TREATMENT PLANT OPERATOR

tpo™

DEDICATED TO MUNICIPAL WASTEWATER PROFESSIONALS

www.tpomag.com
AUGUST 2009

Statewide training for operators

PAGE 36

With a *Smile*

DENNIS WILSON WAS HAPPY TO RETURN TO RUN HIS HISTORIC HOMETOWN'S TREATMENT PLANT

PAGE 16

Curing ponding with Microbial Inoculator Generators

PAGE 32

New Feature: Tips and Tricks

PAGE 34

CHANGE SERVICE REQUESTED

COLE PUBLISHING INC.
1720 MAPLE LAKE DAM RD., PO BOX 220
THREE LAKES WI 54562

PRSTD STD
U.S. POSTAGE
PAID
COLE
PUBLISHING

Are Budget Constraints Reducing Your Pipe Flow Capacity?

ROOTX®

Let RootX help save your budget during these uncertain economic times.

The Problem...

It's simple and fast.
It's effective and EPA accepted.
It is a proven solution.
It is guaranteed!

RootX turns your existing equipment into a root killing machine without negative impacts to the treatment plant or the surrounding environment.

The Solution...

Registered with the EPA to kill roots in Sanitary and Storm sewers (EPA Registration #68464), RootX can be applied with your sewer cleaning equipment or direct from the package. You can attack roots with a targeted foam spray from the RootX applicator or simply fill the pipe with a root killing foam. RootX packaging allows a city or contractor to treat both mainline sewers and residential service laterals for a complete root control program.

RootX provides generic Chemical Root Control specifications to cities that have root control contracts.

The Result.

Simple.
Effective.
Proven.

ROOTX®

GET RID OF GREASE IN PIPELINES!
Call or email us to find out how you can get FREE grease removal today!

GREASE-X

800-844-4974
www.rootx.com
rootx@rootx.com

contents

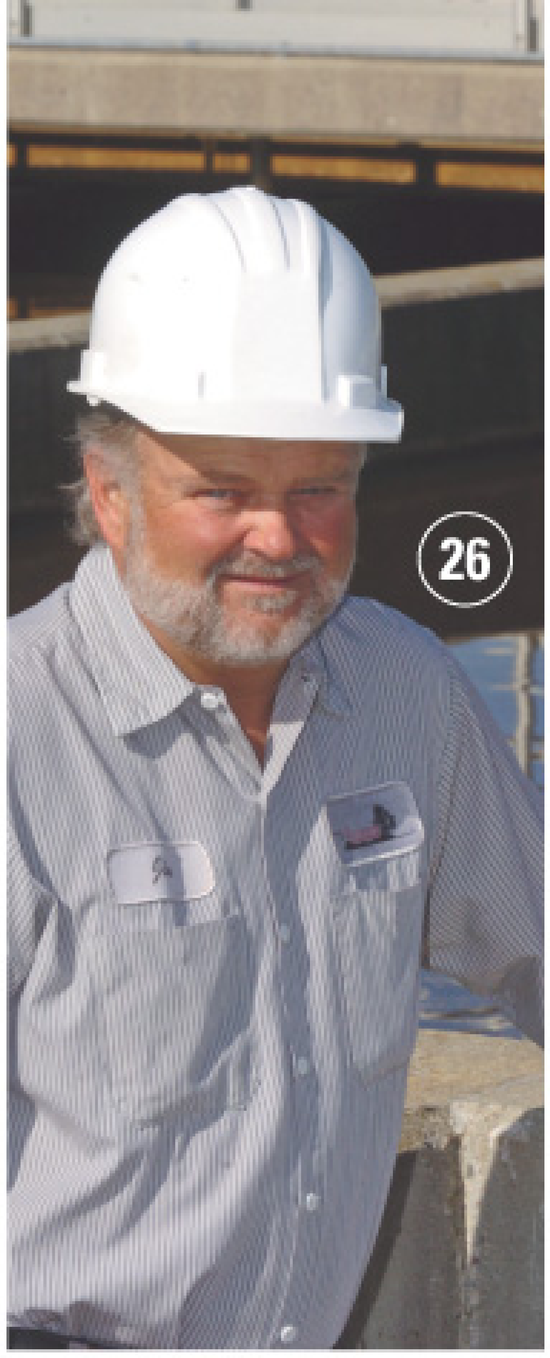
August 2009

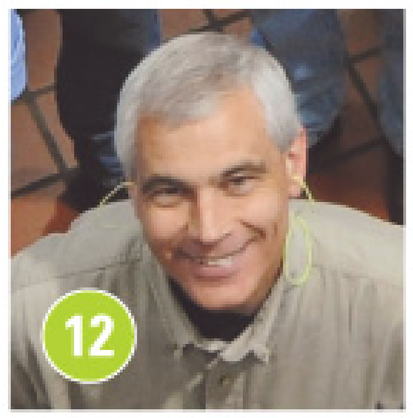
features

COMING NEXT MONTH: SEPTEMBER 2009

Product Focus: Digital Technology

- Top Performer – Plant: Town of Crewe, Va.
- Top Performer – Plant: City of Pittsfield, Mass.
- Top Performer – Operator: Butch Green, Frisco (Colo.) Sanitation District
- Top Performer – Biosolids: City of Raleigh, N.C.
- How We Do It: Blower control system in Lockport, Ill.
- In My Words: Electronic O&M manuals at Orange County Sanitation District
- Hearts and Minds: Educational DVD in Maize, Kan.





departments

on the cover

Dennis Wilson, superintendent of the Oxford (N.C.) Wastewater Treatment Plant, loves his job of safeguarding local water resources. He learned the business working on other communities, but came back to his scenic and historic hometown in 2001. (Photography by Donn Young)

'So, What Do You Do?'

PLANT MANAGERS AND OPERATORS SHARE EXPERIENCES AND APPROACHES ON THE SOMETIMES DELICATE TASK OF TELLING PEOPLE EXACTLY HOW THEY EARN A LIVING

By Ted J. Rulseh

Back in April, this column posed a variety of questions around the subject of meeting new people and telling them what you do for a living.

We asked: Just how do people react — initial, immediate reaction — when you reveal your line of work? Does working in a waste treatment profession still carry a hint of negative perception? When asked what you do, have you ever felt tempted, even now and then, to dodge the subject a little? Is this a concern for people on your team, especially newer people? If so, how do you deal with it?

The column must have touched a nerve, because we got a fair number of responses. Here are a few:

As executive director of a small county sewer district, as my first answer to the question, "What do you do for a living?" I often say, "I am a bureaucrat." After a puzzled look crosses their face, I tell them, "I am a sewer guy." They say, "Oh."

James Fischbeck, Executive Director
Washington County (N.Y.) Sewer District

At age 72, I have had several jobs, including farming bogs, beef cattle, milk cows and crops. I also owned and operated three lumber and hardware retail stores, supervised and operated a water treatment plant, ran a backhoe business, drove school bus, ran a dairy supply business, and worked as a carpenter, to name a few.

*I have now worked as a wastewater treatment operator for 22 years. I introduce myself in many different ways, depending on my perception of who I am talking to. My first perception will usually come from reading their body language. If I want to impress them, I will flower it up by saying, "I work at the No. 1 operation in the state, and in the Top 10 in the USA." If it is an old classmate or an old friend I haven't seen for years, I just say, "I work in a s*** plant." If I am talking to a friend or co-worker of my wife, I say, "I work for the city."*

There are so many scenarios that every meeting is different. After the first meeting, I get a feeling for which direction to go. I am proud of what I do, but I try not to offend or embarrass anyone. I think as a group we do a wonderful job, and I feel my contribution is a plus. As in any job, there is always someone who has a better or more interesting job in their perception.

Rodney Collins
Durham, N.C.

I caught your article about wastewater work and the stigma that surrounds it. I've been at it since 1974. I was 24 when I started. Maybe back then I was concerned about it. I remember asking if the operator I replaced stank when he went to lunch.

All that evaporated pretty quickly. In today's world, I still call myself the sewer guy when anyone asks. It breaks the ice. Then people want to know how it all works and ask for tours. I live in a resort community in the Colorado mountains. Maybe I'm lucky — the bulk of the population here is educated and young. They understand what it takes to keep civilization functioning.

It's not a consideration about the subject being delicate. We have a lot of applications for jobs. I hadn't thought about it for a long, long time until I read your article. It's the bottom of the totem pole that holds it all up.

The FedEx guy dropped off a package today and asked us for a job. That's the second person this week. People want to work here!

Butch Green, District Manager
Frisco Sanitation District, Frisco, Colo.

I am the superintendent of the City of Trenton (N.Y.) Wastewater Treatment Plant. I have been here for 20 years. I would never think of introducing myself in any other way if asked.

Patrick Raftery

To my considerable surprise, nobody came up with what strikes me as the most obvious and appropriate answer to the question, "What do you do?"

That answer is: "I make clean water," or some variation on that theme. It's straightforward, it's positive and, best of all — in the words of an old mentor — it has the advantage of being true. Furthermore, it's all but certain to trigger questions and help start an informative conversation.

I'm not sure why, but our industry seems intent on focusing on our raw material instead of our end product. GM and Ford make cars. Dell makes computers. Kellogg's makes cereal. Treatment plants make clean water.

I'm not sure why, but our industry seems intent on focusing on our raw material instead of our end product. GM and Ford make cars. Dell makes computers. Kellogg's makes cereal. Treatment plants make clean water.

Perhaps it all starts with attitude. In the words of Janine Burke, executive director of the Warwick (R.I.) Sewer Authority, "We need to get proud." Perhaps we're proud already, but if so, we need to be proud in a more public way. **tpo**

Municipal & Industrial
MAINTENANCE SERVICES

SEWER & CATCH BASIN CLEANING Single and double-pump jet-vac combination units with line jetting capabilities of 175 gpm. Catch basin cleaning available with per hour or per basin pricing.

SEWER TELEVISION INSPECTION
We have the CCTV equipment and experienced technicians to perform any type of mainline or service lateral inspection you need. Powered by the latest computers and software.

WET/DRY VACUUMING Jobs that used to take days are completed in hours. Our custom-built vacuum vehicles can quickly cleanup the toughest, dirtiest material, no matter where it's located..

