential for careers in our industry. Forty-two percent of our veterans come from rural areas. Coming back from Afghanistan or Iraq, many of them just want to go back home instead of to a major metropolitan area. Our states also do things independent of the national organization, such as job fairs and job networks. The change in titles is part of an overall initiative. It's a long-term proposition because we're really trying to change thought processes from "operator," which is ingrained in memory to "system operations specialist."

tpo: What is the problem with the term "operator"?

Wade: There is absolutely nothing wrong with the term. The issue is how that term is perceived by people outside our industry. In our industry, we talk to ourselves and feel comfortable with the term. Outside, the perception of "operator" is someone running a piece of machinery. On both the wastewater and water sides, the work in our industry is much more technical than that.

tpo: How does the public perception of "operator" compare with the actual stature of people in the water professions today?

Wade: The science, the math, the lab work, the understanding of regulations, the equipment and processes — all of that is very technical today, even in smaller systems. There is much more to it than turning valves and flipping switches. These positions require professional certification by the states, and every state has its own criteria. A large percentage of people in the industry today have higher education degrees.

tpo: How would this change in titles affect how people in the profession are referred to in statutes and regulations?

Wade: It has no effect at all. I know some people in agencies and organizations don't embrace this because they think they'll have to change their statutes or publications. That's a misperception. It doesn't affect the certification process in any way, shape, form or fashion. In fact, it supplements and provides more credibility in certification.

tpo: How did you arrive at the alternate title of "specialist"?

Wade: NRWA, through our state affiliates, has professional people in the field doing training in source water protection and providing wastewater and

water on-site technical assistance. These people have titles such as Training Specialist, Wastewater Technician and Source Water Specialist.

We decided to do a survey to ensure that we were headed in the right direction and to understand the impressions of the people actually performing the tasks and who would be expected to benefit from the change in titles. We conducted an online survey distributed through our state affiliates. We asked: *Which of the below do you feel would better attract a young person to consider the water and wastewater industry as a career?* We received 1,849 responses during the survey period of 30 days.

> "Through this process, we have heard several people say, 'It's not what you call people, it's what you pay them.' And to a degree that's true. But if the people who make the salary decisions don't respect the position, the salary levels are never going to go up."
> **SAM WADE**

tpo: What was the outcome of the survey?

Wade: Of the respondents, 17.1 percent selected operator, 39.1 percent selected specialist, 33.4 percent technician and 10.4 percent had no opinion. In the survey, we provided a definition of each title:

- Operator as a person employed to operate and control a machine.
- Specialist as a person who has a particular skill or knows a lot about a particular subject.
- Technician as a person whose job involves skilled practical work with scientific equipment, for example, in a laboratory.

tpo: Now that you have completed the survey, what are you doing with the results?

Wade: First of all, we used it to create the proclamation from our state associations. We also provided the results to other water and wastewater organizations: the Water Environment Federation, the American Water Works Association, the National Association of Clean Water Agencies, the Association of State Drinking Water Administrators, the Rural Utility Service and the Association of Boards of Certification.

Our state associations are beginning to take action. For example, in South Dakota, the governor issued an executive proclamation on the subject. In Delaware, they've started to review their statutes and change their terminology, although, as I said, that's not required. Our Wisconsin affiliate, in all their brochures and training announcements, use the "system operations specialist" titles. So it's gradually building, and we hope it will eventually become a part of the industry vocabulary.

tpo: You have stated that these new titles can help pull wages along. How do you see that happening?

Wade: Through this process, we have heard several people say, "It's not what you call people, it's what you pay them." And to a degree that's true. But if the people who make the salary decisions don't respect the position, the salary levels are never going to go up.

tpo: In sum, what do you see as the benefit of this initiative?

Wade: There are great, dedicated people who provide a safe, quality water supply that we drink every day and protect the environment through wastewater treatment. They deserve to be recognized for the critical services they provide to the public and for how far the industry has progressed over the years. As an industry, we need to project, outside our own circles, the skills, knowledge and expertise required to operate the systems that produce high-quality, safe water and protect the environment. **tpo**

Process Chemistry and Laboratory Analysis

By Craig Mandli

Biological and chemical processes play a vital role in the breakdown of fats, grease and solids in wastewater. Laboratory testing makes sure these processes are kept in check. Here are several of the innovative products on the market that aid in biological and chemical breakdown, and the laboratory analysis of those processes.

Bacteria/Enzymes

ACTIVATED CARBON

AquaSorb activated carbon from Jacobi Carbons is manufactured from coal, coconut shell and wood raw materials by steam activation. It is supplied as granules, extruded pellets and powders, designed for use in liquid phase treatment to absorb remaining COD and toxic materials. **215/546-3900; www.jacobi.net.**

AquaSorb activated carbon from Jacobi Carbons

Chemicals

Foam Buster micronutrient blend from AQUAFIX

MICRONUTRIENT FOAM CONTROL

Foam Buster micronutrient blend from AQUAFIX controls foaming and reduces filaments in wastewater processes. It is effective on *Microthrix parvicella* and *Nocardia* foams and improves degradation of surfactants, emulsions and petroleum hydrocarbon-based products. It contains vitamins, minerals, surface-tension depressants and natural buffering systems that help overcome filament foaming and settling, addressing the root cause of foam and enabling bacteria to digest and break it up. It is effective in oxidation ditches, activated sludge plants, sequencing batch reactors, extended aeration systems and aerobic digesters. **888/757-9577; www.teamaquafix.com.**

SLOW-DISSOLVING CHEMICAL BLOCK

Citrus Block continuous action, slow-dissolving solid block from Chemtron releases a combination of citrus solvents and nutrients into wastewater facilities. Submersed into solution in a net envelope just below the surface, it helps prevent waterline clogging and sludge formation and eliminates hydrogen sulfide. It keeps surfaces free of organic waste and greases and keeps lift station walls clean as water rises and falls, while also controlling odor. **954/584-4530; www.chemtron.com.**

Citrus Block chemical block from Chemtron

Enclosures

Tank and lagoon cover systems from Geomembrane Technologies

ODOR, TEMPERATURE AND ALGAE-CONTROLLING TANK COVER

Tank and lagoon cover systems from Geomembrane Technologies control odor and temperature and block sunlight to control algae growth and chlorine loss. Their high-strength, UV-protected coated fabric is tensioned across low-profile aluminum arches that span tank openings. The cover is secure, yet detaches easily for access for inspection or maintenance. Rainwater runs to the tank perimeter. The fabric is durable and resistant to wastewater environments. Aluminum hatches can be located in the walkways for inspection or sampling, or fabric hatches can be located in the fabric covers. **506/452-7304; www.gticovers.com.**

Lab enclosures from HEMCO

LAB AUTOMATION ENCLOSURE

Enclosures from HEMCO isolate liquid handling workstations, HPLC equipment, sample weighing, high-throughput screening, powders handling and other processes by providing exhaust air systems or HEPA-filtered clean workstations. They protect personnel from hazardous fumes and processes from lab contamination. Using a flexible, modular design, they are built to customer size and design requirements. **800/779-4362; www.hemcocorp.com.**

CHEMICAL STORAGE ENCLOSURE

Chemical storage enclosures from RM Products

Chemical storage enclosures from RM Products provide continuous fiberglass material from floor to wall to ceiling. Fiberglass will not rot, rust or corrode in the presence of corrosive chemicals. All buildings are factory assembled and ready to use on delivery. Units can be relocated with a forklift or tilt-and-load truck. **800/363-0867; www.rmfiberglass.com.**

Ultradome roof from Ultraflote Corporation

SELF-SUPPORTING ALUMINUM DOME

The Ultradome roof from Ultraflote Corporation is custom engineered. The self-supporting aluminum dome allows maximum overhead space and allows interference-free equipment operation. The extruded aluminum flat cover for rectangular and round tanks has interlocking panels of reinforced extruded aluminum planks creating a strong but lightweight, corrosion-resistant structure. **713/461-2100; www.ultraflote.com.**

Laboratory Supplies and Services

Circulating baths from PolyScience, Div. of Preston Industries

CIRCULATING BATH

Circulating baths from PolyScience, Div. of Preston Industries, are versatile temperature control products designed to streamline work processes. Available with six controllers, they offer a wide range of functions, with temper-

ature ranges from -40 to 200 degrees C. They offer time/temperature programming capabilities and include multiple connectivity options. Remote on/off and external temperature probe ports are built in. **800/229-7569; www.polyscience.com.**

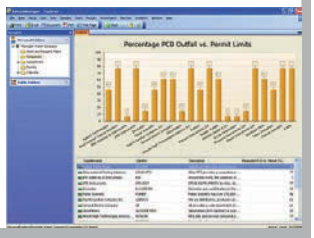
Sampling Systems

DUCKBILL COMPOSITE SAMPLING SYSTEM

Automatic Duckbill Sampler from Markland Specialty Engineering

The Automatic Duckbill Composite Sampling System from Markland Specialty Engineering helps municipal and industrial plants automate composite sampling of tanks, sumps, open channels and sewers, and monitor process slurries and effluent. Users program the controller to sample based on time or by a flowmeter, and can collect from multiple sites simultaneously, facilitating the monitoring required for environmental regulatory compliance. Manual samples may be called in at any time without affecting the normal sampling interval. It uses compressed air and a rubber duckbill, acting as a check valve, to move complete samples up high lifts (over 79 feet) and over long runs (more than 98 feet), even in freezing temperatures. The system is explosion-proof, and lines are blown clear and dry, in a self-cleaning action, after each sample. **905/873-7791; www.sludgecontrols.com.**

AUTOMATED SAMPLING SYSTEM



SampleManager 11 laboratory information management system from Thermo Fisher Scientific

The SampleManager 11 laboratory information management system from Thermo Fisher Scientific helps users make choices about workflow, instrument integration and data reporting for management metrics or regulatory requirements. Lab personnel can use the system workflow to automate decisions, saving time and simplifying user interactions. Workflow capabilities allow lab managers to easily model their processes. **800/637-3739; www.thermo.com.**

Testing Equipment

GreenLight analyzer from Baseline

PORTABLE BACTERIAL ANALYZER

The GreenLight from Baseline is a portable instrument that performs bacterial analysis on wastewater. In as little as 45 minutes, it calculates the total aerobic bacteria count in any water supply. Its operation is based on respiration of aerobic bacteria: measurement of oxygen determines the levels of live active bacteria in water streams. **800/321-4665; www.baseline-mocon.com.**

MICROWAVE MOISTURE/ SOLIDS ANALYZER

SMART Turbo analyzer from CEM Corporation

The SMART Turbo microwave moisture/solids analyzer from CEM Corporation provides total solids determination in less than 3 minutes and can measure TSS and total solids in wastewater and sludge. Rapid, precise

(continued)

analysis helps control the treatment process and reduce costs through effective dewatering and more efficient polymer usage, optimizing solids content. Its IntelliTemp temperature feedback system constantly monitors weight loss and sample temperature, adjusting power accordingly so that the sample is thoroughly dry without being overheated. The system is simple to operate and methods are easily transferable from unit to unit. **800/726-3331; www.cem.com.**

CHLORINE SENSOR

The Model CDA-22 high-accuracy polarographic amperometric sensor from Electro-Chemical Devices measures chlorine dioxide in concentrations from 0.05 to 20 ppm ClO_2 and operates at temperatures from 32 to 122 degrees F. It easily and cost-effectively fits into municipal chlorine monitoring systems. **800/729-1333; www.ecdi.com.**

Model CDA-22 sensor from Electro-Chemical Devices

Applikon DI Alert analyzer from Metrohm USA

ONLINE ANALYZER

The Applikon DI Alert online analyzer from Metrohm USA is preconfigured and delivered ready to analyze and monitor all common ion concentrations in water. Systems are available for more than 20 parameters, with two base techniques that allow analysis of ammonia, calcium, chloride, free and total chlorine, copper, iron, nickel, nitrate, phosphate, silica and zinc. Depending on the desired analyte, a colorimetric or ion-selective approach is chosen. It integrates easily with existing processes. **866/638-7646; www.metrohmusa.com/process.**

PORTABLE VOC MONITOR

The TOX-BOX VOC portable volatile organic compound (VOC) gas monitor from Mil-Ram Technology provides fixed-system features packed in a weatherproof, portable analyzer designed for dependable service under demanding field conditions. It features PID photoionization sensor technology 10.6 eV for more than 400 different gases. It is easily configured through an operator interface consisting of front-panel push-button switches and a large backlit LCD display. It has a rechargeable lead-acid battery or continuous AC adapter operation. An onboard pump continuously draws gas samples across the sensors. Alarm relays are fully programmable in low/mid/high/fault, and are easily configured for nonlatching/latching, nonenergized/energized and 0 to 255 second time delay. **888/464-5726; www.mil-ram.com.**

TOX-BOX VOC portable monitor from Mil-Ram Technology

MC500 colorimeter from Orbeco-Hellige

MULTIPARAMETER COLORIMETER

The MC500 multiparameter colorimeter from Orbeco-Hellige tests for a wide range of water-quality parameters and is suited for field or laboratory. With an open reagent system (using Powder Pack, stable tablets and liquid reagents) it has a six-LED photodetector array that supports more than 90 preprogrammed methods, including DPD chlorine, COD, phosphate and molybdate. Features include 1,000 data point storage, new method uploads via the internet, an infrared interface for data transfer to a computer and a user calibration mode. **800/922-5242; www.orbeco.com.**