Other Services Available:

- **Sewer Joint/Lateral Sealing**
- **GPS/GIS Data Collection**
- **No-Dig Cipp Point Repairs**
- **Manhole Rehabilitation**
- **Digester/Tank Cleaning**
- **Pit, Pond & Lagoon Cleaning**
- **Sludge Dewatering**
- **Water Blast Cleaning**

and much more.

All Work Backed by Our Unmatched Guarantee: You must be satisfied or you pay absolutely NOTHING for our services.

Call Toll Free **1-800-621-4342**

CARYLON CORPORATION

2500 W. Arthington Street ▪ Chicago, IL 60612 ▪ Fax: 312-666-5810

Visit Us On the Web: www.caryloncorp.com

Worth Paying For

To the editor:

I really enjoy *TPO* magazine. Finally there's a publication for the common man. I get tired of reading about multimillion-dollar and multimillion-gallon systems. I don't really care about or understand most of their problems. Yours is the only publication in the industry that I would pay to subscribe to. Keep up the great work.

Greg Scott
City of Shenandoah, Iowa

On the Forefront of Green

To the editor:

I am a big fan of your magazine and look forward to its arrival every month. I hold a class 3 wastewater license in Kentucky, and my background consists of 15 years' experience in the metal-finishing industry, including waste treatment in that industry.

I have no hands-on experience in the municipal field, but I hope my career moves in that direction in the near future. I take my hat off to the people you profile and to all those in the municipal wastewater industry. Those people are truly on the cutting edge of this country's green movement.

Over my 15 years of attending continuing-education classes, I am glad to see this career come from what many perceive to be black magic and a job that gets a reaction of "You do what for a living?" to a field that is moving to the forefront of a more environmentally educated nation. Thanks again for a great publication. Keep up the good work.

Kenneth Horn
Elizabethtown, Ky.

All About People

To the editor:

I just wanted to let you know that *TPO* is the best of all the trade periodicals I receive. As the wastewater treatment superintendent for Brunswick County, N.C., I oversee operations of six facilities ranging from a 100,000-gpd package plant to a 6-mgd biological nutrient removal facility.

The one thing you do, unlike most other trade magazines I see, is that you concentrate on people! That is what makes treatment facilities what they are. Keep up the great work!

Donald B. Dixon
Brunswick County, N.C.

advertiser index

AUGUST 2009

FREE Information from Advertisers

Check the Free Info boxes above.

PRINT NAME:

TITLE:

FACILITY NAME:

MAILING ADDRESS:

CITY:

STATE: ZIP:

PHONE:

FAX:

E-MAIL:

❑ **Start my FREE subscription to *TPO* magazine.**

❑ **No, do not send me *TPO* magazine.**

SIGNATURE (REQUIRED):

DATE:

Fax to 715-546-3786

Mail to: COLE Publishing Inc.
PO Box 220
Three Lakes, WI 54562

tpo TREATMENT PLANT OPERATOR
DEDICATED TO MUNICIPAL WASTEWATER PROFESSIONALS

Published monthly by:
COLEpublishing
CELEBRATING 30 YEARS OF PUBLISHING
–1979-2009–

1720 Maple Lake Dam Rd., PO Box 220
Three Lakes WI 54562

www.tpomag.com

In U.S. or Canada call
toll free 800-257-7222
Elsewhere call 715-546-3346
E-mail: info@tpomag.com
Web site: www.tpomag.com
Fax: 715-546-3786

Office hours Mon.-Fri.,
7:30 a.m.-5 p.m. CST

SUBSCRIPTION INFORMATION: A one year (12 issue) subscription to *TPO* in the United States and Canada is free to qualified subscribers. A qualified subscriber is any individual or company in the United States or Canada that partakes in the consulting, design, installation, manufacture, management or operation of wastewater treatment facilities. Subscriptions to all other foreign countries cost $80 per year. Non-qualified subscriptions are available at a cost of $60 per year in the United States and $120 per year outside of the United States. To qualify, return the subscription card attached to each issue; visit www.tpomag.com; or call 800-257-7222.

Our subscriber list is occasionally made available to carefully selected companies whose products or services may be of interest to you. Your privacy is important to us. If you prefer not to be a part of these lists, please contact Kayla at kaylaw@colepublishing.com.

ADDRESS CHANGES: Submit to *TPO*, P.O. Box 220, Three Lakes, WI, 54562; call 800-257-7222 (715-546-3346); fax to 715-546-3786; or e-mail kaylaw@colepublishing.com. Include both old and new addresses.

ADVERTISING RATES: Call 800-994-7990 and ask for Phil, Kim, Jim or Winnie. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.

EDITORIAL CORRESPONDENCE: Address all editorial correspondence to Editor, *TPO*, P.O. Box 220, Three Lakes, WI, 54562 or e-mail editor@tpomag.com.

REPRINTS AND BACK ISSUES: Visit www.tpomag.com for options and pricing. To order, call Jeff Lane at 800-257-7222 (715-546-3346) or e-mail jeffl@colepublishing.com.

CIRCULATION: Circulation is controlled at 60,000 copies per month except for the Annual Company Directory issue (May) which receives a bonus distribution of 25,000 copies (U.S. and Intl.).

ABC AUDIT APPLIED FOR.

On a Mission

THE NARRAGANSETT BAY COMMISSION USES A WIDE ARRAY OF EDUCATIONAL PROGRAMS TO BUILD AWARENESS FOR WATER QUALITY AND ENVIRONMENTAL STEWARDSHIP

By John K. Thompson

In the early sixteenth century, Italian explorer Giovanni da Verrazzano called Narragansett Bay Refugio, the Refuge. Today, the Narragansett Bay Commission (NBC), in Providence, R.I., educates thousands of New England residents about the importance of protecting the quality of water in the Refuge for future generations.

The history at the NBC's Field's Point Wastewater Treatment Center speaks for itself. "I always tell tour groups that the Providence wastewater treatment plant was the third to begin operation within the country," says Paul Desrosiers, assistant operations manager for the NBC. "It was primary settling aided by alum precipitation.

"We explain to the public that city engineers went to England to study the advanced treatment process that had been developed there. We still have our original chemical feed building, circa 1901, which is presently used as our maintenance facility. It is on the National Register of Historic Places."

PHOTOS COURTESY OF THE NARRAGANSETT BAY COMMISSION

Students from the Anna McCabe Elementary School in Smithfield, R.I., work on water-quality tests in a park in Providence as part of the environmental programs offered by the Narragansett Bay Commission.

INVOLVED OPERATORS

It wasn't always this way. In the 1800s, Rhode Islanders often deposited their household wastewater from sinks, washtubs and outhouses directly into local rivers, in the belief that dilution would render the waste harmless. By 1901, Field's Point had become a model for improvement of effective wastewater treatment in America.

Desrosiers explains how the Field's Point facility is still being used today to build public awareness for water-quality issues. "Our operators are very proud of the work they do," he says. "They interact with the tour groups as they perform their daily duties, and they do it with a sense of that historic role they know the plant has had in shaping America's water-quality future."

Automation is a key focus for plant tour groups. "We demonstrate how we are able to operate equipment through computer commands," says Desrosiers. "That helps the public see many of the 21st century aspects of our business."

What's Your Story?

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

> "Generally, people are very curious and inquisitive and have a lot of questions. Our long history gives us a leg up on answers."
> **PAUL DESROSIERS**

Desrosiers speaks from his many years involved in getting the public connected to what is happening at the plants. He understands the importance of developing a public rapport. His easy and thoughtful manner and finesse as an educator make him equally at home with a group of dignitaries as with a group of fourth-graders.

For Desrosiers, there are some perks in working with the public. "It is a thoroughly rewarding experience to guide a tour group," he says. "People generally know very little about what goes on behind the scenes at a wastewater plant, and it's exciting to open up whole new areas of learning for them. Generally, people are very curious and inquisitive and have a lot of questions. Our long history gives us a leg up on answers."

Desrosiers looks forward to the day four years from now when a plant upgrade will have been completed. "Our present plant is a complete mix activated sludge treatment plant," he says. "That is a wastewater treatment process that has been used successfully since the 1930s, so I try to stress to our tour groups that we have optimized and perfected an old treatment model."

WINNING WATERSHED EXPLORERS

Desrosiers points out that the NBC has dedicated staff working with the region's schools. Environmental education coordinator Cynthia Morrisette has direct contact with elementary schools throughout the service area. She provides plant tours to diverse groups, including elementary age students up to university level undergraduates.

The commission's "Woon Watershed Explorers" effort is just one

Students from Agnes E. Little School perform macroinvertebrate studies at Slater Park Pond in Pawtucket, R.I. The Narragansett Bay Commission offers a variety of programs to raise awareness of water quality and wastewater treatment.

of several educational outreach programs Morrisette has nurtured. The program helps make the students more aware of the valuable water resources in the Narragansett Bay area.

Woon Watershed Explorers is a water-quality monitoring program in which students and teachers learn about the health of local watersheds. It helps create awareness of environmental stewardship and its importance for protecting and preserving Narragansett Bay.

The program has brought area schools together with leading water science professionals from organizations like Roger Williams Memorial, the Biomes Marine Biology Center, Save the Bay, Rhode Island Resource Recovery, the Audubon Society of Rhode Island, the Apeiron Institute for Environmental Living, and high school students from Tollgate High School in Warwick. Participants enjoy a full day of environmental education activities.