PROBE-STYLE ANALYZER

The M1000 probe-style analyzer from Real Tech is suited for many heavy organic-laden monitoring applications and for monitoring UV transmittance for wastewater disinfection. It is designed for accuracy and reliability in open-channel or nonpressurized applications. **877/779-2888; www.realtech.ca.**

M1000 analyzer from Real Tech

TOTAL ORGANIC CARBON ANALYZER

The TOC-4200 online total organic carbon analyzer from Shimadzu Scientific Instruments incorporates the industry-standard 680-degree C combustion catalytic oxidation method to support fast, sensitive analyses from 5 to 20,000 mg C/L full-scale. It uses multiple pretreatment units to match samples characteristics and has a multifunctional sample injector and onboard air purifier. A high-salt sample combustion tube kit increases maintenance intervals by 10 times. A carrier gas purification function is standard. A multifunctional sample injector allows generation of a multipoint calibration curve from a single high standard. **800/477-1227; www.ssi.shimadzu.com.**

TOC-4200 nalyzer from Shimadzu Scientific Instruments

LABORATORY TESTING SERVICE

WesTech Engineering offers complete laboratory testing facilities to assist in project planning. Their laboratory technicians are specialists in filtration, sedimentation and flotation. Careful testing and analysis of a submitted sample can provide the answers to the most difficult process problems, helping to establish design parameters and size equipment based upon bench scale testing results. Comprehensive reports are sent to the customer and the information is then used to discuss the most effective water or wastewater treatment options with process experts. Bench scale units are also available for rental or purchase for use at a testing facility. **801/265-1000; www.westech-inc.com.** tpo

WesTech Engineering Laboratory testing facilities

By Craig Mandli

Filter presses with on-demand chlorine dioxide system save disposal expenses, decrease odor

Problem

The City of Martinsville, Va., once paid more than $300,000 a year for biosolids handling and $180,000 more for electricity for aerobic digestion and belt press dewatering. Filtered biosolids averaged 17 percent solids. Plant operators wanted a more efficient method that also addressed odor issues.

Solution

Operators installed two **HyPack Filter Presses manufactured by Beckart Environmental,** automated with a programmable logic controller to minimize operator time. Each filter press processes 125 cubic feet per day. Beckart also supplied a system to allow operators to make chlorine dioxide on demand to address odors.

RESULT

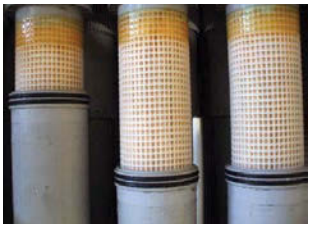
The system increased solids content to 33 percent, reducing hauling and handling costs by about 50 percent and saving $160,000 a year. Electricity costs to run two 200 hp blowers associated with the old system of aerobic digestion with belt presses around the clock were nearly eliminated. Operators also reported satisfaction with the odor-control system. **262/656-7680; www.beckart.com.**

Membrane cleaner provides RO-quality water for ethanol distiller

Problem

The City of Fargo (N.D.) Wastewater Treatment Plant has an auxiliary effluent reuse facility (ERF) to produce 1 mgd of reverse-osmosis-quality water for Tharaldson Ethanol, a corn-to-ethanol distiller. Particularly in cold weather, the ERF experienced biological fouling of the PVDF polymer RO membranes and significantly increased trans-membrane pressure (TMP). This condition had to be resolved quickly to ensure a plentiful supply of RO water.

Solution



To determine the optimal membrane cleaning regimen, the Fargo plant team systematically evaluated 20 cleaners and hundreds of combinations and concentrations, including commonly used commodities and many formulated membrane cleaners. They selected **International Products Corp.'s MICRO-90** for working effectively without phosphates, silicates and strong alkalis, at a membrane-compatible pH of 9.5 and at a 0.3 percent concentration.

RESULT

The ERF has used MICRO-90 since October 2010. Some of the original PVDF membranes are still in use and continue to see significant TMP drops after cleaning. The Fargo ERF design engineers have recommended the cleaner to other similar ERFs nationwide. **609/386-8770; www.ipcol.com.**

Solution improves winter sludge settling at treatment plant

Problem

The Wentzville (Mo.) Wastewater Treatment Plant faced increasing problems operating an undersized aerobic digester in the middle of winter, when volatile solids destruction is low and frozen soils do not allow land application of biosolids. The aeration basins were operated at the maximum mixed liquor suspended solids level, the clarifier sludge blankets were maxed out, the drying beds were full and there was no room for waste sludge. Filaments began to grow, foam increased, and effluent BOD and TSS suffered. The operators wanted better settling sludge, increased decant and more space for waste sludge within the existing digesters.

Solution

After six months of trials, plant operators discovered that **BIO ENERGIZER from Probiotic Solutions** could increase biomass metabolism and destroy sludge, accelerating the bacteria's rate of endogenous respiration by improving cell wall permeability.

RESULT

The percent of volatile solids destruction increased by a total of 43 percent to 85 percent in 27 weeks, and decants were improved. **800/961-1220; www.probiotic.com.**

Plant tests reinforce peracetic acid's high success rate in wastewater treatment

Problem

A wastewater treatment plant in Steubenville, Ohio, needed a cost-effective disinfection method that would not generate chlorinated byproducts.

Solution

Solvay Chemicals conducted independent plant-scale trials using **Proxitane WW-12 peracetic acid (PAA).** The tests were completed over a little more than one month. PAA, a rapidly acting disinfectant, does not generate harmful disinfection byproducts even if overdosed. The dosing system can be economically retrofitted or work in series with an existing disinfection system. The plant was operating at 5 to 8 mgd, with a design capacity of 13.5 mgd.

RESULT

The test was successful. PAA dosage never exceeded 1.5 ppm, and the residual chlorine averaged 0.4 ppm, never exceeding 1 ppm. PAA feed was flow-paced, CBOD remained constant and pathogen control was always within the permit limits. **800/765-8292; www.solvaychemicals.us.** tpo

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FEBRUARY 24, 2014

SESSION	DESCRIPTION	RECOMMENDED
Preventing Tank Truck Rollovers 8:00 AM - 9:00 AM **Room:** 136-138 **Speaker:** **John Conley**	One of the most important tools in the liquid waste industry is the tanker truck, and the most important person is the one who drives it. While the tank truck industry, including the liquid waste sector, has a very good safety record, it does face a special challenge in eliminating tanker rollovers. According to a study conducted for the Federal Motor Carrier Safety Administration, straight tanker trucks account for over 25 percent of all cargo tank rollovers. That same study found that over 75 percent of rollovers are the result of a driver action. Most rollovers are preventable. John Conley, Past President of National Tank Truck Carriers, will discuss efforts by industry and government to eliminate tanker rollovers and other trucking safety and operations issues.	Cleaner Municipal Sewer & Water Pumper PRO Gas Oil & Mining Contractor
PSAI **Visions of the PSAI and the Education Initiative** 9:30 AM - 10:30 AM **Room:** 136-138 **Speakers:** **Jeff Wigley**, Owner, Pit Stop **Todd Hilde**, President and CEO, Satellite Industries	The Education Initiative exists within the PSAI to advance the use of portable sanitation around the world through education regarding its benefits to humanity. Todd Hilde, President of Satellite Industries, will present an overall vision for this important effort. It is an excellent opportunity to gain a new perspective on the portable sanitation industry, and learn how you can participate in spreading this important message. In addition, Jeff Wigley, the Immediate Past President of the PSAI, will provide operators with an overview of the activities, advancements and changes within the association over the past two years.	PRO
PSAI **Industry Image** 11:00 AM - 12:00 PM **Room:** 136-138 **Speakers:** **Nancy Gump**, Owner, Andy Gump, Inc. **Sarah Nasby**, Vice President, S & B Porta-Bowl Restrooms	There is a growing effort among operators and the PSAI to change the public's perception of portable restrooms, because a negative public image does reduce rental fees and ultimately profits. This effort is well underway, as operators and suppliers belonging to the PSAI have joined together to actively promote a healthy, positive image of the industry through the use of press releases, professional marketing materials, partnering with other associations and working to establish an official Portable Sanitation Day to combat the negative press usually associated with this industry. Come learn what the Education Initiative is all about, and how it can help you increase your reputation and profitability.	PRO
PSAI **State of Global Sanitation** 1:30 PM - 2:30 PM **Room:** 136-138 **Speakers:** **Rajeev Kher,** Founder, 3S Shramik **Steve Brinton,** VP of Sales, Satellite Industries	It is clear that portable sanitation protects billions of people around the world from sickness and deadly diseases. However, there are many areas of the world where portable sanitation is underused or non-existent, and billions of people suffer on a daily basis. Thankfully, there are operators in these regions who are making a difference. Come hear their stories, and be inspired as you learn how valuable your business is to the community you live in.	Pumper PRO
PSAI **What's New with OSHA Safety Requirements** 3:00 PM - 4:00 PM **Room:** 136-138 **Speaker:** **Anthony Kuritz**, Compliance Officer, OSHA	Anthony Kuritz is an Industrial Hygiene Consultant working for the Bureau of Safety Education and Training within the Indiana Department of Labor as an INSafe Training Instructor. In this session he will provide important information on OSHA's new GHS requirements for all businesses, truck and driver safety guidelines and other regulations pertaining to workplace safety. There will be time for questions and answers at the end of the presentation.	Cleaner Municipal Sewer & Water Pumper PRO Gas Oil & Mining Contractor

	SESSION	DESCRIPTION	RECOMMENDED
PSAI	**An Introduction to Entering the Federal Government Contracting Arena** 4:30 PM - 5:30 PM **Room:** 136-138 **Speaker:** **Terri Baldwin Flanigan,** Consultant, Phoenix Site Solutions	You've made the decision to enter the world of government contracting. Now what? First, we will help you understand the contract and its requirements to determine if the contract is right for you. Second, we will walk you through the process of putting a bid together. Finally, we will provide you with a list of beneficial websites pertaining to government contracts.	Pumper, PRO, Cleaner, Municipal Sewer & Water, tpo, WSO
NOWRA	**Why Do We Care About Soils?** 8:00 AM - 9:00 AM **Room:** 240-242 **Speaker:** **Randy Miles**, Soil Scientist, University of MO	Soil is a valuable component of decentralized wastewater systems, as it provides the ability to disperse large volumes of effluent, and serves as a treatment component to assure public health and environmental quality while fostering recycling and reuse of water and nutrients. A discussion of critical soil properties such as color, texture, and structure, and their direct or indicator role in treating, dispersing and recycling will be presented. This session will explore why specific technologies and associated designs may need to be employed in unique soil-site scenarios.	Onsite Installer
NOWRA	**Design for Dummies** 9:30 AM - 10:30 AM **Room:** 240-242 **Speaker:** **John R. Buchanan**, Ph.D., P.E., Assoc. Professor, University of TN	Onsite wastewater system design must be based on the volume and characteristics of the wastewater, and the hydraulic properties of the soil. This session will focus on evaluating the wastewater source to determine the area of soil required for final treatment and dispersal. Specific discussion issues include wastewater strength, daily volume, long-term acceptance rate, and boundary conditions.	Onsite Installer, Pumper
NOWRA	**How to do a Good Site Evaluation** 11:00 AM - 12:00 PM **Room:** 240-242 **Speaker:** **Randy Miles**, Soil Scientist, University of MO	Site evaluation is the most critical input into the design and installation of an onsite wastewater system. The site evaluator must provide a prediction of the hydrological flow characteristics within the soil landscape. This session will focus on evaluation of the internal soil properties relative to their occurrence in the landscape. Discussion will include the iterative process that the site evaluator should have with the installer and homeowner.	Onsite Installer
NOWRA	**Designing for Tough Sites** 1:30 PM - 2:30 PM **Room:** 240-242 **Speaker:** **John R. Buchanan**, Ph.D., P.E., Assoc. Professor, University of TN	Onsite wastewater systems must be designed to match the conditions of the soil and site. Frequently sites are limited by wet soils and shallow restrictive layers. This session will discuss the decision process to determine the appropriate system configuration for various site and soil conditions. Further, this session will explore various site modifications to improve the site acceptability.	Onsite Installer
NOWRA	**Wastewater and Soils: Clean It Up AND Get It To Go Away** 3:00 PM - 4:00 PM **Room:** 240-242	The primary goal in dispersing effluent in the soil treatment component is to encourage unsaturated flow. Unsaturated flow provides the ability for greater contact with soil particle surfaces while allowing oxygen in the larger soil pores, thus greater treatment than under saturated flow conditions. Specific discussion will include dispersal technologies, soil properties, and water management strategies and devices.	Onsite Installer
NOWRA	**Good Installation for Long-Term User Satisfaction** 4:30 PM - 5:00 PM **Room:** 240-242 **Speaker:** **John R. Buchanan**, Ph.D., P.E., Assoc. Professor, University of TN	The primary goal when installing an onsite wastewater system is to protect public and environmental health. However, installers should also consider ease of maintenance and landscaping as the system is installed. The system is more likely to be maintained if the components are readily accessible. Appropriate landscaping can divert surface water away from system components. This session will focus on these important issues that can make the installation a long-term success.	Onsite Installer, Pumper
NOWRA	**Look Out for Gophers! Taking Care of Mound Systems** 8:00 AM - 9:00 AM **Room:** 243-245 **Speaker:** **Sara Heger**, Engineer, University of MN	This presentation will cover providing maintenance for mound systems. It will cover the tasks related to septic tanks, pump tanks, pumps, pressure distribution, inspection pipes, the soil treatment system itself and landscaping, including those troublesome gophers.	Onsite Installer, Pumper