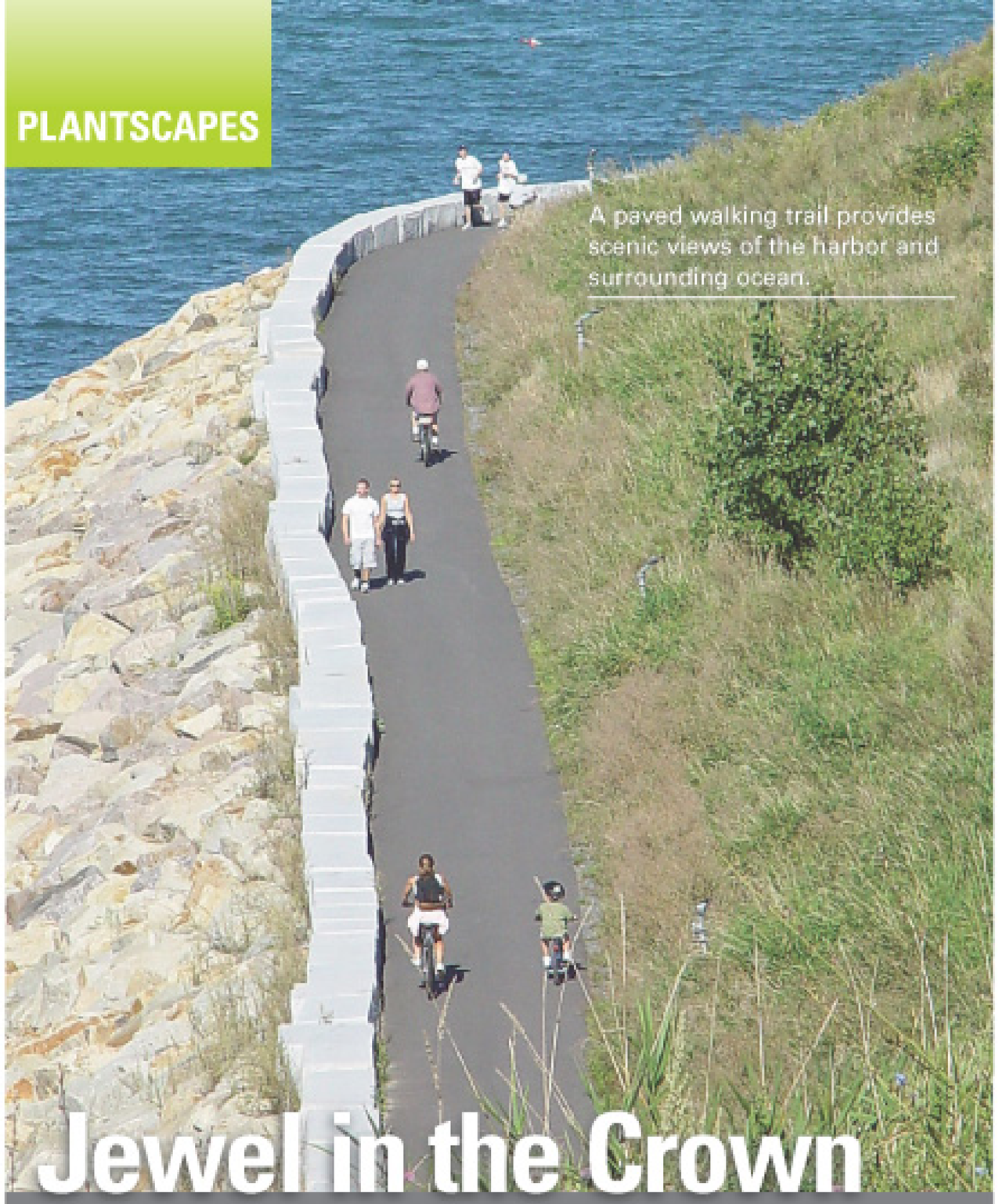
The goal of the Woon Watershed Explorers and the culminating environmental education conference is to help students connect the health of their local river to the health of Narragansett Bay and to encourage them to care for these resources so that future generations can enjoy them.

"Education plays a vital role in upholding the NBC's mission and we are extremely proud of the amazing efforts of these young scientists," says Ray Marshall, NBC executive director. In addition to expanding these services, NBC plans to build a training and education facility as part of its biological nutrient removal upgrade.

The commission also involves the public directly in helping to focus the organization's mission. Says Desrosiers, "Since its inception, the NBC has had a Citizens Advisory Group that has helped to define the role of public participation in determining our mission."

Finally, the commission is working to educate groups about the combined sewer overflow tunnel process. "Now that we have started using our CSO tunnel to capture combined sewage that used to get discharged to nearby rivers and streams, we have another process that seems state-of-the-art," Desrosiers says.

"But in my eyes, the real change will be occurring as we upgrade our plant to biological nutrient removal over the coming four years." Change takes time, and the NBC continues to leverage its history as a leader in water management with a commitment to helping the public stay informed and get involved in protecting the waters of Narragansett Bay. tpo



A paved walking trail provides scenic views of the harbor and surrounding ocean.

(PHOTOS COURTESY OF MWRA)

A photographer is inspired by the scenic views available among the wildflowers on Deer Island.

Jewel in the Crown

PUBLIC SPACE AROUND BOSTON'S DEER ISLAND TREATMENT PLANT REMINDS VISITORS OF THE LASTING BENEFITS OF A MASSIVE HARBOR CLEANUP PROJECT

By Mary Shafer

Deer Island Wastewater Treatment Plant in Boston, Mass., is not only the second largest such facility in the country. It is part of one of the greatest environmental success stories since Congress passed the 1972 Clean Water Act.

The plant is part of a precedent-setting cleanup effort, surrounded by engineered landscaping that makes it one of Boston's key recreational assets. It has become a showcase for the city and a much-loved resource for many of its residents.

A BENEFICIAL PROJECT

In 1985, a Boston lawyer, disgusted at the polluted state of Boston Harbor, sued the city for violating the Clean Water Act. He won, and a federal judge mandated what became a $3.8 billion project to bring the city into compliance. A significant element of the project, known as the Boston Harbor Cleanup, was the construction of a new secondary treatment plant on Deer Island.

Last updated in the 1950s and '60s, the plant had provided only primary treatment. It wasn't enough to keep harbor water safe, and eventually most marine life either died off or left. Fish and shellfish that did remain weren't safe to eat.

"Having a federal judge oversee this project was one of the best things that could have happened, because it created a real schedule with interim reports and deadlines," says Marianne Connolly, program manager for regulatory compliance with the Massachusetts Water Resources Authority (MWRA), which oversaw the project and now runs the plant. Connolly managed the creation of Deer Island's public access plan.

During the cleanup, the National Park Service studied Boston Harbor as a potential protected area. The late Congressman Gerry Studds helped pass legislation in 1996 creating the Boston Harbor Islands National Recreation Area (NRA).

Ultimately, the NRA designation provides protection for all assets inside its boundaries. Though located on Deer Island, the plant retains its autonomy. The park service simply adds a layer of credibility in securing federal funds that might become available for historical, archaeological or security efforts.

GETTING TO WORK

MWRA sold bonds to fund the capital improvement projects. It also secured assistance from ratepayers and through federal grants. Deer Island's actual construction work started in the late 1980s.

The project eliminated daily near-shore discharges of primary treated wastewater. Flows were redirected to giant submerged sprinkler heads at the end of a 9.5-mile, 24-foot-diameter tunnel that outfalls into the 100-foot-deep waters of Massachusetts Bay.

The outdated plant was razed. Contractors moved many glacial drumlins to make room for the new plant. Every part of the island was cleared and bulldozed, except the pump house from the original 1930s plant. It was renovated and slightly remodeled to provide office and educational space for tour groups.

Today, two-thirds of the island's 210 acres are occupied by the plant, which can treat more than a billion gallons of wastewater per day from 43 Greater Boston communities with a population of 2.5 million.

PUBLIC ACCESS COMES TO LIFE

The public access component of the facility emerged early in the environmental review process. MWRA staff were able to help shape and expand that effort, led by then-director Doug MacDonald.

TPO **welcomes news about interesting features of your facility's grounds, signage or buildings for future articles in the PlantScapes column. Send your ideas to editor@tpomag.com or call 877/953-3301.**

This aerial view looks from the Atlantic Ocean toward the mainland. The twelve 140-foot-tall digesters, which many call the "giant eggs," are a landmark in the harbor. A manmade berm conceals the digesters from Winthrop, the community on the other side of the peninsula.

The public got involved through MWRA public outreach, which sought endorsement, input and plan modification.

"We also got involved with the budding community of Winthrop, which bore most of the plant construction impacts," recalls Connolly. "They are perhaps the biggest users and beneficiaries of the park." A narrow spit of land connects Deer Island to the mainland at Winthrop. The Great Hurricane of 1938 deposited so much sand there that it filled in the waterway, formerly known as Shirley Gut, which separated the two.

Several designers and contractors created the green areas outside the fence surrounding the plant's buildings. Primary landscape designers were Carol R. Johnson Associates. "Given that the soil was so virgin, we weren't sure how things were going to work," says Connolly.

The Deer Island staff worked with the designers and an agronomist to determine optimal soil mixtures for the best drainage properties, so root systems from new plantings wouldn't become inundated and drown.

A 60-acre public access area is open year-round, from sunrise to sunset. It includes 2.6 miles of paved, handicapped-accessible pathways that wind around the island's perimeter. Ten overlooks, landscaped with native plants similar to those found on the other Harbor Islands, allow people to capture views into the plant itself or look out across the harbor. Interpretive signage provides information about what they see.

The site also has mooring space for six boats and interpretive signage. On average, as many as 15,000 people enjoy the recreational space each year. MWRA has a public access groundskeeping contract with an outside vendor at Deer Island. The three-year commitment covers $263,900 worth of services — small change for the amount of public pride and goodwill it produces. tpo

top performer: **PLANT**

Driving *Efficiency*

A METHANE-TO-ENERGY SYSTEM AND SOPHISTICATED SCADA CONTROLS ENABLE A NORTH CAROLINA TREATMENT PLANT TO KEEP A TIGHT REIN ON ENERGY EXPENSES

By Jim Force

OPPOSITE PAGE: The staff at the South Durham Water Reclamation Facility includes, from left, front row: Dean Townsend, Bob Dodson and Jeff Teer; middle row: Adam Turner, Robert Battistel, William Villanueva, Rodney Collins and Reginald Champion; back row: Ted Cope, Charles Cocker and Peter Saulsbury. (Photography by Donn Young)

The South Durham Water Reclamation Facility.

BOB DODSON KNOWS WHEN WASTEWATER TREATMENT energy costs rise, because his phone starts ringing. Plant managers from all over the country call him to ask how his South Durham (N.C.) Water Reclamation Facility produces methane gas from sludge and uses it to provide heat and run blowers, cutting dependence on natural gas and electricity.

"The city started generating methane and using it for fuel at the North Durham treatment works in 1933," says Dodson, a Penn State University environmental resource management graduate with 25 years of experience as a wastewater professional. "We've had the system in place at South Durham since it started up in 1984. We're old hands at this."

The facility produces and uses 3 million to 4 million cubic feet of methane per month. The fuel powers the engines that run the aeration system blowers. Then the heat from the engines passes through heat exchangers to provide heat for the plant's control building and anaerobic digesters, as well as startup heat for the building's hot water supply. The system saves between $150,000 and $175,000 a year in fuel and power costs.