SESSION	DESCRIPTION	RECOMMENDED
NOWRA **ATUs - How to Make Them Work** 9:30 AM - 10:30 AM **Room:** 243-245 **Speaker:** **Tom Fritts**, Vice President, Residential Sewage Treatment Co.	Aerobic treatment units were first introduced in the mid 1950s, and have become a reliable technology when properly maintained. There are no longer just a handful of ATU manufacturers out there, and they all need qualified service providers to maintain the many different systems being sold today. We will review the basics of servicing these systems and some of the responsibilities that come with the NSF Standard 40 certification.	Onsite Installer Pumper
NOWRA **Rest Stops: A Case Study of Challenging Wastewater** 11:00 AM - 12:00 PM **Room** 243-245 **Speaker:** **Sara Heger**, Engineer, University of MN	The University of Minnesota's Onsite Sewage Treatment Program is working with the Minnesota Department of Transportation to evaluate the 51 septic systems serving the rest stops and truck garages across Minnesota at MnDOT facilities. Many of these systems are more than 30 years old, and the lack of information makes managing these systems, prioritizing replacement and designing replacement systems very difficult. It is generally understood that these systems are subject to challenging site conditions and wastewater characteristics. This presentation will cover protocol for investigation and the field data.	Onsite Installer Pumper
NOWRA **Troubleshooting Onsite Systems** 1:30 PM - 2:30 PM **Room:** 243-245 **Speaker:** **Tom Fritts**, Vice President, Residential Sewage Treatment Co.	Understanding the "treatment train" and learning how to "run the rope" are skills you should have to be a proficient troubleshooter. Troubleshooting is more than just the importance of knowing how the system works. Many troubleshooting skills are no different than those used by your family physician or Mission Control. Having a good understanding of the system and following known procedures will allow your troubleshooting visit to be efficient and effective.	Onsite Installer Pumper
NOWRA **Installation Mistakes: How to Avoid and Fix Them** 3:00 PM - 4:00 PM **Room:** 243-245 **Speaker:** **Sara Heger**, Engineer, University of MN	Installing systems right from the beginning will save you time and money. Key aspects of proper installation will be discussed, including protecting the natural soil conditions, proper bedding of piping, tanks and treatment units and working on difficult sites. But what do you do when it is already been messed up? Potential remedies will be covered.	Onsite Installer
NOWRA **Marketing & Customer Service for Small Business Owners** 4:30 PM - 5:30 PM **Room:** 243-245 **Speaker:** **Tom Fritts**, Vice President, Residential Sewage Treatment Co.	Designing, installing, pumping and servicing ... is that enough? NO! Our businesses are not run by executives in penthouse offices ... we are the executives ... we are the entrepreneurs. Learning easy ways to market your company and effective customer service can take your profits to the next level. You may be surprised how many tools you already have that you are just not using.	Onsite Installer Pumper PRO
SSCSC **Personal Safety** 8:00 AM - 9:00 AM **Room:** 231-233 **Speaker:** **John Chadwell**, Western Regional Manager, EHS International	This is a fascinating, high-energy class that's applicable to challenges encountered in today's workplace. It will provide an overview of industry safety issues such as workplace violence and personal safety, as well as the tools necessary to deal with the challenges of working with the public and with fellow employees. Throughout attendees will be presented with concepts on how to develop a survival mindset that could help improve their overall safety through personal awareness training. Attendees will leave with a better understanding of personal safety at the workplace or worksite, and valuable lessons that can be applied to their lives outside of work.	Pumper Cleaner Onsite Installer Municipal Sewer & Water Gas Oil & Mining Contractor PRO tpo WSO
SSCSC **Understanding the Nuances of a Quality CCTV Inspection Program** 9:30 AM - 10:30 AM **Room:** 231-233 **Speaker:** **Jim Aanderud**, Owner/President, Innerline Engineering	The success or failure of any pipeline inspection program comes down to two important factors – the quality of the videos and the quantity of footage inspected. Falling short in either one can prove fatal for the contractor and the public agency alike. This class will clearly define the makeup of a quality pipeline inspection, and discuss the steps that must be taken to produce a superior video. We will also look at specific and proven ways in which we can increase production and profitability. This class will help define a successful CCTV inspection program.	Cleaner Municipal Sewer & Water

SESSION	DESCRIPTION	RECOMMENDED
SSCSC **In the Trenches with Trenchless Pipeline Repair and Renewal** 11:00 AM - 12:00 PM **Room:** 231-233 **Speaker:** **Mark Hill**, P.E., Civil Engineer, Michael Baker Corp.	Trenchless pipeline repair and renewal is a growing industry with new innovative processes being offered. This class takes a look at the benefits and drawbacks of some of the most common and some of the innovative pipeline repair and renewal technologies currently on the market. We will look at the specific site conditions that are a challenge for trenchless rehabilitation, what has been successful, and what has fallen short.	Cleaner Municipal Sewer & Water
SSCSC **Nozzle Application: What, Why, Where, When and How?** 1:30 PM - 2:30 PM **Room:** 231-233 **Speaker:** **Duane Johnson**, Vice President, Affordable Pipeline Services	Too often cleaning truck operators believe that only one or two nozzles are sufficient to complete any project. Just because they have had great results with one nozzle in certain cleaning applications, they unfortunately continue to use the same nozzle in every other cleaning condition. This class will look at a variety of cleaning situations and discuss the various options available for cleaning. We will focus on specific pipeline conditions, and then discuss the precise type of nozzle needed to efficiently clean in each of these situations. Our goal will be for each attendee to learn a new approach to pipeline cleaning, and to begin thinking outside of the box when it comes to encountering new and challenging cleaning situations. Our ultimate goal is to increase effectiveness and productivity for each operator by always using the correct nozzle in any given cleaning condition.	Cleaner Municipal Sewer & Water
SSCSC **Stop It!** 3:00 PM - 4:00 PM **Room:** 231-233 **Speaker:** **Denis Pollak**	The ins and outs of plugging and line stopping of sanitary sewers can be very challenging, and a sizable risk to say the least. There are many ways of controlling flow with the use of inflatable and mechanical pipe plugs. The standard of care and safety when plugging is sometimes overlooked or misunderstood. In this class we will take a close look at plugging, and discuss their advantages and practical uses. We will also look at alternative methods of controlling flow, such as line stopping, pipe freezing and bypassing. Plugging can be a very effective tool in a variety of applications. For example, by controlling the flow, lines that would otherwise be inaccessible can be accessed and inspected by conventional CCTV inspection equipment. We will look at how plugging can be a valuable tool for CCTV, cleaning and rehabilitation projects.	Cleaner Municipal Sewer & Water
SSCSC **Getting the Most out of your Combination Unit** 4:30 PM - 5:30 PM **Room:** 231-233 **Speaker:** **Rick Lewis**	During today's economic times, agencies and contractors are keeping their combination units much longer. In order to extend the life of these units, there are critical steps that must be taken in order to guarantee that they continue to function at the optimum level. In this class we will define the key components of a combination unit and provide the necessary tools to maintain the truck and maximize its efficiency. We will discuss procedures and tricks of the trade that are needed in order to maintain its proficiency while ensuring its safety.	Cleaner Municipal Sewer & Water Pumper Gas Oil & Mining Contractor
WJTA-IMCA **Preparing for Your First High Pressure Waterjetting Job** 8:00 AM - 9:00 AM **Room:** 133-135 **Speaker:** **Gary Toothe**	Waterblaster? Check. High-pressure hose? Check. Let's do some waterblasting. Hold on there, partner. There is a lot more to successful waterblasting than just loading up the truck. Let's start with, "What are you trying to do?" Now be careful, this may be a question with more than one answer! In this session we will explore what needs to happen before the wheels ever start rolling for that first (or any) waterblasting job.	Cleaner Municipal Sewer & Water Gas Oil & Mining Contractor
WJTA-IMCA **Vacuum Truck Operation and Safety** 9:30 AM - 10:30 AM **Room:** 133-135 **Speaker:** **Gary Toothe**	One of the bigger myths in the industrial cleaning industry is that there is nothing to operating a liquid vacuum truck. Nothing could be further from the truth. What you don't know about proper vacuum truck operation and safety could cost you a job, a truck, or a life. In this session we will explore the basics of liquid vacuum truck operation and safety on materials from water up to flammable liquids, and what your people need to know before they fire that unit up.	Cleaner Municipal Sewer & Water Pumper Gas Oil & Mining Contractor

SESSION	DESCRIPTION	RECOMMENDED
WJTA-IMCA **Hydroexcavation: Getting the Best Bang for Your Buck** 11:00 AM - 12:00 PM **Room:** 133-135 **Speaker:** **Neil McLean**	Learn how to dial your hydroexcavation truck in to make your company look professional to your customers while increasing production, performance and safety. This program will discuss options like multiple wands and the right nozzle design to increase your performance. You will also learn how to use proper water management for the best production outcome.	Gas Oil & Mining Contractor Pumper Cleaner Municipal Sewer & Water
Business Training and Marketing **Marketing on a Shoestring** 1:30 PM - 2:30 PM **Room:** 133-135 **Speaker:** **Suzan Chin**, Founder and Chief Marketing Officer, Creative Raven	What you are experiencing in your business today is not because of what you are doing at this moment in time, but rather a direct result of what you did or failed to do six to nine months ago. This session will review five important marketing activities that can be accomplished on a modest budget in a relatively short period of time: 1. The World's Smallest Brochure: How to make your business card one of your most powerful marketing and advertising tools 2. Networking: Tips and tricks for tapping into your personal and professional networks and creating a powerful 15 or 30 second "elevator pitch" for networking events and meeting key strategic influencers and gatekeepers 3. Website Auditing: Performing an in-depth review of your online presence, developing a plan for making your website a better marketing or sales tool for your business 4. E-Newsletters: Using the power of e-based communication to nurture prospects into customers and keep existing customers wanting more 5. Press Power: Getting positive publicity and your name in the headlines and leveraging positive press exposure. Participants will leave with instructions, resources and samples on how to implement these budget-friendly marketing activities quickly and easily for their business.	Pumper Cleaner Onsite Installer Municipal Sewer & Water PRO Portable Restroom Operator Gas Oil & Mining Contractor
Business Training and Marketing **Getting Some.....** 3:00 PM - 4:00 PM **Room:** 133-135 **Speaker:** **Suzan Chin**, Founder and Chief Marketing Officer, Creative Raven	Brand recognition and positive publicity ... how do those big companies do it? This session will provide an interactive view of branding, its core components, what goes into creating a great brand and marketplace recognition. We will review why consistency is key, how color and presentation can set a company apart, as well as "personal branding." For many small to medium-sized businesses, personal branding is crucial to developing customer loyalty and powerful word-of-mouth referral business. Participants will learn: What goes into creating a great logo and memorable visual branding identity; Key components of establishing a brand and market perception; Essentials for developing your "personal brand" and engaging your customer. Publicity also plays a vital role in establishing a brand and keeping a company in the forefront of the target customer's mind. Often more powerful than paid advertising, it is a frequently overlooked and underused form of marketing, and this session will demonstrate how participants can tap into this inexpensive form of marketing that has incredible return on investment. Take aways include: Basics of developing a great news release; Insider tips for writing your own feature news articles; and idea generators for publicity and positive PR.	Pumper Cleaner Onsite Installer Municipal Sewer & Water PRO Portable Restroom Operator Gas Oil & Mining Contractor
Business Training and Marketing **The Online Marketing Toolbox** 4:30 PM - 5:30 PM **Room:** 133-135 **Speaker:** **Suzan Chin**, Founder and Chief Marketing Officer, Creative Raven	Be present and present ... navigating and exploiting the world of online marketing. Like it or not, online media is now a part of our daily lives. Smart phones, tablets, laptops, WIFI – we are a society that is "wired-in" so business owners need to take advantage of all this new and ever-evolving platform for communication. Today's online marketing toolbox needs to include many components: an engaging website with great content, social media, SEO and blogging. But how as a busy business owner do you develop these and ride the digital marketing wave? This session will review: The nuts and bolts of developing a responsive website; What business owners need to plan for and be ready to implement; Creating compelling content; How, when and why to use social media and the basic skills needed for getting involved. As SEO rules and algorithms have changed dramatically, we will share what can impact a site's rankings and the use of blogging to boost traffic, visibility and higher placement in search results including: How to set up a blog; Creating an editorial calendar; Ongoing maintenance tips; Connecting it to social media efforts. At the end of the session, participants will have a greater understanding of how all the different forms of digital communication work together, what tools are best suited for helping them achieve their goals and how to start incorporating e-based communication methods into their overall marketing strategy.	Pumper Cleaner Onsite Installer Municipal Sewer & Water PRO Portable Restroom Operator Gas Oil & Mining Contractor

SESSION	DESCRIPTION	RECOMMENDED
NAWT **CSA 2010 Implementation/ Impact on Carriers/Drivers** 8:00 AM - 9:00 AM **Room:** 234-236 **Speaker:** **Buddy Mauger**, Compliance and Training Specialist	This training will discuss the implementation of CAS 2010 and what it will mean for companies and drivers. We will cover what you will need to stay out of trouble with the new requirements of CSA 2010. We will show you how to check your CSA 2010 "BASIC" scores to see where any problems may be. We will also create a DOT Portal Access and review data via the U.S. DOT Portal.	Pumper Gas Oil & Mining Contractor
NAWT **DataQ's: When and How to Challenge** 9:30 AM - 10:30 AM **Room:** 234-236 **Speaker:** **Buddy Mauger**, Compliance and Training Specialist	In this session we will take a look at the U.S. DOT's DataQ Challenge Protocol, and how and what to look for when reviewing roadside inspections. The training will cover the following; DataQ's how to log on and create a user profile, submitting a challenge to an inspection, how to review your data to find changes and what to do to challenge an error, and how to request reports via DataQ.	Pumper Cleaner Municipal Sewer & Water PRO Portable Restroom Operator Gas Oil & Mining Contractor
NAWT **US DOT Update/Recent, Upcoming and Proposed Regulations** 11:00 AM - 12:00 PM **Room:** 234-236 **Speaker:** **Buddy Mauger**, Compliance and Training Specialist	This training will cover recent changes, updates and proposed regulations. It will cover hours of service regulations (changes and court challenges), electronic logs (scheduled 2015), entry-level driver training requirements (scheduled 2014), National Registry of Medical Examiners (May 2014) and Skill Performance Standards (July 2014).	Pumper Cleaner Municipal Sewer & Water PRO Portable Restroom Operator Gas Oil & Mining Contractor
NAWT **What is a Good Septic System Inspection?** 1:30 PM - 2:30 PM **Room:** 234-236	This seminar will discuss the basics of a septic system inspection, including why it is important to locate and open all components of the system. It will provide information on locating techniques, evaluation of drainfields, and interacting with homeowners or other clients about scope of services and results.	Pumper Onsite Installer
NAWT **The History of the PSMA Hydraulic Load Process** 3:00 PM - 4:00 PM **Room:** 234-236 **Speaker:** **Ray Erb**, Consultant, Thomas Erb & Sons, Inc.	The development of the Pennsylvania Hydraulic Load Test will be presented. This will include the background on why the test was developed, and what problems were hoped to be solved by conducting the test during a septic system inspection. The current procedures will be discussed, with an introduction to some of the problems with the test and potential solutions.	Pumper Onsite Installer
NAWT **Improving Arizona's Inspection Program to Meet Modern Challenges** 4:30 PM - 5:30 PM **Room:** 234-236 **Speakers:** **Dawn Long** **Kitt Farrell – Poe**, Ph.D, Professor, University of AZ	The Arizona Transfer of Ownership Inspection Program began in 2001. In the past 13 years, it has become evident that improved inspection procedures are needed for determining the physical and operational condition of seepage pits and for properties that have been vacated for extended periods of time. Arizona is looking at the NAWT Hydraulic Loading Test as a standard operating procedure to address these issues.	Onsite Installer Pumper
NEHA **DEER in the Headlights** 8:00 AM - 9:00 AM **Room:** 237-239 **Speaker:** **Doug Lassiter**, Executive Director, North Carolina Septic Tank Association	Downsized Effective Efficient Regulation (DEER) should be on everyone's minds. Most states and jurisdictions developed their regulations concerning onsite permitting and septage over decades of efforts, creating a piecemeal document that is cumbersome and confusing to the normal person. Many times it's a prescriptive standard and because of its mass, is slow to react and embrace the accelerated rate of technologies in our field. This discussion may step on some toes, but the industry is changing and we must change with it. DEER is essentially creating less bulk, more adaptability in the regulations bringing better returns in the commerce of residential and commercial building. This presentation will help you make positive change in how regulations affect you — the onsite wastewater professional.	Onsite Installer Pumper

SESSION	DESCRIPTION	RECOMMENDED
NEHA **Basic Chemistry of Onsite Wastewater Treatment Systems** 9:30 AM - 10:30 AM **Room:** 237-239 **Speaker:** **A. Robert Rubin**, Emeritus Professor, North Carolina State University	For onsite wastewater professionals, understanding the chemistry of wastewater is essential to understanding the technology needed for each situation. This presentation will provide a basic overview of the chemical reactions that take place in onsite wastewater systems, and how those reactions are influenced by outside factors. Alkalinity, water hardness, and the effects of temperature and time will all be discussed. By the end of this session, attendees will have a basic understanding of the chemical reactions that take place in onsite systems, and their relationship to technology that is used. Additionally, this will provide background material to support management requirements, an element of any successful system.	Pumper Onsite installer
NEHA **Making the Most of Your Experience: Training and Credentials for the Onsite Wastewater Professional** 11:00 AM - 12:00 PM **Room:** 237-239 **Speaker:** **Anthony Smithson**, Consultant	Historically, training in the onsite wastewater industry has been on-the-job and code-specific, or a notch better for those lucky enough to have training center in their state. National organizations like NAWT and NOWRA are working to change that by bringing training developed by the respected members of the Consortiums of Institutes for Decentralized Wastewater Treatment to areas that have been underserved in getting a more comprehensive view at onsite technologies and strategies. To further advance the profession, the NEHA certified installer of onsite wastewater systems credential examination will be offered with the training as applicable. This presentation will focus on how training and credentialing can develop stronger onsite programs, and on the positive impacts that training and credentialing can have on all levels of the onsite wastewater industry.	Onsite installer
NEHA **Winners Communicate!** 1:30 PM - 2:30 PM **Room:** 237-239 **Speaker:** **Doug Lassiter**, Executive Director, North Carolina Septic Tank Association	As onsite wastewater systems evolve and get more complicated, communication is needed – especially when the management of systems is required. This is a discussion on the essential nature of constantly improving communication lines within a business, whether it's with regulators, customers, employees, or the public. The leaders in any field of industry, in the community, or in government are always the persons that can communicate with their target audience. This presentation gives some common traits of successful people, how they improve their talents, and how they are rewarded for their efforts. Sometimes, it's not the shiny, new truck that people remember. It's the memory that the person took the time to communicate, and that's what separates them from their competition.	Onsite installer
NEHA **Best Available New Technology** 3:00 PM - 4:00 PM **Room:** 237-239 **Speaker:** **A. Robert Rubin**, Emeritus Professor, North Carolina State University	Amazing new technology for onsite wastewater systems is being developed all the time. But how do you know what works for what situation? This presentation will provide information on new technologies that incorporate disinfection, nutrient removal and water re-use. Included will be how these systems work, and what environments are best suited for their use as well as advantages and pitfalls of new technologies. The presentation will wrap up with a discussion of the management responsibilities that go hand-in-hand with new technology. Please note: it is recommended that you attend the Basic Chemistry presentation prior to this presentation to make the most of the material presented.	Onsite installer
NEHA **Best Available New Technology: How to Get Your Regulator On Board** 4:30 PM - 5:30 PM **Room:** 237-239 **Speaker:** **Anthony Smithson**, Consultant	Every year new technologies are developed for the onsite wastewater industry. But fitting the new technology into old regulations takes a bit of work. This presentation will focus on taking new technology and ways to make it work within constrictive regulatory frameworks. Understanding how the regulatory process works and how new technologies are approved make the whole process a bit easier. Included will be a discussion of how regulations can be designed to foster new technology and improve practices across the industry.	Onsite installer

SESSION	DESCRIPTION	RECOMMENDED

NASSCO

Lessons Learned During Sewer Rehabilitation on Public and Private Property

8:00 AM - 9:00 AM
Room: 130-132
Speakers:
Robert Kelly, P.E., Director of Engineering, City of Westlake
Scott Belz, URS Corporation

In 2001, the City of Westlake implemented an Inflow and Infiltration (I & I) program to eliminate excessive storm water from entering their sanitary sewer system during rain events. They hired URS Corporation of Cleveland, Ohio, to conduct the I & I testing portion of the program. Each area used similar rehabilitation techniques; however, through the course of each project, certain lessons were identified from the testing, to the bidding and finally during the construction phase. Various rehabilitation techniques, materials and methods have been conducted in each area. The city modified their program in the subsequent phases based on the lessons learned in each previous phase. Even though different rehabilitation methods have been used, all reduced I & I. The areas and year of completion are Salem-Radcliffe Subdivision (2001), Berkeley Estates (2004) and Canterbury Area (2007), and Melrose Area (2011). Through this program, the city has successfully eliminated I & I from each area tested, reduced basement flooding and improved overall storm drainage.

Municipal Sewer & Water Cleaner tpo wso

NASSCO

Pipe Bursting a Mature and Diverse Trenchless Technology

9:30 AM - 10:30 AM
Room: 130-132
Speakers:
Matt Timberlake, Vice President, Ted Berry Company Inc.
Matt Werth

Pipe bursting is a mature and widely used trenchless method for renewal of deteriorated and undersized gas, water, sewer, utility conduits and other pipelines throughout the world. Pipe bursting is an economic pipe replacement alternative that reduces social disturbance to business and residents when it is compared to the open cut technique or pipeline rehabilitation techniques. This presentation will describe current pipe bursting practices used successfully throughout the world, and will assist those involved in pipeline replacement and/or rehabilitation projects to evaluate the capabilities of pipe bursting and its practical application. Information shared will be consistent with the IPBA guidelines for pipe bursting, which is widely recognized as the most current and factual pipe-bursting document available.

Municipal Sewer & Water Cleaner

NASSCO

Resurgence of Chemical Grout Industry: Niche Business Opportunities

11:00 AM - 12:00 PM
Room: 130-132
Speakers:
Donald Rigby, Director of Marketing, Avanti International
Richard Schantz, P.E., Consulting

This presentation will include an overview of small business opportunities doing specialty grouting in the utility and construction industry. It also covers the various major market segments, overall soil, pipe trench and structure considerations, types of grouts available, how to develop your know-how and building a sound business reputation.

Municipal Sewer & Water Cleaner

NASSCO

Chemical & Biological Control of F.O.G. in a 2,500-Mile Collection System

1:30 PM - 2:30 PM
Room: 130-132
Speakers: **Brian Conroy**, Duke's
Jim Elliott, Vice President of Sales, In-Pipe
Rich Schici, In-Pipe

This session will review a treatment plant-friendly method of grease elimination from a sewer collection system. The technique causes the grease to be liquefied, allowing it to be flushed downstream without re-coagulating. This technique will be illustrated for the control of fats, oils and grease in a 2,500-mile collection system.

Municipal Sewer & Water Cleaner tpo

NASSCO

Lateral Rehabilitation, What's Available?

3:00 PM - 4:00 PM
Room: 130-132
Speaker: **Jacob Trapani**

In this session we will offer a complete overview of all lateral and main/lateral connection rehabilitation technologies available today. In an effort to seek a viable, cost-effective solution to one of the most significant contributors to our failing sewer infrastructure, technology providers have developed several methods to structurally repair and/or seal lateral pipes and their connection to the main sewer. Individual lateral pipes often have multiple bends, diameter changes, shifted joints, cracks, deposits, and roots, which create considerable challenges to repair or seal. The lateral pipe connection to the sewer main also poses problems due to leaks, cracks and poor alignment. Accessibility of lateral pipe is another issue, since one end is located in the sewer main and the other in a building. In some cases, a clean-out exists either in or outside of the building. It is critical that the methods developed cope with the existing conditions to provide an effective product and installation method that can be installed efficiently.