"As with any wastewater operation, it takes a commitment on the part of the operators and supervisors to meet permit requirements consistently. We have an outstanding team who take pride in the appearance, operation and maintenance of the facility." **BOB DODSON**

profile

South Durham (N.C.) Water Reclamation Facility

SUPERINTENDENT: Bob Dodson

BUILT: 1984

LAST UPGRADE: 1995

POPULATION SERVED: 80,000

FLOWS: Design 20 mgd, average 11 mgd

TREATMENT LEVEL: Tertiary

TREATMENT PROCESS: Badenpho (Eimco Water Technologies) with N and P removal

BIOSOLIDS: Land-applied by contractor

STAFF: 13 plus support from centralized maintenance division and laboratory staff

OPERATING BUDGET: $2.4 million

WEB SITE: www.durhamnc.gov/departments/wm

FIRST-CLASS TREATMENT

The South Durham plant was built to handle 10 mgd. It was upgraded for phosphorus removal in 1988 and expanded to 20 mgd with full nutrient removal in 1995. Today, about 11 mgd from the city of Durham flows into the system, passing through climber bar screens and a chain-and-flight grit collector system. After primary clarification, the flow moves on to a five-stage Badenpho process (Eimco Water Technologies) for biological treatment, including phosphorus and nitrogen removal.

Rubber membrane diffusers (Sanitaire) disperse air into the chambers. Final clarifiers and deep-bed traveling bridge filters remove most of the remaining suspended solids before the effluent is disinfected in a Trojan 3000 ultraviolet light system.

PLANT PERFORMANCE
South Durham Water Reclamation Facility

PARAMETER	PERMITTED LIMITS	ACTUAL (2008)
BOD	5 mg/l summer 7 mg/l winter	<2 mg/l
TSS	30 mg/l	2 mg/l
Phosphorus	0.5 mg/l summer 2.0 mg/l winter	0.3 mg/l summer
NH3	1 mg/l monthly avg. summer 2 mg/l monthly avg. winter	0.05 mg/l

The high-quality effluent flows into New Hope Creek, which feeds Jordan Lake, the drinking water source for the Towns of Cary, Apex and Morrisville and a secondary source for the city of Durham. The plant is also permitted to supply bulk reclaimed water, distributed to commercial entities for irrigation. It also houses a state-certified water and wastewater laboratory and staff from the Industrial Waste Control Section.

Plant performance simply sparkles. "We've experienced just one permit violation in the last 13 years," says Dodson. He attributes such success to the plant staff, which exhibits a true concern for the quality of the local water environment every day. "As with any wastewater operation, it takes a commitment on the part of the operators and supervisors to meet permit requirements consistently," Dodson adds. "We have an outstanding team who take pride in the appearance, operation and maintenance of the facility."

In addition to Dodson, that staff includes Charles Cocker, plant supervisor; Reginald Champion, Rodney Collins, George Harris, Peter Saulsbury and

The entrance to the facility. The plant was built to handle 10 mgd, upgraded for phosphorus removal in 1988, and expanded to 20 mgd with full nutrient removal in 1995.

Gas from the facility's four floating-cover anaerobic digesters is collected and compressed in a Gardner Denver compressor and sent to a pair of 524-hp Caterpillar engines that drive the blowers in the aeration system.

Operator William Villanueva monitors process recording readings in the control room.

William Villanueva, operator III; Robert Battistel, Anthony Jeter and Hugo Martinez, operator II; Adam Turner, operator I; Dean Townsend, equipment operator III; and Jeff Teer, plant maintenance mechanic.

Staff in the laboratory consists of chemists James Blake, Lito Chiu, Sheila Hopkins and Nathanette Mayo; laboratory technicians Bobby Honeycutt, Michael Merritt, Henry Plachcinski and Jackie Carroll-Garcia; and secretary Cathy Byrd. Also housed at the facility are Tyrone Battle, industrial pretreatment coordinator, and Rose Sanchez, industrial pretreatment technician.

"The SCADA will also annunciate when we are reaching our peak demand charges and identifies the largest power users. That allows the operator to make decisions on which equipment to run."

BOB DODSON

MAKING IT USEFUL

Primary and waste activated solids at South Durham are first thickened to about 3 to 8 percent solids in a gravity thickener or a belt thickener (Ashbrook) before being pumped to four floating-cover anaerobic digesters, where the material is stabilized.

Digester gas flows through a number of condensation traps and a coalescent filter (Dollinger - an SPX Brand) to remove water and fine sediment. Then it is collected and compressed in a Gardner Denver compressor and sent to a pair of 524-hp Caterpillar engines that directly drive the blowers in the aeration system.

Dodson says the performance of the Caterpillar units has been exceptional. "Our original Cat engines were 500 hp and were installed in 1984 and provided more than 20 years of service," he says. "We finally replaced them in 2005-2006 with the current Model 3512s, which now include catalytic converters to meet emissions standards and more efficient controls and monitoring capabilities.

"Only during equipment downtime do we send any to the waste gas flares," explains Dodson. A 50,000-cubic-foot tank stores the gas when supply exceeds demand. The gas is an excellent fuel: At 72 to 75 percent methane, it is cleaner than landfill gas.

In addition to heat and hot water for the control building, the recovered heat from the engines' exhaust maintains mesophilic zone temperatures (98 degrees F) in the digesters. And South Durham's biosolids provide even more value. Drying beds or belt presses (Ashbrook and Klein) dewater the material to 15 to 18 percent solids. The Class B cake is then stored in a 1.5-acre covered building. Private contractor Synagro Central applies it to area farmland.

CONSISTENCY IS KING

"The key to successful operation of the digestion and gas production system is consistency — consistent flows, temperatures and mixing," says Dodson. The South Durham operators make every effort to optimize biosolids digestion by supplying as much organic material and primary and secondary sludge to the system as possible. They also collect and process solids quickly to capitalize on maximum volatility. "Maximum gas production means maximum dollars," Dodson says.

SAFETY FIRST

Ted Cope takes both common and uncommon approaches to plant safety. As safety officer for the Durham (N.C.) Department of Water Management, he has oversight responsibility for safety at both of the city's wastewater treatment plants, including the South Durham Water Reclamation Facility, as well as both water treatment plants and several divisions.

"Safety is paramount here, and we employ different tools to make sure our employees and divisions operate safely," he says.

One approach is employee incentives. "I know not everyone likes employee incentive programs, but they seem to work for us," says Cope. In the Durham plan, employees qualify for $25 Visa gift cards by working six months without an OSHA reportable accident. They can earn even more gift cards if their division and department meet annual safety goals.

Durham also sponsors a Safety Excellence Award based on a 50 percent reduction in the incidence rate. "We haven't achieved that level yet, but I'm hopeful that we will," Cope says.

Durham's safety committee and safety review process are innovative. The committee is made up of representatives from each division. It conducts safety reviews monthly at the various divisions in Cope's area of responsibility, and each division is reviewed quarterly.

The reviews use a form of reverse evaluation in that each team is made up of members from other divisions. "We don't want our staff evaluating their own divisions or facilities," says Cope. "Rather, it's another set of eyes." That way, he says, the review is impartial and may catch safety issues that might have been missed in a self-evaluation. Further, committee members can learn about safety procedures they might apply to their own facilities.

Cope says his department is making significant progress in safe operations, using these techniques augmented by regular safety training and safety meetings at all facilities. "The program has been well received," he says.

Plant superintendent Bob Dodson and safety officer Ted Cope check equipment for proper guarding.

Plant superintendent Bob Dodson takes a moment to admire the plant's final product.

An up-to-date SCADA system also delivers value by reducing electrical usage and cutting staffing needs during off hours. "We've employed a SCADA system since the mid-1990s," says Dodson, "and we're now modernizing it with a Rockwell [Automation] system with help from our local systems integrator, Lord and Co."

The SCADA system is a key to South Durham's ability to save on power and fuel costs. The system alerts operators to the status of peak and off-peak electrical rate periods by radio and on the screen of every computer station. The operator can then choose what type of power supply to use with various systems.

For example, during off-peak periods, when electrical costs are lower, it is better to run the aeration system blowers on standard electrical power and store the digester gas. The operator can switch to the gas engines to power the blowers when electrical costs go up during peak times.

CRITICAL MAINTENANCE

Dodson explains other benefits of the SCADA system's peak and off-peak alerts. "If we are conducting tests or other maintenance activities, we will often delay running this additional equipment until off-peak hours," he says. "The SCADA will also annunciate when we are reaching our peak demand charges and identifies the largest power users. That allows the operator to make decisions on which equipment to run."

The SCADA system also monitors all processes so that the plant can run with one operator per shift from 4 p.m. to 8 a.m. and on weekends.

Maintenance is critical as well, and South Durham benefits from a centralized maintenance division. The division offers a full shop and staff skilled in electrical, building and grounds, instrumentation, mechanics and engineering. "They're able to build and repair many of the parts vital to plant operations, without needing to go to outside vendors," says Dodson. "And when we can't get a part from the original manufacturer, we can build it ourselves.

"The maintenance division is a great arrangement for us. They understand our needs and know what they're doing." Like the capacity to produce its own fuel, home-grown maintenance increases the plant's self-sufficiency and its ability to maintain outstanding and cost-effective wastewater treatment for the residents of Durham. **tpo**

more info:

Ashbrook Simon-Hartley
800/362-9041
www.ashbrookcorp.com

Caterpillar, Inc.
309/675-1000
www.cat.com

Eimco Water Technologies
512/834-6000
www.glv.com

Gardner Denver Inc.
217/222-5400
www.gardnerdenver.com

ITT Water & Wastewater – Sanitaire
414/365-2200
www.sanitaire.com

Klein Technical Solutions GmbH
www.klein-news.de/en

Rockwell Automation Inc.
519/623-1810
www.rockwellautomation.com

SPX Dehydration & Filtration
800/344-2611
www.dollinger-spx.com

Trojan Technologies Inc.
519/457-3400
www.trojanuv.com

WITH A SMILE

PLANT SUPERINTENDENT DENNIS WILSON LOVES HIS HOMETOWN AND HIS JOB OF SAFEGUARDING WATER RESOURCES IN AND AROUND A HISTORIC COMMUNITY

By Jim Force

IF THERE ISN'T A SMILEY FACE ON DENNIS WILSON'S OFFICE DOOR, there should be. Wilson, superintendent of the Oxford (N.C.) Wastewater Treatment Plant, is one of the happiest guys in the water profession.

"I love wastewater," he says. "I think it's the most fascinating thing on the planet. I learn something every day I come to work." Some enthusiasm may stem from the fact that Oxford is his hometown, and he feels he's giving something back to his community in the form of clean water and a sustainable environment.

Wilson graduated from the local high school in 1986 and went straight to work for Hydro Management, then under private contract to manage the Oxford treatment facility. He started as a laborer, cutting grass and doing the heavy lifting. In his six years with the firm, he advanced to operator grade II, but he found it difficult to move higher because the plant didn't have an in-house laboratory to give him the required lab experience.

In 1992, he signed on with the wastewater plant in nearby Warrenton, serving as assistant superintendent and then superintendent. Along the way, he achieved his operator grade IV certification.

Oxford treatment plant superintendent Dennis Wilson examines a mixed liquor sample. (Photography by Donn Young)

But his heart remained in Oxford, a picturesque community whose central business district and residential areas are on the National Register of Historic Places. When the municipal utility resumed public operation of the plant in 2001, he applied for and won the superintendent's position.

"Larry Thomas is the city engineer and public works director, and he and I hit it off real well," Wilson recalls. "It was like a dream come true." Thomas agrees it was a good fit. "Dennis is really dedicated to his job," he says. "He literally lives and breathes it, and he is always giving back to the community."

BACK HOME AGAIN

Today, Wilson looks after a well-run, well-manicured facility that recently underwent a major upgrade and expansion. Average daily flow is about 1.5 mgd from a service area of 4.5 square miles and a population of 9,300. Pretreated industrial flow comes from several companies including Bandag and cosmetic maker Revlon, two of the area's most important employers.

The administration building is about the only thing left from the original earthen lagoon plant, built in 1970 and added onto in 1989. A $12 million expansion designed by Dewberry Engineering of Raleigh, N.C., and completed in September 2006, incorporated new headworks, as well as secondary and advanced treatment processes. Permitted capacity increased from 2.17 mgd to 3.5 mgd.

The head end of the plant now includes a new influent pump station that houses three 40-hp/4,000-gpm pumps (Fairbanks Morse), an Aqua Guard Bar/Filter Screen and screenings compactor (Parkson), aerated grit removal (WSG & Solutions), and Parshall flume.

A pair of Carrousel oxidation ditches (Eimco Water Technologies) provide secondary treatment and include aerobic and anoxic zones for biological nutrient removal. Two 200-hp Excell aerators (Eimco Water Technologies) provide the required oxygen. After final clarification, a splitter box directs flow to a pair of 20-inch-bed traveling bridge filters (Parkson) and two UV light disinfection systems (Trojan).

Oxford Wastewater Treatment Plant
PERMIT AND PERFORMANCE

PARAMETER	PERMIT	ACTUAL (2008 AVG.)	% REMOVAL
BOD	5 mg/l (summer) 10 mg/l (winter)	4.1 mg/l (summer) 3.2 mg/l (winter)	98.9 99.0
TSS	30 mg/l	3.8 mg/l	98.9
NH3-N	1 mg/l (summer) 2 mg/l (winter)	0.3 mg/l (summer) 0.3 mg/l (winter)	98.0 98.5
Total N	—	5.73 mg/l	—
Total P	—	0.32 mg/l	—

The team at the Oxford Wastewater Treatment Plant: from left, Marvin Keeton, pump mechanic; Cindy Marks, laboratory technician and pretreatment coordinator; Antoine Lewis, operator; Jason Melendez, intern; James Wright, operator; and Dennis Wilson, superintendent.

"I love wastewater. I think it's the most fascinating thing on the planet. I learn something every day I come to work."
DENNIS WILSON

profile

Dennis Wilson, Oxford (N.C.) Wastewater Treatment Plant

EXPERIENCE:
23 years

POSITION:
Superintendent

CERTIFICATION:
Grade IV wastewater treatment operator

DEGREE:
High school diploma, Oxford, N.C.; continuing education in wastewater treatment and certification.

GOALS:
Continue to lead the treatment team at Oxford. Oversee additional expansion and upgrading of treatment processes. Manage the budget. Stay put in a nice city he calls "heaven."

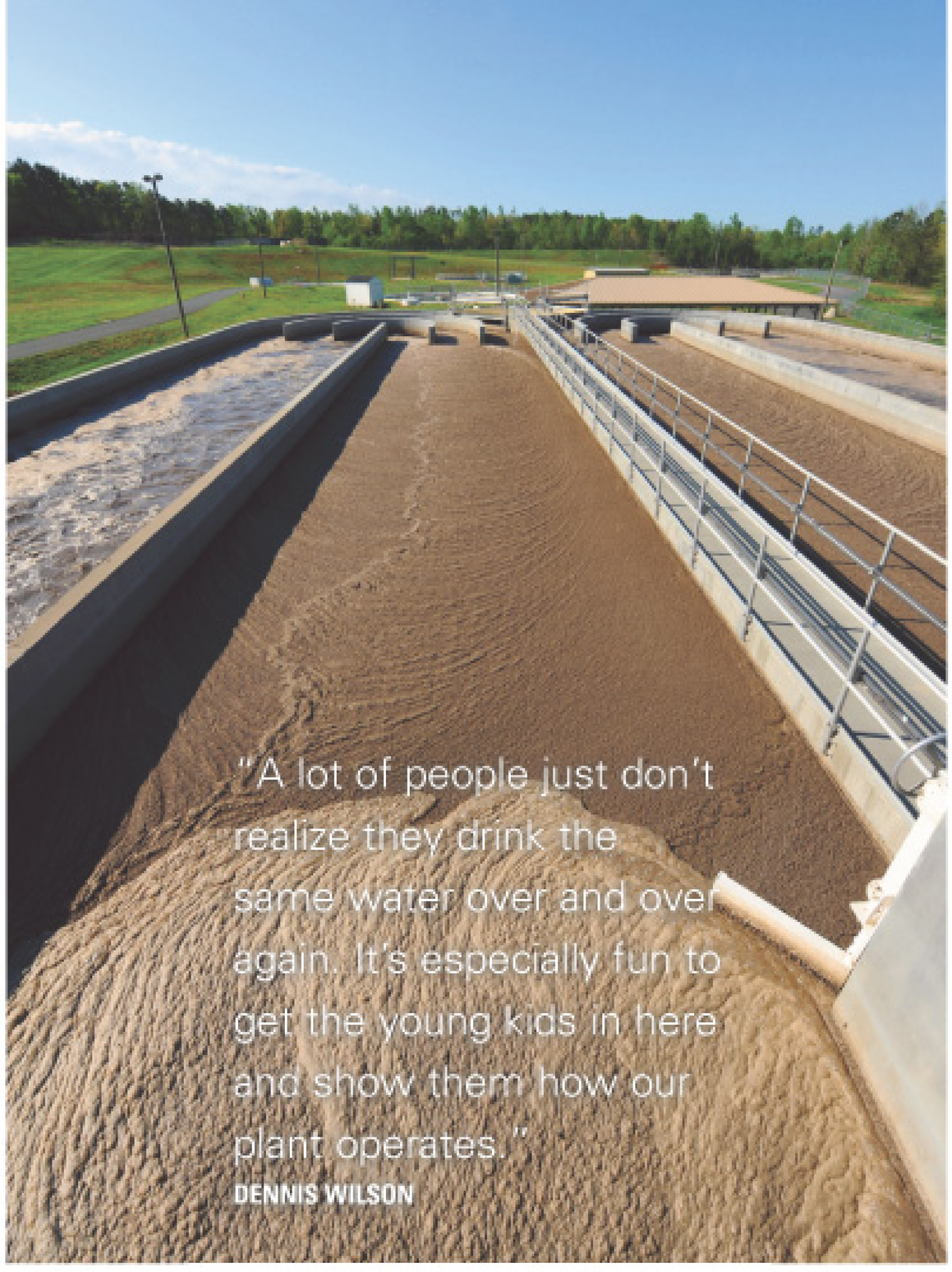
INTERNS LEARN ABOUT WASTEWATER BY WORKING WITH IT

Oxford is home to Vance Granville Community College, where 4,100 curriculum students pursue associate degrees in a wide range of technical and professional studies. Dennis Wilson and the Oxford Wastewater Treatment Plant staff take full advantage of the school by regularly hosting interns from the college's biotechnology program.

"They spend 160 hours with us, working regular shifts alongside our professional staff," says Wilson. Much of the training takes place in the wastewater laboratory, where interns learn how to collect samples and analyze them. They also become well-versed in biological processes and the other systems involved in treating wastewater.

A recent intern, Jason Melendez, 23, says the experience helped him determine his long-term career interests. "I'm pursuing a broad-based biology curriculum, but I wouldn't mind working in the wastewater field when I'm out of school," he says.

Wilson thinks the intern program is a good way to fill the growing need for wastewater treatment professionals: "It's important to get them involved when they're young and spark their interest."



One of two Carrousel activated sludge oxidation ditches at the Oxford Wastewater Treatment Plant. The plant was recognized by the North Carolina AWWA-WEA as the best for operation and maintenance in the state's central section in 2008.

Polished further in a post-aeration channel, the high-quality effluent runs into Fishing Creek and eventually the Tar River, Pamlico Sound and the Atlantic Ocean. The 2006 expansion also added a new return sludge pump, flow monitoring and a new outfall line. The Oxford plant lab is now certified to analyze for total suspended solids, fecal coliform, chlorine, dissolved oxygen, temperature and pH.

Working with the engineer and contractor, Wilson's team carefully planned the expansion so it could be completed alongside the existing treatment processes without disrupting the operation. "Anytime you're digging on an old plant site like ours, you need to be careful," says Wilson. "But things went very smoothly here, and we experienced no problems. It was really seamless."

At 13 acres, there was plenty of room at the Oxford site for the new construction. Contractors installed new processes right alongside the old systems, and then tied them in when ready with no interruptions in service. Representatives from the manufacturers of the new equipment and processes were scheduled on site to provide hands-on training to the Oxford staff.

"Dennis is really dedicated to his job. He literally lives and breathes it, and he is always giving back to the community. … He's worked very hard to get us where we are today."
LARRY THOMAS

HANDLING BIOSOLIDS

An earlier expansion in 2001 dealt with biosolids. "We were coping with an undersized 300,000-gallon digester," explains Wilson. "We added more digester volume, plus a 4-million-gallon holding lagoon." Synagro, a private biosolids contractor, empties the lagoon twice a year, trucking the liquid to area farms, where it is spread on land.