Municipal Sewer & Water Cleaner tpo wso

SESSION	DESCRIPTION	RECOMMENDED
NASSCO **Fiber Optic Temperature Sensing Technology for CIPP Cure Quality Control** 4:30 PM - 5:30 PM **Room:** 130-132 **Speaker:** **Don Barnhart**, Product Manager, Janssen Technology	For cured-in-place pipe installation, fiber optic technology offers a quantum leap in temperature resolution over conventional practice to assist contractors in revealing and overcoming heat sinks inhibiting cure and for better control of the cooldown process as well. With temperature knowledge every inch along the liner, contractors also avoid costly labor and fuel costs associated with over-cooking the liner.	Municipal Sewer & Water Cleaner
Sales and Customer Service **Be Always Profitable: Setting up the Sale** 8:00 AM - 9:00 AM **Room:**140-142 **Speaker:** **Frank Taciak**	This session teaches participants methods and guidelines for a successful sales call. Sales, whether we want them to or not, drive business. They either make our profit, or kill our success. Making a profit always starts before the job begins because "if it wasn't planned at the beginning it won't be found at the end." Participants will learn: How Sales = Profit; Implementing effective sales techniques and concepts; How to set up sales for business potential. Figuring what your costs are so that you charge for it. How to stop worrying about the competition. Setting up sales for maximum success. Participants will leave this session with key strategies to set up their sales process for maximum success.	Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO Portable Restroom Operator
Sales and Customer Service **Be Always Profitable – Your Best Sales Presentation** 9:30 AM - 10:30 AM **Room:**140-142 **Speaker:** **Frank Taciak**	This session provides an overview of the actual sales process. Participants will learn a step-by-step method of presenting their business and creating a win-win outcome for both contractor and customer. Participants will learn: Where the sales presentation starts; How to handle calls, emails, and communication; Methods for setting up the appointment; Guidelines for meeting with customers; Effectively using selling options; How to close the sale. Participants will take home methods, ideas, and concepts that they can immediately use in making their sales process more successful.	Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO Portable Restroom Operator
Sales and Customer Service **Be Always Profitable – Servicing Your Sale** 11:00 AM - 12:00 PM **Room:**140-142 **Speaker:** **Frank Taciak**	This session teaches participants how to both manage job fulfillment in their sales process, as well as create positive customer attitudes about their work. Customer service is key in effective business and making sure customers are happy is no longer an option in our marketplace. Participants will learn: Guidelines for setting up the work schedule; Basics of structuring man power on the job; Rules for managing contact with the customer; Strategies for guaranteeing payment. Participants will leave with a thorough understanding of customer service skills and how to best use these in all aspects of their work.	Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO Portable Restroom Operator
Sales and Customer Service **Be Always Profitable – Our Attitude to Success** 1:30 PM - 2:30 PM **Room:**140-142 **Speaker:** **Frank Taciak**	Can YOU have a successful life and business? This session answers that question, and gives participants the tools they need to make their life ... WORK! Never before have there been as many tools and strategies available to make a business successful, but are we implementing them? Participants will learn: How to implement an effective plan; How to turn a successful business into a successful life; Learn to envision what winners look like. At the end of this session, participants will leave with the knowledge, skills, and motivation they need to achieve success in their life's work.	Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO Portable Restroom Operator
NPCA **7 Things you Should Know About Design, Installation and Maintenance of Precast Concrete Septic Tanks** 3:00 PM - 4:00 PM **Room:**140-142 **Speaker:** **Claude Goguen** P.E.	As population in the U.S. continues to migrate away from cities and into rural areas, and as municipalities struggle with limited infrastructure budgets, there has been a larger demand for high-quality, efficient and durable onsite wastewater systems. In order for those systems to successfully treat residential wastewater, all the components must work efficiently to allow for the chemical and biological reactions to occur. This includes the proper design and performance of the structures that house and convey the wastewater as it's being treated. Precast concrete manufacturers are tasked with providing reliable structures that will be subjected to a variety of loads and extreme exposure conditions. At the same time, they must be easily installed, watertight, and able to house the evolving *(continued)*	Onsite Installer

SESSION	DESCRIPTION	RECOMMENDED
NPCA *(continued)* **7 Things you Should Know About Design, Installation and Maintenance of Precast Concrete Septic Tanks**	treatment technologies that serve to reduce nutrient loading into the soil and groundwater. This course will explore the stresses that precast concrete tanks are subjected to in service, and how they are designed to counter those stresses. The course will also include discussion on watertightness, proper installation practices and testing. The attendee will be able to describe stresses on an underground wastewater treatment tank in service, identify the main keys to a watertight precast concrete septic tank, and give three examples of poor tank installation practices that could jeopardize the effectiveness of the septic system.	Onsite Installer
NPCA **Grease Interceptors: A Slick Solution to a Greasy Problem** 4:30 PM - 5:30 PM **Room:** 140-142 **Speaker:** **Cyndi Glascock**, Design Consultant, Gainey's Concrete Products	As communities across America are struggling to maintain aging sewers, it is more important than ever to manage harmful discharges that may compromise the effectiveness of the system. Precast concrete grease interceptors play a major role in pretreating grease-laden waste streams and protecting the sewer systems. They must be designed to provide easy access for maintenance and be sized to hold large quantities of grease to reduce pumping/cleanout costs. This course will cover elements of proper design of grease interceptors, including sizing and placement of baffling tees and filters. That design must also take into account anticipated loading conditions. The course will also include best practices in selecting the location for the grease interceptor as well as proper installation. Attendees will be able to: Size large outdoor precast grease interceptors; Differentiate between hydrodynamic and gravity-fed grease interceptors and their sizing charts; Define the key factors to designing grease interceptors for site loading requirements; Identify the considerations required for properly installing a grease interceptor.	Onsite Installer Pumper Cleaner Municipal Sewer & Water tpo

FEBRUARY 25, 2014

SSCSC **Don't Fear the Shapefile** 8:00 AM - 9:00 AM **Room:** 231-233 **Speaker:** **Mark Hill**,P.E., Civil Engineer, Michael Baker Corp.	More and more agencies and companies have implemented GIS mapping and want to provide that data to their contractors performing work. This class will address what to do with the data, what it looks like, how to import it into common CCTV inspection software, and how to link data to it for a submittal.	Municipal Sewer & Water tpo WSO Water System Operator
SSCSC **What's Important for Your Company; Is it Size, or Profit or Both?** 9:30 AM - 10:30 AM **Room:** 231-233 **Speaker:** **Duane Johnson**, Vice President, Affordable Pipeline Services	It is often said that most small businesses fail to have a plan and most often tend to operate reactively. As they get busier, they add more employees and more equipment in order to meet the added workload. Without a plan, this approach can have devastating effects on a company by destroying their financial solvency. It's important to understand the true meaning of growth and the real costs associated with it. This class will look at some of the important questions that must be asked and analyzed before embarking in any future growth. Participants will help bring into focus the proper approach for making correct business decisions. As an owner and manager of two distinct businesses (a drain cleaning company and a pipeline cleaning and inspection company), Johnson will take on a unique approach as he discusses some of the challenges that come from growth and the need to stay focused on profitability. Remember that bigger is not always better, sometimes it is just bigger.	Pumper Cleaner Onsite Installer Municipal Sewer & Water PRO Portable Restroom Operator Gas Oil & Mining Contractor
SSCSC **1 + 1 = 14: Cleaning and Inspection Equipment Working as one Entity** 11:00 AM - 12:00 PM **Room:** 231-233 **Speaker:** **Jim Aanderud**, Owner/President, Innerline Engineering	Whether it's cleaning and video projects or specialized cleaning applications, the way in which combination units and CCTV inspection vehicles work together will determine ongoing success. In this class participants will look at the relationship between these two pieces of equipment, and discuss the importance of the working relationship between their crews. They will focus on the importance of planning, communication, organization and execution, then will look closely at the keys to success in cleaning and video projects, and the methods for maximizing production and profitability. They will also look at the proper use of CCTV cameras during high-end cleaning and cutting applications and discuss their importance for safety and cleaning effectiveness.	Municipal Sewer & Water Cleaner

SESSION	DESCRIPTION	RECOMMENDED

NAWT

Be Ready to Land Apply
8:00 AM - 9:00 AM
Room: 234-236
Speaker:
Bill Toffey, Owner, Effluential Synergies LLC

The purpose of this session is to start at the beginning when a decision is made to land apply septage. Local community and site conditions will be discussed; along with what equipment is needed to properly land apply under different conditions, agreements with landowners, scheduling application times, and what it takes to meet the Federal 503 regulations on pathogen control, including lime stabilization and reporting requirements.

Pumper, tpo

NAWT

Soils and Cropping Systems
9:30 AM - 10:30 AM
Room: 234-236
Speakers:
Bruce Fox, Partner, Allstate Septic Systems LLP
Dave Gustafson, UW MN

This session will concentrate on the land-application site from the perspective of the soil and slope conditions and how they impact application rates. Erosion and runoff control measures and oil separation requirements will be discussed. The identification of sensitive areas that need to be addressed, along with setback requirements from sensitive areas, buildings, and roads will be highlighted.

Pumper, tpo

NAWT

Land Application Rates and Nutrient Management
11:00 AM - 12:00 PM
Room: 234-236
Speakers:
Bruce Fox, Partner, Allstate Septic Systems LLP
Jim Anderson, Education Coordinator, NAWT

This session will look at both daily and yearly application rates. Establishing a nutrient management plan will be discussed. How to stay within the nitrogen application rate requirements while balancing crop nutrient needs will be discussed. Crop selection will be discussed from both an application rate perspective as well as crop usage for animal feed.

Pumper, tpo

Customer Service & Employee Development

Gen Y + Gen X + Baby Boomers = #@$%???
8:00 AM - 9:00 AM
Room: 237-239
Speaker: **Jerard Nighorn**, Lenzyme

Solve this equation ... this seminar will be packed with generation laughter. Attendees will learn how to solve hiring problems, keep customers, collect receivables and communicate across generations. The answer to this equation will help all business owners solve problems they may not even know are happening, and create a new way of looking at customers, workers, co-workers and generations in whole. Knowing the answer or knowledge will sure help to increase your overall business profits and take you and your business to the next level.

Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO Portable Restroom Operator, tpo, WSO Water System Operator

Customer Service & Employee Development

Get and Keep the Best Coworkers
9:30 AM - 10:30 AM
Room: 237-239
Speaker: **David Heimer**,
Chief Operating Officer, Service Roundtable

You can't grow your business if you can't find, hire and keep the right people. Why is it that some companies can't find qualified personnel, while other companies always have a flood of applicants and get to pick and choose? Why are some companies always fighting turnover battles, while other companies routinely keep their best employee for 20-30 years? Heimer will show attendees how to build a recruiting pipeline, attract the kind of employees they want, and keep them for years. He will share real-life positive and negative experiences from service business owners, and the lessons learned. You CAN find and keep the coworkers you want; you just need to learn how.

Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO Portable Restroom Operator, tpo, WSO Water System Operator

Customer Service & Employee Development

Win, Win, Win in Residential Service Contracting
11:00 AM - 12:00 PM
Room: 237-239
Speaker:
Bill Raymond, Co-Owner, Frank and Lindy Plumbing Heating and Cooling

Learn how to create a well-balanced company that wows its customers, nurtures employees and achieves their financial goals. So often one or more of the three are missing. This workshop will focus on fundamentals from each area, bringing a better understanding of business planning, customer expectations and employee development and retention.

Cleaner, Pumper, PRO Portable Restroom Operator, Onsite Installer

SESSION	DESCRIPTION	RECOMMENDED
Safety and Compliance Track **OSHA Confined Space and Fall Protection Untangled** 8:00 AM - 9:00 AM **Room:** 240-242 **Speaker:** **Chris Cira**, Partner, MTech	This session presents a different and unique high-level overview of confined space, air monitoring and fall protection regulations. We will untangle the multitude of regulations regarding these topics and bring it down to a practical and understandable approach and most important an approach that can actually be implemented in the field. We will also touch on the differences related to general industry, construction, agriculture and maritime regulations, and which one impacts you in the field.	Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO, tpo, WSO
Safety and Compliance Track **Air Monitoring Application for the Liquid Waste Industry** 9:30 AM - 10:30 AM **Room:** 240-242 **Speaker:** **Ed Fitzgerald**, Jack Doheny Companies	This program will outline the application and use of air monitoring equipment for confined space and area monitors as it applies to the liquid waste industry. It will be in layman's terms, and will include a review of terminology such as PPM, LEL, TWA and % X Volume. All alarm points, as they apply to the industry, will be compared to day-to-day exposures that we all experience so that the employee will understand that they are protected and will not feel any effects when the alarm sounds.	Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO, tpo, WSO
VACUUM LOADERS **Vacuum Loaders** 9:30 AM - 10:30 AM **Room:** 243-245 **Speaker:** **William Akins**, Manger, Vac-Con Services Inc.	This program will outline the different applications of various vacuum trucks (combination machines, hydroexcavators, and industrial machines). It will also outline use cases for determining necessary equipment. This program will then give a detailed overview of industrial vacuum trucks, their components, and capabilities. It is intended to be interactive with active Q&A throughout.	Municipal Sewer & Water, Gas Oil & Mining Contractor, Cleaner, Pumper
DOT COMPLIANCE **The Value of DOT Certification for Vacuum Trucks** 11:00 AM - 12:00 PM **Room:** 243-245 **Speaker:** **Anne Brantley**, Director of Product Development, Wastequip Cusco	In this session attendees will discuss the purpose of DOT certification to strengthen a truck's tank and bumper to prevent spillage of hazardous materials during rollover accidents or rear-end collisions. Trends indicate that DOT certification is being required for more types of materials – not just hazardous material. DOT certification can increase the price of vacuum truck by as much as 20 percent, so when should fleet owners make that extra investment? What are the requirements for truck DOT certification, and how can you choose a reputable manufacturer to ensure your fleet is in compliance with evolving regulations?	Municipal Sewer & Water, Gas Oil & Mining Contractor, Cleaner, Pumper
MUNICIPAL **Take Control of Inflow & Infiltration in Manholes** 8:00 AM - 9:00 AM **Room:** 130-132 **Speaker:** **William Goff**, Sealing Systems	Many people are aware of the challenges inflow and infiltration bring to any utility. However, they may not be fully aware of how easy it is to identify the problems, and what methods are recommended to fix them. This presentation will give attendee a closer look at infiltration identification, and methods and products to use for correction and remediation of infiltration and rehabilitation. It will also address proactive efforts and products to reduce or deny infiltration and thus eliminate the need for rehabilitation. Prevention is always less costly than remediation.	Municipal Sewer & Water, tpo
MUNICIPAL **DC Water is Utilizing CIPP to Rehabilitate the Nation's Capital** 9:30 AM - 10:30 AM **Room:** 130-132 **Speaker:** **Muminu Badmus**, Projects Manger, Perma-Liner Industries, LLC.	DC Water provides critical water and sewer services to the nation's capital; the infrastructure that supports these services is old and deteriorating. The median age of the 1,800 miles of sewer pipe is 86 years old, with some in-service trunk mains installed before the Civil War. One of DC Water's strategic initiatives is to evaluate different technologies to improve service delivery while lowering asset life cycle costs. The lateral program seemed a likely candidate to evaluate trenchless solutions, since over 20 percent of the project costs were related to restoration. DC Water staff were interested in a trenchless solution, specifically a cured in place pipe (CIPP) solution, as a possible alternative to the traditional open-trench method.	Municipal Sewer & Water, tpo