A new SCADA system allows operators to pull up the plant and its processes on their home computers, monitor operations, and check security. "That's a big plus," says Wilson. "We don't have to come back to the plant to do that."

Performance has been top shelf, earning Oxford recognition from the North Carolina AWWA-WEA as the best for operation and maintenance in the state's central section in 2008. "That was very special recognition, coming from our peers," says Wilson. It also marked a significant achievement by Wilson and his staff, since in former times the plant had recorded several violations and fines. Says Wilson: "It was like going from zero to hero."

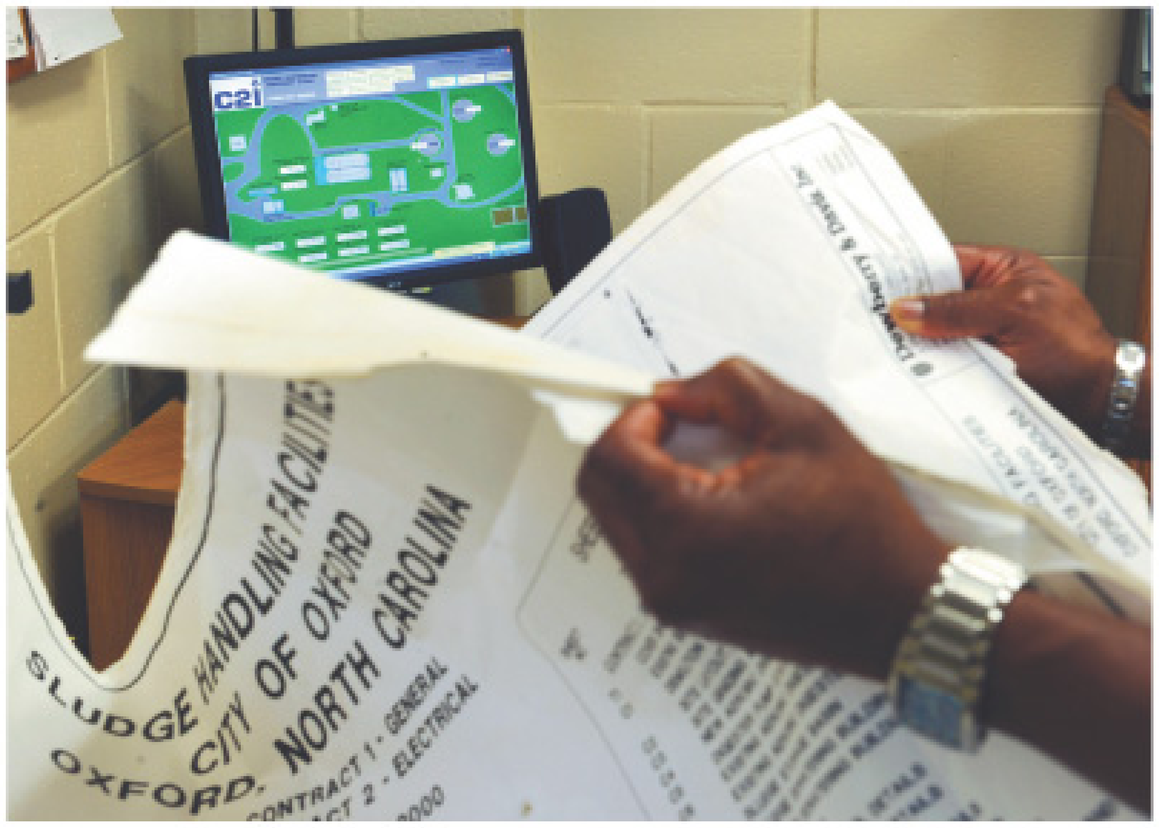
Public works director Thomas says Wilson has made a big difference at Oxford. "Dennis has really turned things around," he says. "He's worked very hard to get us where we are today."

These pleasant outcomes are really a reflection of Wilson's positive personality. "I mark my time as good days — when everything is smooth sailing — versus bad days," says Wilson. "We have a lot more good than bad."

COHESIVE TEAM

But even on bad days, his positive attitude helps get things back on track. "I like to fix things," he says. And he admires his staff of James Wright and Antoine Lewis, operators; Marvin Keeton, pump mechanic; and Cindy Marks, laboratory and pretreatment coordinator. "Our relationship is based on respect," Wilson says. "I've been through it all myself. When folks come to you and you don't know how it works, they lose respect."

Marks, who just came onboard a few months ago, really appreciates Wilson's interaction with his employees. "He's the best manager I've ever worked for," she says. "He really knows wastewater and shares his knowledge with his staff."



Wilson looks over plans for biosolids handling at the Oxford treatment plant.

Wilson also spreads the good word about wastewater with the greater community. Based on the theme of Keeping it Clean Downstream, Oxford's public education program teaches local citizens and students about how wastewater treatment results in clean beaches, flourishing wildlife, and public health.

"A lot of people just don't realize they drink the same water over and over again," Wilson observes. "It's especially fun to get the young kids in here and show them how our plant operates."

Wilson's "dream job" is not without its challenges. North Carolina has a fairly wet climate, and the Oxford system experiences infiltration and inflow problems from time to time. "Nothing we haven't been able to handle," he says. "We haven't gotten blown out yet."

Still, plans are in place to add an equalization basin in one of the old lagoon locations to guard against overflows. Other improvements include configuring a third oxidation ditch, improving the plant's security system, and installing a larger UV system. Other than that, Wilson doesn't anticipate anything earth-shaking. "We try to keep things simple here," he says.

And he doesn't plan to go anywhere: "This is a nice city. I love it here. It's heaven for me." tpo

more info:

Eimco Water Technologies
512/834-6000
www.glv.com

Fairbanks Morse
800/356-6955
www.fairbanksmorse.com

Parkson Corporation
954/974-6610
www.parkson.com

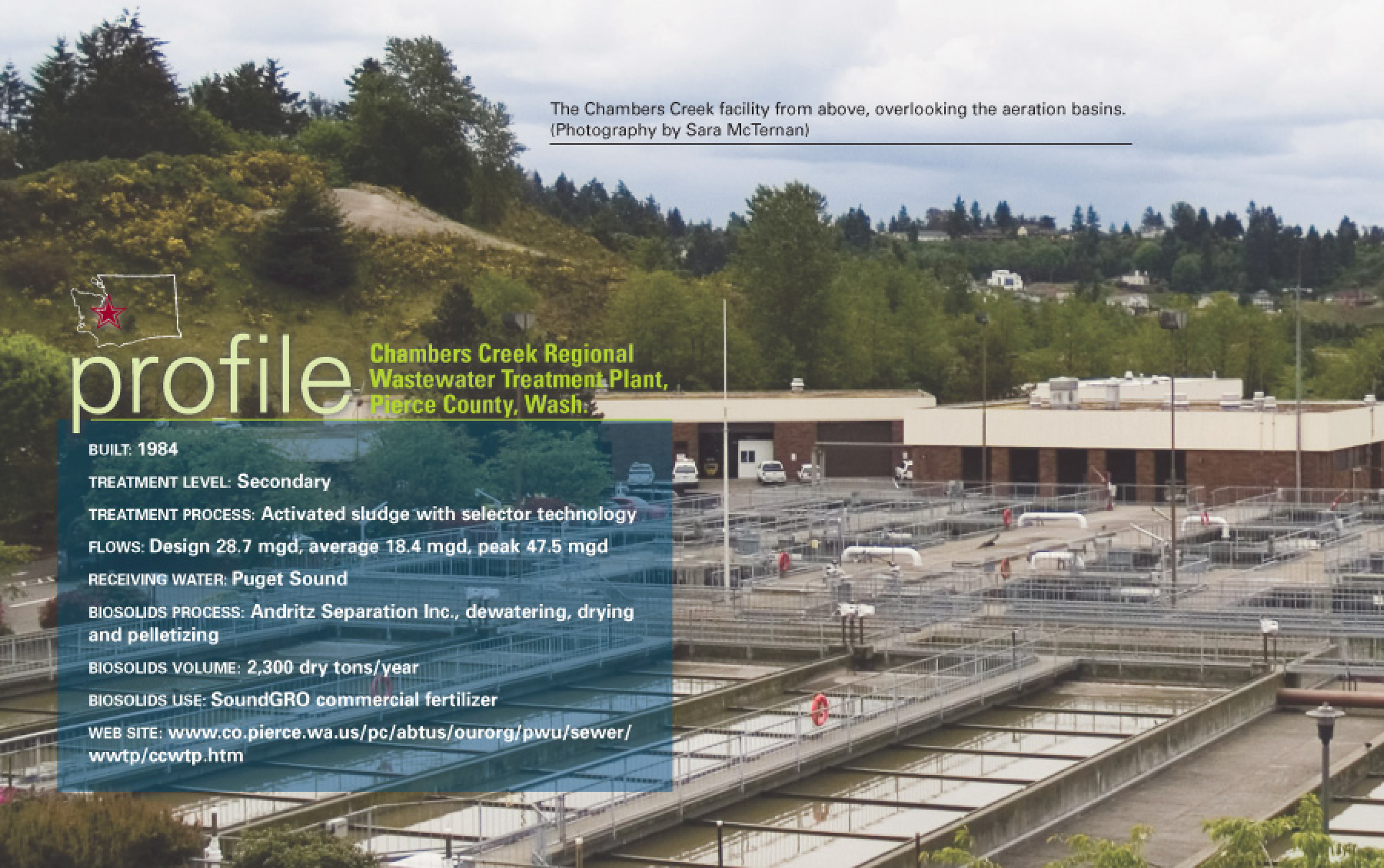
Trojan Technologies Inc.
519/457-3400
www.trojanuv.com

WSG & Solutions Inc.
866/353-7084
www.wsgandsolutions.com

When Treatment Becomes *Production*

THE CHAMBERS CREEK TREATMENT PLANT ADDS PRODUCT-QUALITY ISSUES TO ITS DAY-TO-DAY CONCERNS ABOUT MEETING EFFLUENT REQUIREMENTS

By Diane Gow McDilda



The Chambers Creek facility from above, overlooking the aeration basins. (Photography by Sara McTernan)

profile

Chambers Creek Regional Wastewater Treatment Plant, Pierce County, Wash.

BUILT: 1984

TREATMENT LEVEL: Secondary

TREATMENT PROCESS: Activated sludge with selector technology

FLOWS: Design 28.7 mgd, average 18.4 mgd, peak 47.5 mgd

RECEIVING WATER: Puget Sound

BIOSOLIDS PROCESS: Andritz Separation Inc., dewatering, drying and pelletizing

BIOSOLIDS VOLUME: 2,300 dry tons/year

BIOSOLIDS USE: SoundGRO commercial fertilizer

WEB SITE: www.co.pierce.wa.us/pc/abtus/ourorg/pwu/sewer/wwtp/ccwtp.htm

THE CHAMBERS CREEK REGIONAL WASTEWATER Treatment Plant is also a manufacturing facility. Besides high-quality effluent, the plant produces SoundGRO pelletized fertilizer, a product that meets U.S. EPA Class A standards.

SoundGRO is the state's only registered and trademarked fertilizer produced by a wastewater utility. But with that mark of distinction comes the responsibility of meeting both effluent permit requirements and biosolids criteria — along with product-quality standards.

"It's a challenge from an operations perspective," says Larry Ekstrom, superintendent of the plant in Pierce County, Wash. "Not only do we have water-quality concerns, but since we became a commercial manufacturer, we have product-quality issues, too."

Besides meeting EPA criteria, the product must meet commercial fertilizer 5-4-0 nutrient requirements (the percentages of nitrogen, phosphorus and potassium, respectively). If the biosolids are out of compliance with the fertilizer criteria, the plant risks a fine from the state Department of Agriculture. And quality control also must account for customer satisfaction.

"Overall, there's pellet quality," Ekstrom says. "It's how it holds together. Pellets that crumble into dust don't make a good quality product, and that can affect their market value." For its excellent performance, the Chambers Creek plant received the 2008 Northwest Biosolids Management Award from the Northwest Biosolids Management Association.

Even though they pay for it like any other customer, operators at the plant use the fertilizer at their own homes. "I use it on my lawn and ornamental plants," says Ekstrom. "We see the comparison to our neighbors' lawns.

Plant superintendent Larry Ekstrom in front of the secondary clarifiers.

"It's a challenge from an operations perspective. Not only do we have water-quality concerns, but since we became a commercial manufacturer, we have product-quality issues, too."

LARRY EKSTROM

SoundGRO has iron and it really greens up the lawn. I get comments from my neighbors, asking why my lawn is so green. We can honestly promote it and are able to say, 'These are the results.'"

THE PELLETIZING PROCESS

The Chambers Creek plant, a 28.7-mgd (design) activated sludge facility, is owned and operated by the Pierce County Sewer Utility. The move into manufacturing came in 2001, when the plant staff decided that its Class B biosolids program needed an upgrade.

Previously, biosolids were trucked out of the county for land application, incurring transportation and labor costs. The SoundGRO system came on line in 2005, and since then the plant has transformed a 20 percent solids Class B biosolids product into a 90+ percent solids Class A product. It has eliminated the transportation of 13,000 wet tons of biosolids and 52,000 road

Alice Nguyen, lab analyst, performs a total phosphorus test as part of the plant's annual laboratory accreditation requirement.

HIDDEN MENACE

A common problem for air-handling equipment in wastewater treatment is the presence of siloxanes — common components of soap and other personal-care products that foul and pit surfaces. There is pretreatment equipment on the market that removes siloxanes, but the Chambers Creek Regional Wastewater Treatment Plant hasn't used it yet.

For now, the plant staff avoids damage by regular cleaning. "We have had problems with siloxanes," says plant superintendent Larry Ekstrom. "But our attempt to manage it is to clean it every eight weeks. Cleaning is done within a day. As our capacity grows and demand increases, we may have to look at pretreatment so we don't have to shut down the RTO [regenerative thermal oxidizer] for a day."

miles per year. And the plant now utilizes biogas in its operations.

Operators first work at the wastewater treatment plant before moving over to the fertilizer manufacturing facility (FMF). "Our lead operators work here in the FMF," Ekstrom explains. "Group IIs work all the other areas, excluding the FMF. Ultimately we want to train more people to become operators at the FMF. It's operated at the highest level, and we're encouraging others to learn and gain experience. Through promotion, they will eventually work at the FMF."

Steve Hanenburg, group IV certification, is the chief operator at the wastewater treatment plant, which includes the FMF. Dave Cole, group IV certification, is the supervisor at the FMF, but his responsibilities extend beyond typical wastewater operation tasks.

"Dave's responsible for production and shipping," says Ekstrom. "He handles receiving of materials and the logistics of dealing with the finished product including storage and distribution. It's like a retail establishment."

As in most facilities, the biosolids process begins in the anaerobic digester, but Chambers Creek added drying and pelletizing processes. Andritz Separation Inc. provided the design and equipment.

The first step in the SoundGRO process is dewatering. Material at 2.5 percent solids from the anaerobic digester is conveyed to one of two Andritz D-5 centrifuges. Each processes at 100 gpm and runs at 3,200 rpm. Only one is operated at a time, the other serving as backup. A liquid polymer is added in the centrifuge to help separate the water from the solids.

Biosolids at 20 to 21 percent solids leave the centrifuge and are mixed with recycled pellets, comprised of pieces that are broken or too small to be used as final product. The biosolids mix and bond with undersized pellets to form larger pellets with a solids content of about 70 percent. A total of 47 percent of the product is recycled and brought back to the front of the fertilizer manufacturing plant.

The pellets are then conveyed to the Andritz DDS40 drum dryer system, comprised of three concentric and interconnected drums. Pellets enter the innermost drum and float along the center shaft, moving from one end of the drum to the other. At the end, they pass into the next larger drum, and ultimately into the outermost drum. As the drum rotates, hot air travels back and forth across the pellets until they are dried to a solids content of 94 percent.

The drum inlet air temperature is 850 to 950 degrees F, and the exit temperature is 210 degrees F. The heat for drying is supplied by a furnace fueled by a mixture of 85 percent digester methane and 15 percent natural gas. The digesters use a submerged cover design that allows more efficient gas collection. Typical digester configurations collect 8 to 10 cubic feet per pound of solids. The digesters at Chambers Creek collect 14 to 15 cubic feet per pound.

"If we changed the burner configuration, we could burn all of the biogas," explains Ekstrom. But like many treatment plants located in colder climates, biogas is needed to heat the digesters in winter months, so only a portion can be dedicated to the dryer. An added benefit of using the biogas as fuel is that it destroys the methane, a potent greenhouse gas.

Startup of the system revolves around the dryer drum and is relatively quick. Shutdown takes longer. "Within an hour, we can be at full capacity. As we start up, we primarily watch oxygen levels and temperature," says Ekstrom. "Depending on the temperature, it can take about two hours to shut it down. We have to step down the feed rate and make sure the dryer drum isn't filled with product. We incrementally stop feeding it."

Bob Atkinson, maintenance specialist, repairs a primary clarifier.

SORTING THE PRODUCT

Once the pellets are dried, they must be sorted to maintain a consistent product. The combined hot air and solids travel via an enclosed conveyor to separation units. Initially, in the pre-separation process, a baffle reduces the air velocity, allowing heavier solids to fall out. These are collected and conveyed back to the front of the fertilizer manufacturing plant.

The air and lighter particles enter a polycyclone, which uses the centrifugal force of a cyclone to further separate particulate matter from the air. The polycyclone is a series of spinning tubes. The particulate-laden air enters from the side, and the particles are forced to the side of the cylinder. Then they drop from the walls of the cyclone and are conveyed to the front of the manufacturing plant. Clean air is directed out of the top of the cyclone.

These smaller particles and dust, if not removed, would be a detriment to the quality of the fertilizer. In addition, the dust is ignitable. Low anoxic conditions are maintained in the pre-separator and polycyclone, at 6.5 percent oxygen, to suppress the potential for combustion.

"We're very proud of what we do. We have an exceptional crew here, in all disciplines — operations, maintenance, laboratory, electrical and instrumentation. It really is a team effort and the great expertise they have gives us a high level of efficiency. We have some of the lowest utility rates in the area and it's because they do a stellar job."

LARRY EKSTROM

In front of the wastewater collection maintenance building are team members, from left, back row, Steve Hanenburg, chief operator; Scott Roth, maintenance field supervisor; David Cole, public works and utilities supervisor; front row, Larry Ekstrom, plant superintendent; Tricia Jarbeaux, administration.

CHAMBERS CREEK WASTEWATER TREATMENT PLANT PERMIT REQUIREMENTS	
$CBOD_5$	25 mg/l monthly avg. 40 mg/l weekly avg.
TSS	30 mg/l monthly avg. 45 mg/l weekly avg.
Fecal coliform	200/100ml monthly avg. 400/100ml weekly avg.
pH	6.0 - 9.0

Solids from the separation process are then sent for sorting. A vibratory screen with three tiers separates the pellets by size. As described by Ekstrom, the size designations are finished product, dust, and clinkers (over-sized pellets). The finished product measures 0.5 to 2.5 mm. The oversized particles are 2.5 to 10 mm, and dust is anything smaller than 0.5 mm.

"With the larger pellets, a percentage is crushed in a roller mill and returned," Ekstrom says. "The largest ones are spit out. We try to use them here on the property, or we dispose of them." The dust and undersized pellets bypass the roller mill and return to the mixer. The finished product is sent to a pellet cooler. On average, the plant produces 11 to 12 tons of SoundGRO pelletized fertilizer per day.

"The pellet cooler is a finned radiator," says Ekstrom. "The material passes against stainless steel plates. There's a water side and a product side that allows heat transfer."

After cooling, the pellets are moved by a pneumatic conveyor to one of three silos, each with 10,000 cubic feet of storage capacity — enough for 14 weeks.

Trucks load directly from the bottoms of the silos for bulk deliveries. The plant is equipped to bag SoundGRO fertilizer in 50- and 1,200-pound bags. For the smaller bags, the plant uses auxiliary bagging equipment that pulls from a main silo and feeds into a mini silo. Auxiliary equipment is not needed to fill the larger bags.

Bulk and bagged fertilizer is available for purchase from the treatment plant. The 50-pound bags are also sold by 10 distributors at 13 locations. Bulk fertilizer is sold through four distributorships. The 1,200-pound bags (called tay bags or ton bags) go mostly to large-quantity users, such as golf courses. The bags provide bulk quantities for facilities that don't have storage space to protect it from the weather.