SESSION	DESCRIPTION	RECOMMENDED
MUNICIPAL **Nozzle Explanation and Selections** 11:00 AM - 12:00 PM **Room:** 130-132 **Speaker:** **Scott Paquet**, President/CEO, NozzTeq Inc.	In this session participants will discuss the different types of nozzles available on the market today, including how you make your selection and what to look for in a nozzle. Paquet will examine hose-line loss and what this means when setting a nozzle up properly. Participants will look at the design of nozzles and why some are more effective than others. This will give the end user an education in determining what nozzles to purchase and in the selection of nozzles. A supplied hose-line loss chart will explain why the end of the hose pressure is the most important. Participants will also cover how to test nozzles with a cost-effective test kit. This will also include complete instructions to make the proper selection and an understanding that one nozzle does not do it all.	Cleaner Municipal Sewer & Water
INSTALLER **Septic Tank Bells and Whistles** 8:00 AM - 9:00 AM **Room:** 133-135 **Speaker:** **Bob Smith**, Engineer, Orenco Systems, Inc.	There are a number of different accessories for installation with a residential septic tank. The broad categories include equipment for ease of access, equipment for improvement of effluent quality, equipment for ease of operation and maintenance and equipment for improving dispersal distribution. This presentation will go over these four classes of septic tank accessories and how they can benefit the function and maintenance of an onsite system.	Onsite installer
INSTALLER **Aeration Units for Onsite Septic Systems** 9:30 AM - 10:30 AM **Room:** 133-135 **Speaker:** **David Flagg,** President/CEO Septic Services, Inc.	This session will touch on the history of aeration, and the difference between aerobic and anaerobic digestion. It will move along to the many types of tanks, aerators and features and benefits of each design, along with diffuser types, filtering, electrical requirements, and safety and maintenance of the system, effects on the adsorption field, including both pictures and video. Aeration is not a new process, as its use began at the turn of the century in municipalities, and began to be used on residential sites as far back as the 1940s. However, because of the high cost and less concern for the environment, the process did not become popular until many years later. In a septic tank, anaerobic bacteria digest the sewage and require little to no oxygen to break down the waste material. In an aeration tank, aerobic bacteria require lots of oxygen to survive to break down and digest the sewage, so consider anaerobic bacteria at the speed of Wile E. Coyote and aerobic bacteria like the Roadrunner. By aerating a tank, it allows you to process more sewage in a smaller space, producing a cleaner effluent to the adsorption system. The benefits in the adsorption field will also be discussed.	Onsite installer
INSTALLER **Understanding ATUs, their Service Requirement, and Maintenance** 11:00 AM - 12:00 PM **Room:** 133-135 **Speaker:** **Doug Dent**, Ecological Labs	The presentation provides detailed information on how to service ATU systems, how to evaluate problems from influent to effluent, and the equipment needed to assure correct identification of system problems from as simple as; when to pump an ATU, the need to check pH levels from time to time, dealing with odor issues, to understanding the good guys in biology to the bad guys, this referring to sludge bulking caused by filamentous microorganisms. The presentation reviews ATU design and comparison to standard onsite septic systems, with adequate attention to the importance of the ATU's relationship with biology presented in an easy to understand technical format that will satisfy both new and seasoned operators, and service personal. The program covers the ATU biological process, factors that effect ATU performance, and methods and tools necessary to identify, correct, and resolve many ATU problems. The session includes handout materials and information to meet the session's goal of achieving a level of knowledge and understanding that will allow proper service of ATU systems by those that attend the session.	Onsite installer
PORT. SANITATION **The Best of Both Worlds** 8:00 AM - 9:00 AM **Room:** 243-245 **Speaker:** **David Roncadori**, J & J Chemical Co.	In this session participants will discuss liquids vs. portion control deodorizers. Liquids can be non-formaldehyde, formaldehyde or biological. The discussion will include how liquid deodorizers can be applied; direct charge, dilute, or premix – controlling the use of liquid deodorizer utilizing a blend system; and what strength is best for you. Portion control includes tablets or packets. Discussed will be choosing the right portion control method for your needs; one-size-doesn't-fit-all requirements; how seasons and environment can influence your choice of product; and the pros and cons of liquid and portion control, including storage, transport, spillage, cost, and limitations.	PRO Portable Restroom Operator

SESSION	DESCRIPTION	RECOMMENDED

FEBRUARY 26, 2014

INSTALLER

COLE Publishing's Onsite Installer Course

8:00 AM - 5:00 PM
Room: 234-236
Speakers:
Dave Gustafson, UW MN
Jim Anderson, Education Coordinator, NAWT

This 8-hour course will train participants on the basics of installing onsite wastewater treatment systems. It will include discussion on installing sewage tanks, trenches, pumps and pump stations, above-ground systems, and media filters.

onsite installer

PORT. SANITATION

Deodorizers and Making the Right Choices

8:00 AM - 9:00 AM
Room: 237-239
Speaker:
Dale Wallace, GM, Green Way Products division of PolyPortables, LLC

This seminar will cover a number of questions and decisions to be made that will help guide new and or established operators on how to properly service and maintain their investment, "The Portable Toilet." The decisions you make will impact the success of your business. Why do we do what we do? What governs your choices when you decide how and how much to service your customer? This discussion addresses: Why this business? How do you grow your business? How do you make the most of your business? How do I take care of a toilet? What about urine scale and bio films? What should you use as a deodorizer with so many choices out there? And should you detail your toilets, and if so, how?

PRO Portable Restroom Operator

PORT. SANITATION

Oh Shift! Six Future Trends You Must Gear Up For to Compete and Succeed

9:30 AM - 10:30 AM
Room: 237-239
Speaker:
Beverly Lewis, President, Beverly Lewis Group

Several global trends on the horizon will have a major impact on your sanitation business. This session will discuss six epic shifts that will change the face of portable sanitation. The seminar will raise awareness and create long-range visibility for these trends, and discuss specific strategies to turn these changes to your advantage. Topics include technology, workforce demographics, communication, consolidation and sustainability.

PRO Portable Restroom Operator

PORT. SANITATION

Portable Restroom Service Units

11:00 AM - 12:00 PM
Room: 237-239
Speaker: **Randy Tischendorf,** Sales, Imperial Industries, Inc.

This seminar will cover the proper selection of chassis in correspondence with weight distribution and the Bridge Law. It will supply the attendee with both the maximum capacities allowable on a given chassis, taking into consideration if a trailer is being pulled. The seminar will cover the estimated overall weight of tanks manufactured in aluminum, steel and stainless steel and the proper chassis selection for each basic tank capacity. Also discussed will be the various styles of tanks used in the portable restroom industry, and their uses.

PRO Portable Restroom Operator

Business Training and Marketing

Improving Profitability through Tracking

8:00 AM - 9:00 AM
Room: 240-242
Speaker: **Clint Smith**, CallSource

In a sea of competing companies, what makes your company stand out from the rest? Callers are looking for precisely this answer, and how you communicate this will separate you from your competition. Learn how to get the best "bang for your buck" on the thousands you spend to get the phone to ring. While call volume is a key component, you're still ultimately as good as you book. Timing, tone, and confidence all play large roles in earning the caller's trust. In order to get more techs to more doors, you must first improve your current situation. Knowing how to find these improvement areas is crucial since you cannot improve what you don't measure.

Pumper Cleaner onsite installer Municipal Sewer & Water Gas Oil & Mining Contractor PRO Portable Restroom Operator

SESSION	DESCRIPTION	RECOMMENDED

Business Training and Marketing

Advertising and Marketing for Service Companies

8:00 AM - 9:00 AM
Room: 243-245
Speaker: **Jeff Bruss**, President, COLE Publishing

Often overlooked by service companies, a strong marketing and advertising program will keep your business in front of both customers and the competition. Topics covered include phone book advertising, social media, Internet, newspapers and more. Learn how to develop your brand and the most economical and intelligent places to put it.

Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO

Business Training and Marketing

How Anywhere, Anytime Paperless Operations Save Time and Money

9:30 AM - 10:30 AM
Room: 240-242
Speaker: **Joel Smith**, Business Consultant

This presentation will go over a typical business cycle for portables and liquid waste services (brown, yellow, black oil, septic, graywater) from first customer contact through verification of service. It includes how changes can save from 15 to 45 percent; invoices, route sheets, receivables, customer contact, marketing, and order taking; implementations for the field; how to get the greatest benefits; how to handle exception customers; and services to differentiate your company from the competition.

Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO, tpo, WSO

Business Training and Marketing

Achieving Financial Balance in Your Business

9:30 AM - 10:30 AM
Room: 243-245
Speaker:
Russ Decker, CEO, Trade-Serve

This session will teach attendees how to properly price sewer, septic and plumbing services, and how to market using discounts without losing your profits. It will include how to easily plan for retirement, depreciation, taxes and retained earning while having sufficient money for the owners' draws. Achieve financial balance between your production employees, customers and the shareholder(s), and get access to software that will help you. This session will be hands-on practice with take-home handouts that you will be able to use in your business immediately.

Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO

Business Training and Marketing

Book More Calls – Wow More Customers

11:00 AM - 12:00 PM
Room: 240-242
Speaker:
Brigham Dickinson, Founder, Power Selling Pros

In this class, owners will learn to master a set of principles that will help them and their call-handling team book more calls and wow more customers over the phone. What better way is there to keep your dispatch board full than to book the calls that are already coming in to your office? With this class, you'll learn how your call-handling team can become more passionate in their interaction with your customers; they'll not only book more calls, but also become fundamentally great at taking care of customers. For business owners looking to book more calls and wow more customers, your attendance at this class is a must.

Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, PRO

Business Training and Marketing

7 Incredibly Effective Ways to Improve Your Sales

11:00 AM - 12:00 PM
Room: 243-245
Speaker: **Ara Mahdessian**, CEO, ServiceTitan

In this session attendees will take a look at the simple yet incredibly effective methods that the most successful contractors use to improve their sales. They will discuss how they motivate technicians, ensure satisfaction, generate more repeat business and other secrets that you can quickly and easily implement when you return to your office.

Pumper, Cleaner, Onsite Installer, Municipal Sewer & Water, Gas Oil & Mining Contractor, PRO

MUNICIPAL

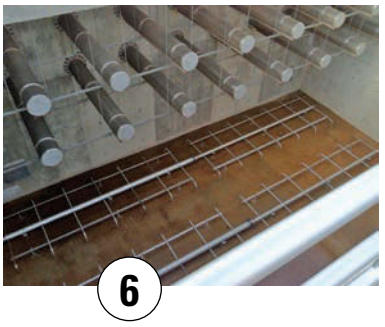
Sewer Cleaning 101

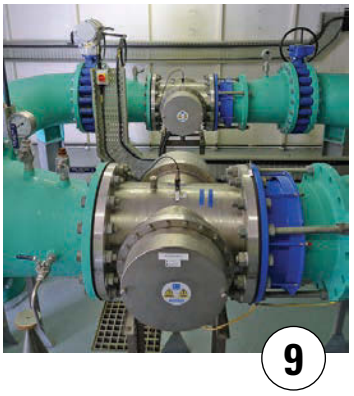
8:00 AM - 9:00 AM
Room: 130-132
Speaker: **Ken Billingham**, KEG Technologies

This session discusses the understanding of how the crew, equipment and nozzles are integral to the successful completion of the task at hand. Topics discussed include pressure drop, cleaning procedures, and nozzle selection, and how they are related to each other. Learn how to effectively clean sewer and storm lines using minimal fuel, water and time. This class will be of interest to owners, managers and operators alike.

Municipal Sewer & Water, Cleaner

SESSION	DESCRIPTION	RECOMMENDED
MUNICIPAL **SEALING: Underground Coatings – Restore Deteriorated Infrastructure** 9:30 AM - 10:30 AM **Room:** 130-132 **Speaker:** **Stewart Nance**, Sales & Marketing Manager, Interfit USA	Infiltration into sewer systems is insidious, pervasive and monumentally expensive. Collection systems develop increasingly worse infiltration over time due to defective and deteriorating components. Cementitious and epoxy liners, and the combination of both, have proven effective in permanently and economically restoring and protecting deteriorated structures, and thus eliminating infiltration.	Municipal Sewer & Water Cleaner tpo wso
MUNICIPAL **Rehabilitation: How Small Contractors Can Make Big Money Doing Manhole Rehabilitation** 11:00 AM - 12:00 PM **Room:** 130-132 **Speaker:** **Bill Shook**, President and Founder, AP/M Permaform	There are more than 20 million manholes in America, and more than half are over 50 years old and in need of serious repair. This session discusses the variety of techniques that are presently available to seal, reinforce and protect old block, brick/mortar and corroded precast manholes to better than new condition without digging. For a small investment, contractors can net big returns. Case studies will be shared.	Municipal Sewer & Water tpo
PUMPER **Right Sizing Your Pump System** 8:00 AM - 9:00 AM **Room:** 133-135 **Speaker:** **Jason Reading**, Sales Manager, National Vacuum Equipment	Attendees will discuss the process for evaluating an application and determining what would be the correct system for use. It will provide attendees with a takeaway that includes a list of "Rules of Thumb," pitfalls to avoid and confirmation of steps that the end user will find helpful to ensure they have the right system for their job.	Pumper Municipal Sewer & Water Gas Oil & Mining Contractor Cleaner
PUMPER **Make More Money by Using a Biological Product with your Services** 9:30 AM - 10:30 AM **Room:** 133-135 **Speaker:** **Mireya Eavey**, One Biotechnology	Using a biological product adds beneficial bacteria needed for a healthy tank. The product will continue to flow through the drainfield and breakdown the biomat. Subjected to bleaches, detergents, and other chemicals, naturally occurring bacteria struggle to survive and keep up with the influx of waste in residential and commercial septic systems. Adding a biological product formulated to work in the harsh conditions that requires no pH neutralizing and is performance ready, will decrease the amount of times a system has to be pumped, while giving a customer lasting results.	Pumper
PUMPER **Septic Drainfield Restoration** 11:00 AM - 12:00 PM **Room:** 133-135 **Speaker:** **Mark Reynolds**, CEO/President, RCS II and Municipal Sales, Inc.	According to the US EPA 90 percent of all septic failures occur in the drainfield. It's important to understand the system your working with, and to take the time to see if your building department has an as built drawing of the system. What are the reasons systems fail? This session will discuss the steps to solve these issues.	Pumper Onsite Installer





1. CW INDUSTRIES REVERSING ROCKER SWITCH

GRS-6024 series momentary action full-size reversing rocker switches from CW Industries and distributed by Peerless Electronics are available in DPDT center-off construction. The RoHS compliant switches are rated at 40 amps, 12-volt DC and feature self-cleaning contacts. Made of heavy-duty nylon with copper alloy terminals, the switches have a male 0.25-inch quick-connect terminal for ease of installation and can be mounted in a 1.58- by 0.948-inch panel opening. **800/285-2121; www.peerlesselectronics.com.**

2. NEPTUNE DIAPHRAGM METERING PUMPS

Series 7000 mechanically actuated diaphragm metering pumps from Neptune Chemical Pump Co. are designed for water and wastewater applications. The mechanical design eliminates the use of contour plates on the liquid side of the diaphragm, while the straight-through valve and head allows for improved flow. The series is self-priming and has a maximum capacity of 300 gph at 150 psi. **215/699-8700; www.neptune1.com.**

3. BADGER METER FLOW MONITOR

The ER-500 series flow monitor from Badger Meter is designed for challenging environments. Meters can be connected to a network for remote monitoring and process automation. Models support multiport linearization tables for increased accuracy. Alarm parameters warn of process or pipeline changes. **800/876-3837; www.badgermeter.com.**

4. SINGER VALVE AUTOMATED PILOT CONTROL

The 420-DC or 420-AC automated pilot control from Singer Valve features over-volt protection, 4-20 mA feedback, O-ring seal, explosion-proof housing and modular design. Valves require less than 2 amps of power and are controlled by the 4-20 mA signal from the water distribution SCADA system. The pilot control offers programmable span and speed control via USB cable and software. **888/764-7858; www.singervalve.com.**

5. DIALIGHT LED FLOOD LIGHT

DuroSite and SafeSite LED flood lights from Dialight are designed for hazardous and industrial applications. The 14- by 14-inch lights

deliver 10,750 lumens at 107 watts and are available in various NEMA optical configurations. Features include 20 kV surge protection, tempered glass lens and powder-coated aluminum housing. **732/919-3119; www.dialight.com.**

6. WORLD WATER WORKS MOVING BED BIOFILM REACTORS

IDEAL moving bed biofilm reactors from World Water Works are designed for BOD removal, nitrification and denitrification at municipal treatment plants. The MMBR features free-floating plastic media where biofilm grows. The 50- to 300-micron biofilm consumes organic materials, as well as converts ammonia to nitrate or nitrate to nitrogen gas. **800/607-7973; www.worldwaterworks.com.**

7. BINMASTER NONCONTACT LEVEL SENSOR

The RL level sensor from BinMaster Level Controls is designed to provide bin level data in challenging environments where dust levels are extremely high. The noncontact, continuous level sensor works in powders and solid materials, including low-dielectric materials. The sensor has a self-cleaning, nonstick surface that does not require routine maintenance or air purge. **800/278-4241; www.binmaster.com.**

8. HEMCO LAB WORKSTATION ENCLOSURES

Enclosures from HEMCO are designed to isolate liquid handling workstations, HPLC equipment, sample weighing, high throughput screening, powder handling and other lab automated processes by providing exhaust air systems or HEPA filtered clean workstations. **800/779-4362; www.hemcocorp.com.**

9. ETS UV DISINFECTION SYSTEM

Closed vessel UV disinfection systems from Engineered Treatment Systems feature high-powered amalgam lamps, automatic wiping mechanisms, air release valves and hatches to gain access to the interior of the chamber. The system reduces UV exposure, has no open water surfaces and can be installed horizontally or vertically. Wiper rings can be replaced without removing the wiping carriage from the chamber. **877/885-4628; www.ets-uv.com.**

10. ROCKWELL AUTOMATION VOLTAGE MONITOR

The Allen-Bradley i-Sense voltage monitor from Rockwell Automation reads incoming power, providing data that pinpoints voltage-based power events and reveals any consequent relationship between voltage sags and downtime. **414/382-2000; www.rockwellautomation.com/industries/water.** tpo

product spotlight

Microfiber media designed to meet stringent treatment requirements

By Ed Wodalski

OptiFiber PES-14 microfiber pile cloth filtration media from **Aqua-Aerobic Systems** is engineered to improve tertiary effluent quality to meet stringent wastewater treatment requirements. Typical effluent quality is less than 1.0 NTU and less than 3.0 mg/L TSS, with phosphorus reduction to 0.1 mg/L or less.

"The microfiber basically gives filtration capacity equivalent to a 3- to 5-micron filtration device," says James Horton, director of product management for Aqua-Aerobic Systems. "We're trying to get very close to nondetect solids with a tertiary filtration device. Typically, with a sand filter or the more traditional cloth, you would be looking to achieve 5 mg/L of solids. So we're moving down to the next level of filtration.

"The microfiber allows more fibers per square inch, increasing the potential for particle capture," Horton says. "What we're targeting with microfiber is lower level phosphorous applications: 0.075, 0.1 levels of total phosphorous out of the treatment plant. So, even moving from 5 mg/L, which is your typical cursory effluent, down to 2 or 3 mg/L might not seem like much, but when you're dealing with these very low levels of phosphorus, it's absolutely critical.

"Our position is, yes, you can achieve lower level phosphorus with an 8- to 10-micron cloth, sand or screen; but if you can, why not move to something that has a 3- to 5-micron nominal aperture and use less chemical and take away some of the onus that falls upon the operations team by taking advantage of that additional solids removal?"

The microfiber media can be used for fine polishing applications. It is approved by the California Department of Public Health for use in high water-quality wastewater reuse and designed for use with AquaDisk, AquaMiniDisk, AquaDrum, AquaDiamond and Aqua MegaDisk filters in retrofits or new plant construction.

OptiFiber PES-14 from Aqua-Aerobic Systems

The expandable Aqua MegaDisk, Aqua-Aerobic Systems' newest configuration, is designed specifically for large, land-locked applications. Each disk is approximately 10 feet in diameter.

During filtration, influent enters the filter unit and moves through the completely submerged, vertically mounted media. Solids are captured on the outside of the media while clear effluent enters the center tube and is directed to the effluent weir.

In the backwash mode, the submerged cloth disks rotate at one revolution per minute. Backwash shoes make firm contact with the media and solids are removed by vacuum pressure with a backwash pump.

Media lifespan is directly proportional to the solids loading on the filter, Horton says. "Typically what we see for an average performing clarifier with 15 to 25 mg/L of solids is a life of between five and 10 years." **815/654-2501; www.aqua-aerobic.com.**

PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL

FEBRUARY 24-27, 2014

» INDIANA CONVENTION CENTER • INDIANAPOLIS, INDIANA U.S.A.

EDUCATION DAY | MONDAY FEBRUARY 24, 2014

NASSCO NATIONAL ASSOCIATION OF SEWER SERVICE COMPANIES

8 a.m.	Lessons Learned During Sewer Rehab on Public and Private Property
9:30 a.m.	Pipe Bursting a Mature and Diverse Trenchless Technology
11 a.m.	Resurgence of Chemical Grout Industry: Niche Business Opportunities
1:30 p.m.	Chemical & Biological Control of F.O.G. in a 2,500-Mile Collection System
3 p.m.	Lateral Rehabilitation, What's Available
4:30 p.m.	Fiber Optic Temperature Sensing Technology for CIPP Cure Quality Control

NEHA NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

8 a.m.	DEER in the Headlights
9:30 a.m.	Basic Chemistry of Onsite Wastewater Treatment Systems
11 a.m.	Making the Most of Experience: Training and Credentials for Wastewater Pros
1:30 p.m.	Winners Communicate
3 p.m.	Best Available New Technology
4:30 p.m.	Best Available New Technology: How to Get Your Regulators on Board

NPCA NATIONAL PRECAST CONCRETE ASSOCIATION

3 p.m.	7 Things About Design, Installation & Maintenance of Precast Concrete Tanks
4:30 p.m.	Grease Interceptors: A Slick Solution to a Greasy Problem

WJTA-IMCA WATERJET TECHNOLOGY ASSOCIATION INDUSTRIAL & MUNICIPAL CLEANING ASSOC.

8 a.m.	Preparing for your First High Pressure Waterjetting Job
9:30 a.m.	Vacuum Truck Operation and Safety
11 a.m.	Hydroexcavation: Getting the Best Bang for Your Buck

SAFETY SESSION JOHN CONLEY

8 a.m.	Preventing Tank Truck Rollovers

PSAI PORTABLE SANITATION ASSOCIATION INTERNATIONAL

9:30 a.m.	State of Global Sanitation
11 a.m.	Industry Image
1:30 p.m.	Visions of the PSAI and the Education Initiative
3 p.m.	What's New with OSHA Safety Requirements
4:30 p.m.	An Introduction to Entering the Federal Government Contracting Arena

SALES & CUSTOMER SERVICE FRANK TACIAK

8 a.m.	Be Always Profitable: Setting up the Sale
9:30 a.m.	Be Always Profitable: Your Best Sales Presentation
11 a.m.	Be Always Profitable: Servicing Your Sale
1:30 p.m.	Be Always Profitable: Our Attitude to Success

NAWT NATIONAL ASSOCIATION OF WASTEWATER TECHNICIANS

8 a.m.	CSA 2010 Implementation/Impact on Carriers/Drivers
9:30 a.m.	DataQ's: When and How to Challenge
11 a.m.	US DOT Update/Recent, Upcoming and Proposed Regulations
1:30 p.m.	What is a Good Septic System Inspection?
3 p.m.	The History of the PSMA Hydraulic Load Process
4:30 p.m.	Improving Arizona's Inspection Program to Meet Modern Challenge

NOWRA NATIONAL ONSITE WASTEWATER RECYCLING ASSOCIATION

» SITE EVALUATION AND DESIGN OF ONSITE WASTEWATER TREATMENT SYSTEMS

8 a.m.	Why Do We Care About Soils?
9:30 a.m.	Design for Dummies
11 a.m.	How to Do a Good Site Evaluation
1:30 p.m.	Designing for Tough Sites
3 p.m.	Wastewater and Soils: Clean It Up AND Get It To Go Away
4:30 p.m.	Good Installation for Long-Term User Satisfaction

» FROM INSTALLATION TO MARKETING YOUR BUSINESS AND EVERYTHING IN BETWEEN

8 a.m.	Look Out for Gophers! Taking Care of Mound Systems
9:30 a.m.	ATU's - How to Make them Work
11 a.m.	Rest Stops: A Case Study of Challenging Wastewater
1:30 p.m.	Troubleshooting Onsite Systems
3 p.m.	Installation Mistakes: How to Avoid and Fix Them
4:30 p.m.	Marketing & Customer Service for Small Business Owners

SSCSC SOUTHERN SECTION COLLECTION SYSTEMS COMMITTEE

8 a.m.	Personal Safety
9:30 a.m.	Understanding the Nuances of a Quality CCTV Inspection Program
11 a.m.	In the Trenches with Trenchless Pipeline Repair and Renewal
1:30 p.m.	Nozzle Application: What, Why, Where, When and How?
3 p.m.	Stop It! A Closer Look at Plugging
4:30 p.m.	Getting the Most out of Your Combination Unit

BUSINESS TRAINING & MARKETING SUZAN CHIN

1:30 p.m.	Marketing on a Shoestring
3 p.m.	Getting Some…Brand Recognition
4:30 p.m.	The Online Marketing Toolbox

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WWW.PUMPERSHOW.COM

TREATMENT PLANT OPERATOR tpo Marketplace Advertising

VISITORS

Splashes of Color

By Ted J. Rulseh

Some migrating visitors were lighting things up last fall at the Newport (R.I.) Wastewater Treatment Facility. Erik Drukovskis, chief operator, snapped this and other photos of cedar waxwings that visit the plant property, including the chlorine contact chamber.

"I believe the name comes from the red tips on their wings or the yellow tips on their tails, which make it look like they've been dipped in wax," says Drukovskis, a United Water professional. "The color of the tail will be either yellow or orange based on what they eat. Their diet consists of cedar cones and fruit — and insects, which is what brings them to Newport.

"We have a few chokecherry trees, but they also love the uncovered, open-air chlorine contact chamber. Insects fly above the chamber, and the cedar waxwings fly around and eat them up. Their flight pattern is similar to that of bluejays in that they seem to dart around, changing direction to catch the next insect in their bills. They're fascinating to watch, and if you stand still they'll fly within a few feet of you." 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.

"I believe plants must offer tours and interact with the public. Water is grossly underappreciated and unvalued in our country. Part of the plant operator's job is to elevate the public's understanding and appreciation."

Greg Swanson, Utilities General Manager, City of Moline, Ill.

TREATMENT PLANT OPERATOR tpo

CLASSIFIED ADVERTISING

JANUARY

DEWATERING

Lily Maximizer septic receiving station, 4-inch off load, automatic screen 1/2 & 3/8 stainless screens. Conveyor and auger takes garbage to trash bin. $16,000. 509-336-3634 meyersvin@gmail.com can email photo. (P01)

4" Dia-Disk Double Diaphragm Pump: 5hp electric motor. Cost new - $17,000. Completely rebuilt. Variable flow, 0-200gpm, low-stroke - won't shear polymer. PRICE $7,500. Pictures are available upon request. Please call 910-738-5311. (oBM)

Two 15-cubic-yard Aqua-Zyme Dewatering boxes with insert micron liners with rolling tarps. INCLUDES polymer injection system. 5 years old, only used 2 times. $45,000 for everything OBO. 419-739-4917 (P01)

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. Possible use with Fish Farms. Portable, or very easy installation. Brand new product. US patent pending. callagher@sbcglobal.net, www.thefecal-fighter.com. (oBM)

PUMPS

Two (2) 4" Thompson Double Diaphragm Pumps: 5hp electric motor, single phase. Cost new - $9,000 each. Will sell both for $5,000 or sell individually for $3,000 each. Pictures are available upon request. Please call 910-738-5311. (oBM)

TRAILERS-VACUUM/TANKER

4,000-gallon Lely Self-Contained Vac/Press Tanker: Isuzu motor, Fruitland RCF 500 vacuum pump, Evans tri-axle trailer with aluminum wheels. Excellent condition - $27,500. Pictures are available upon request. Please call 910-738-5311. (oBM)

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

Satsop Business Park received the Washington State Department of Ecology's 2013 Wastewater Treatment Plant Outstanding Performance Award.

The **City of Cookeville's Wastewater Treatment Plant** received an Operation Excellence Award from the Kentucky-Tennessee Environment Association.

Pasteurization Technology Group received the 2013 Innovative Technology Award from the Water Environment Federation. PTG was recognized for its X-500 system, which uses waste heat from turbines or engines to disinfect wastewater while also generating electricity.

Eric T. Buzza, a water and wastewater operations specialist based in Gannett Fleming's Pittsburgh, Pa., office, received the 2013 Harry J. Krum Award from the Water Works Operations Association of Pennsylvania.

The **City of Lynden** received a Wastewater Treatment Plant Outstanding Performance Award from the Washington State Department of Ecology.

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

education

Alabama

The Alabama Water Environment Association has a Collection System Operators Seminar March 25 in Huntsville. Visit www.awea-al.com.

Florida

The University of Florida TREEO Center has a Process Control of Advanced Waste Treatment Plants Seminar Jan. 22-24 in Gainesville. Visit www.treeo.ufl.edu/wastewater-courses.aspx.

Illinois

The Illinois Water Environment Association has a Government Affairs Conference Jan. 10 in Burr Ridge. Visit www.iweasite.org.

Kansas

The Kansas Water Environment Association is offering these courses:

- Jan. 8 – Introduction to Water and Wastewater Conveyance, Garden City
- Jan. 14-15 – Wastewater Collection Systems, Arkansas City
- Jan. 15 – Wastewater Treatment, Colby
- Jan. 23 – Small Systems Wastewater, Holton
- Jan. 24 – Special Topics – Ultrasound and UV, Garden City
- Jan. 28 – Wastewater Treatment, Pratt
- Jan. 29 – Wastewater Collection Systems Management, Iola
- Feb. 5 – Wastewater Collection Systems Management, Iola
- Feb. 5 – Wastewater Stabilization Lagoons, Phillipsburg
- Feb. 11-12 – Secondary Treatment/Review of Activated Sludge, Newton
- Feb. 12-13 – Activated Sludge, Wichita
- Feb. 13 – Small Wastewater Systems, Ulysses
- Feb. 14 – Wastewater Treatment, Liberal
- Feb. 19-20 – Math for Operators, Hutchinson
- Feb. 25-26 – Basic Water/Wastewater/Distribution/Collections Math, Goddard
- Feb. 26-27 – Wastewater Plant O&M, Kansas City
- Feb. 27 – Small Wastewater Systems, Hays

Visit www.kwea.net.

Missouri

The Missouri Rural Water Association has developed a series of free smartphone apps designed for wastewater operators using the Android and iPhone systems. They can be found by searching MRWA in the Google Play and Apple stores. Visit www.moruralwater.org.

Ohio

The Ohio Water Environment Association is offering these courses:

- March 13 – Government Affairs Workshop, Lewis Center
- May 1 – Collection Systems Workshop, Lewis Center
- May 21-22 – Operations/Lab Analysis Workshop, Lewis Center

Visit www.ohiowea.org.

Wisconsin

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

- March 24-25 – Upgrading Your Sanitary Sewer Maintenance Program
- March 26-28 – Wastewater Pumping Systems and Lift Stations
- April 15-17 – Nutrient Removal Engineering: Phosphorus and Nitrogen in Wastewater Treatment

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

The Wisconsin Department of Natural Resources is offering the following courses:

- Feb. 17-21 – General Wastewater Treatment - Intro and Advanced, Madison
- Feb. 25-26 – Anaerobic Digestion - Intro and Advanced, Green Bay
- March 4-5 – Phosphorus Removal - Intro and Advanced, Janesville
- March 10-14 – General Wastewater Treatment - Intro and Advanced, Green Bay
- March 18-19 – Ponds and Lagoons - Intro and Advanced, Black River Falls
- March 24-28 – General Wastewater Treatment - Intro and Advanced, Chippewa Falls
- March 26-28 – Wastewater Pumping Systems and Lift Stations, Madison

Visit http://dnr.wi.gov. tpo

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

CALENDAR OF EVENTS

Jan. 22-23
Water Environment Association of Texas Collection Systems Conference and Expo, San Marcos. Call 512/693-0060 or visit www.weat.org.

Feb. 4-6
New York Water Environment Association Annual Conference and Exhibition, New York Marriott Marquis. Visit www.nywea.org.

Feb. 25-28
Water Environment Federation 2014 Utility Management Conference, Savannah, Georgia. Call 703/684-2441 or visit www.wef.org.

March 9-21
Water Environment Federation 2014 Water and Wastewater Leadership Center, Kenan-Flagler Business School, University of North Carolina, Chapel Hill. Visit www.wef.org.

March 11-14
Water Environment Federation Collection Systems 2014: Collection on the Chesapeake, Baltimore Convention Center. Call 703/684-2441 or visit www.wef.org.

March 18
Wisconsin Department of Natural Resources Spring Biosolids Symposium, Stevens Point. Visit http://dnr.wi.gov.

March 29-April 2
Missouri Water Environment Association/American Water Works Association Joint Annual Conference, Osage Beach. Visit www.mwea.org.

April 6-9
Alabama Water Environment Association Annual Conference, Orange Beach. Call 205/349-0067 or visit www.awea-al.com.

April 6-10
Florida Water Resources Conference, Coronado Springs Resort, Lake Buena Vista, Fla. Event is a joint conference of the Florida Section of the American Water Works Association, the Florida Water Environment Association and the Florida Water and Pollution Control Operators Association. Visit www.fwea.org.

April 16-17
Nebraska Water Environment Association Great Plains Conference, Embassy Suites, LaViasta. Visit www.ne-wea.org.

April 22-24
Nevada Water Environment Association Annual Conference, location TBA. Visit www.nvwea.org.

April 22-24
Alaska Water Wastewater Management Association Annual Conference, Centennial Hall, Juneau. Visit www.awwma.org.

April 27-30
Arkansas Water Works and Water Environment Association Annual Conference, Hot Springs. Visit www.awwwea.org.

April 29-May 2
California Water Environment Association Annual Conference, Santa Clara Convention Center. Call 510/382-7800, ext. 115, or visit www.cwea.org.

May 3-7
British Columbia Water & Waste Association Annual Conference and Trade Show, Whistler. Visit www.bcwwa.org.

May 18-21
Water Environment Federation Residuals and Biosolids 2014: Sustainability Made Simple/Facilitating Resource Recovery, Austin (Texas) Convention Center. Call 703/684-2441 or visit www.wef.org.

June 5-6
Canadian Biosolids and Residuals Conference, Sheraton Wall Centre, Vancouver, British Columbia. Visit www.acwwa.ca.

June 22-25
Michigan Water Environment Association Annual Conference, Boyne Mountain Resort, Boyne Falls. Visit www.mi-wea.org.

industry news


John Yen


Charlie Wright


Piera Eduardo


Martin Riley

BASF Water Solutions adds manager, promotes staff

BASF Water Solutions hired John Yen as channel partner manager, promoted Charlie Wright to regional territory manager for the Northeast, promoted Piera Eduardo to senior product manager and promoted Martin Riley to technical service representative for the East Coast.

Orbeco-Hellige's Sarasota facility ISO certified

Orbeco-Hellige's Sarasota, Fla., facility received ISO 9001:2008 certification. Orbeco-Hellige serves as the North American headquarters for the Tintometer Group of Companies, manufacturer of products for the water quality and color measurement industries.


Richard D'Amato

Brown and Caldwell names executive vice president

Brown and Caldwell named Richard D'Amato executive vice president and private sector enterprise leader. He will be based at the company's Denver, Colo., office.

Layne Christensen relocates to Woodlands headquarters

Layne Christensen has moved to its new corporate headquarters in The Woodlands, Texas, a suburb of Houston.

CH2M HILL CEO retires, successor named

Lee McIntire, chief executive officer and chairman for CH2M HILL will retire as CEO, effective Jan. 1. McIntire, 64, will remain chairman of the board. Jacqueline Hinman, 52, was appointed to serve as CEO. She was president of CH2M HILL International and is a member of the board of directors.

Detcon's IR-700 gas detector SIL certified

Detcon received SIL capable certification for its IR-700 infrared combustible hydrocarbon gas detector. The device underwent third-party functional safety assessments and was found to be in compliance with IEC61508:2010 Parts 1-7.

Spiroflow Systems launches website

Spiroflow Systems launched its redesigned website, www.spiroflowsystems.com. The site provides access to product information and applications, case studies, a dedicated blog and a sales representative locator.

FreeWave receives ISO certification

FreeWave Technologies received ISO 9001:2008 certification for its commitment to ensuring high quality standards in product manufacturing.

Miox launches website

Miox Corp. launched its new website, www.miox.com. The site includes videos highlighting company history, a tour of on-site chemical generators, product information and press releases. tpo

Operators Everywhere Trust USABlueBook®

The crew at the Village of Cary's Wastewater Treatment Facility is leading the way in operational excellence. In 2010 they were honored by the Illinois Association of Water Pollution Control Operators with Plant of the Year.

"When doing our normal comparison shopping, we end up getting almost everything from USABlueBook."

For many years, Cary's team has relied on USABlueBook for quality products at competitive prices. "When doing our normal comparison shopping, we end up getting almost everything from USABlueBook," stated John, Chief Operator. "We haven't found many of your prices that can be beat!"

John Stein
Chief Operator
Village of Cary WWTP
Cary, IL

Featured Products From USABlueBook®

Complete process automation for the cost of a controller!

AquaMetrix Multiparameter Controllers

NEW!

- **Four separate 4-20 mA inputs, three frequency inputs and four relay outputs**
- **Datalog, setup and remote viewing from laptop, tablet or smartphone**

Finally—an affordable alternative to expensive process automation systems! These controllers combine the functions of chart recorders, process controllers and panel meter displays, all in one standard 1/4-DIN package. Further customize your controller with optional expansion cards.

Ethernet connection lets you monitor all current readings, datalogged readings and configurations 24/7 using a standard web browser, or view data on the detailed display. Receive unlimited email and text alerts based on user-defined conditions. 120 to 240 VAC, 60 Hz. NEMA 4X enclosure.

DESCRIPTION	STOCK #	EACH
2300 Controller w/ (4) 4-20 mA & (3) Frequency Inputs	17699	$ 1,950.00

View process status from a smartphone, tablet or PC!

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Get the Best Treatment™

For more information on AquaMetrix Multiparameter Controllers, visit www.usabluebook.com.

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