"Most of the fertilizer leaves the plant on a flatbed, bagged, palletized and wrapped," Ekstrom says. The plant bagged some 2.5 million pounds of fertilizer last year. The treatment plant Web site posts average nutrient and heavy metal concentrations for the fertilizer along with suggestions for home users.

MANAGING THE AIR

The air used to dry the pellets is both treated and used in the system. Heated air from the polycyclone is recirculated through the system, but is first run through a Venturri wet scrubber and a regenerative thermal oxidizer (RTO). In the wet scrubber, the air is sprayed with reclaimed water. "We're hitting it with chlorinated water," says Ekstrom. "It's reclaimed water and has residual chlorine that oxidizes some of the odor."

The primary purpose of the wet scrubber is to remove particulate matter, not as pretreatment for the RTO, but strictly as emissions treatment. The RTO consists of three towers, each running a purge, standby and use cycle that allows recycling of any air not completely treated during the oxidation process.

The gas stream enters the RTO and is preheated. It then enters the combustion chamber, where the temperature reaches 1,500 degrees F. Here, volatile organic compounds (VOCs) are destroyed. Typical VOC destruction rates for RTOs are upwards of 99 percent.

The heat generated during the destruction of organics is collected in ceramic media and is used to preheat the incoming gas stream. The treated air is then sent back to the furnace, where it is used to supplement air entering the drum dryer.

From air to effluent to product quality, Chambers Creek has more streams to manage than most wastewater treatment plants. At times it can be complicated, but there's no regretting the success. As Ekstrom says, "We're very proud of what we do. We have an exceptional crew here, in all disciplines — operations, maintenance, laboratory, electrical and instrumentation. It really is a team effort and the great expertise they have gives us a high level of efficiency. We have some of the lowest utility rates in the area and it's because they do a stellar job." **tpo**

more info:

Andritz Separation Inc.
817/465-5611
www.andritz.com

Engineering, Consulting and Contracted Services

By Benjamin Wideman

VORTEX FLOW REGULATORS

John Meunier Inc. has been a supplier of **Hydrovex vortex flow regulators** for the last 25 years. The firm has developed special expertise in supporting cities, municipal engineers, drainage commissioners and urban developers in drainage flow control, meeting expectations in the most stringent flow conditions.

The company's approach and service are designed to ensure rapid delivery of custom-built products that fit the project application. The Hydrovex products line also includes technologies to control and treat combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs). **888/638-6437; www.johnmeunier.com.**

BIOSET PROCESS AND DRYING/GASIFICATION PROCESS

Schwing Bioset Inc. offers communities two green solutions for biosolids management. The **Bioset process** converts the material into a beneficially reusable Class A fertilizer, and a **drying/gasification process** generates recoverable energy.

The Bioset process is an advanced alkaline stabilization technology. It can be easily retrofitted to existing plants and installed by the company's installation crew.

The inert fluidized bed drying process can be combined with a gasification step in a new and innovative method for handling biosolids. Thermally dried biosolids from the SBI dryer are introduced into a gasifier from Primenergy LLC. The heat is then recovered and used to offset a major portion (if not all) of the energy needed in the drying step.

Additional benefits include a typical 95 percent reduction in the weight of the final material, and the elimination of the additional equipment normally required to treat the dryer offgas. Schwing Bioset also offers plant operations and beneficial reuse hauling and marketing services for the end products these technologies produce. **715/247-3433; www.schwingbioset.com.**

BROAD RANGE

Severn Trent Services, one of the largest water and wastewater service firms in the United States, serves more than 4 million end users. Its professionals operate, maintain and manage more than 425 water and wastewater plants in 21 states.

Coverage ranges from single-plant operations to complex collection, distribution and customer service systems, including total utility management. The company also offers services such as customer billing and collection, meter reading, system evaluation, and system repair and reconstruction. It fosters community outreach, total quality management and dedication to maintaining the highest water-quality standards. **800/868-6201; www.severntrentservices.com.**

WASTEWATER SOLUTIONS

Ensafe Inc., a global services company, offers wastewater solutions from remedial system development and optimization for contaminated sites, to wastewater discharge elimination studies for industry, to wastewater design services for municipalities, to passive treatment of stormwater.

The goal is to develop cost-effective solutions that protect receiving waters. EnSafe has no ties to any technology or equipment. Founded in 1980, the company has consistently ranked among the top environmental and design firms by the Engineering News-Record. Wastewater solutions include outsourced treatment plant operations, permitting, remedial systems operations and maintenance, wastewater treatment studies, and equipment evaluations. **800/588-7962; www.ensafe.com. tpo**

It's your magazine.
Tell your story.

TPO welcomes news about your municipal wastewater operation.

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

Small Staff, *Big Performance*

THE REGIONAL TREATMENT FACILITY IN SUSSEX, WIS., MAINTAINS CONSISTENT PERMIT COMPLIANCE IN THE FACE OF CONTINUOUS GROWTH AND TREATMENT PROCESS-EXPANSION

By Jack Powell

Wastewater superintendent Jim Thalke, left, with operators Dennis Wolf, center, and Jon Baumann. (Photography by Kevin Harnack)

RESIDENTIAL AND COMMERCIAL GROWTH HAS been a constant in Waukesha County, Wis., just west of Milwaukee County. Over the last 50 years, the Sussex Regional Water Pollution Control Facility has kept up admirably through well-designed upgrades and expansions and conscientious operation.

Since 1959, the plant has dramatically increased in physical size, design capacity, and treatment performance. It has gone from a 0.3-mgd primary and trickling filter plant serving the Village of Sussex exclusively to a 5.1-mgd regional activated sludge facility with tertiary treatment, serving Sussex as well as the Village of Lannon, the Town of Lisbon, Lisbon Sanitary District #1, and a portion of the Village of Menomonee Falls.

Because of its small receiving stream (Sussex Creek, a Fox River tributary), the state Department of Natural Resources imposed strict effluent limits in the facility's NPDES permit. That includes 5 mg/l BOD, 10 mg/l TSS, 7.0 mg/l dissolved oxygen, 400/100 ml fecal coliform, 1.9 mg/l total phosphorus, and 511 mg/l chlorides.

In practice, the plant regularly achieves less than 2 mg/l BOD and less than 1 mg/l TSS. Ammonia is consistently below the detection limits of 0.06 mg/l, while fecal coliform counts run in single digits.

For delivering these results consistently and cost-effectively with a small, dedicated staff, the plant earned a 2008 Operations Award from the Central States Water Environment Association.

ACCOMMODATING GROWTH

Sussex and its surroundings, about 25 miles northwest of Milwaukee, have seen considerable growth, including two industrial parks and a number of mom-and-pop businesses, along with heavy residential development. "Despite this growth, we have been able to meet the stringent DNR standards as we continue to upgrade and expand the facility," says Jim Thalke, wastewater superintendent.

Thalke, who has been at the plant for 28 years, is quick to credit his staff for its performance. Operators are Gerry Spengler, onboard for 23 years;

profile

Sussex (Wis.) Regional Water Pollution Control Facility

POPULATION SERVED:
15,000

TREATMENT LEVEL:
Tertiary

PLANT PROCESSES:
Activated sludge (oxidation ditch), media filtration

FLOWS:
5.1 mgd design,
2.2 mgd average

BIOSOLIDS:
Contract hauled; injected into cropland

STAFF:
Jim Thalke, wastewater superintendent; Gerry Spengler, Dennis Wolf, Jon Baumann, operators

"We have a small, but innovative staff that is always trying to make things better."
JIM THALKE

The oxidation ditch at the Sussex Regional Water Pollution Control Facility provides secondary treatment in a plant with a 5.1 mgd design flow.

PHOTO BY TED J. RULSEH

Dennis Wolf, 22 years; and Jon Baumann, one year. "We have a small, but innovative staff that is always trying to make things better," Thalke observes.

Automation also contributes to the facility's success. Thalke and staff recently installed a radio-controlled SCADA system (L.W. Allen and Strand Associates) that allows them to monitor plant operations and communicate more effectively when problems arise. Earlier this year, the facility adopted a computerized maintenance management system that also helps manage the laboratory schedule and calculates lab test results from raw data.

GROWTH DRIVES EXPANSION

At present, the largest employer in Sussex is Quad/Graphics, a U.S. printing company, whose local plant produces 40,000 to 50,000 gpd of wastewater. A major pizza manufacturing facility closed down a few years ago, and a maker of health-food bars plans to take it over in the near future.

The Sussex treatment plant serves a total population of 15,000. Sussex itself, while within an easy commute from Milwaukee, is not a bedroom community but a village with its own clear identity and character. "Fortunately, our engineers had the foresight to upgrade the facility because of the growth we've experienced," Thalke says.

A gull flies over the oxidation ditch at the Sussex plant.

In 1978 the facility was upgraded to a 1.0-mgd activated sludge plant with anthracite tertiary filters. Five years later, a belt press was added to improve dewatering of biosolids. Then in 1994 the plant underwent a $9.8 million expansion to become a full-fledged regional facility.

That upgrade included an oxidation ditch, two aerators, a clarifier, a WEMCO Hydrogritter grit removal system (Weir Power & Industrial), Mahr Bar Screen (Headworks Inc.), a biosolids storage tank, and new tertiary filters Siemens Water Technologies).

"During construction, we wanted to control costs, so we made a decision to renovate some existing equipment and purchase other equipment," says Thalke. "We wanted to be as cost-effective as possible and still do the job for the people in our area, now and in the future."

Equipment renovated included a clarifier that was converted into a gravity thickener, a belt press that was converted into a gravity belt thickener, and an old aerobic digester that was converted into a chlorine contact tank for disinfection. In addition, the tertiary filters added in 1978 were removed, and the filter room was converted to house the laboratory, employee locker rooms, superintendent's office, control room, meeting room and garage.

> "We have built our system wisely with good equipment and good people. We should be able to keep up with the region's growth for the foreseeable future."
>
> **JIM THALKE**

A major upgrade completed early in 2009 increased pumping capacity, treatment capacity and storage. It added two aerators, a clarifier, and a UV disinfection system (Trojan). In addition, the gravity sludge thickener was replaced with one of the plant's two 1.5-million-gallon biosolids storage tanks.

Operators Dennis Wolf, left, and Jon Baumann remove a 25-hp motor from the pump room.

READY FOR THE FLOOD

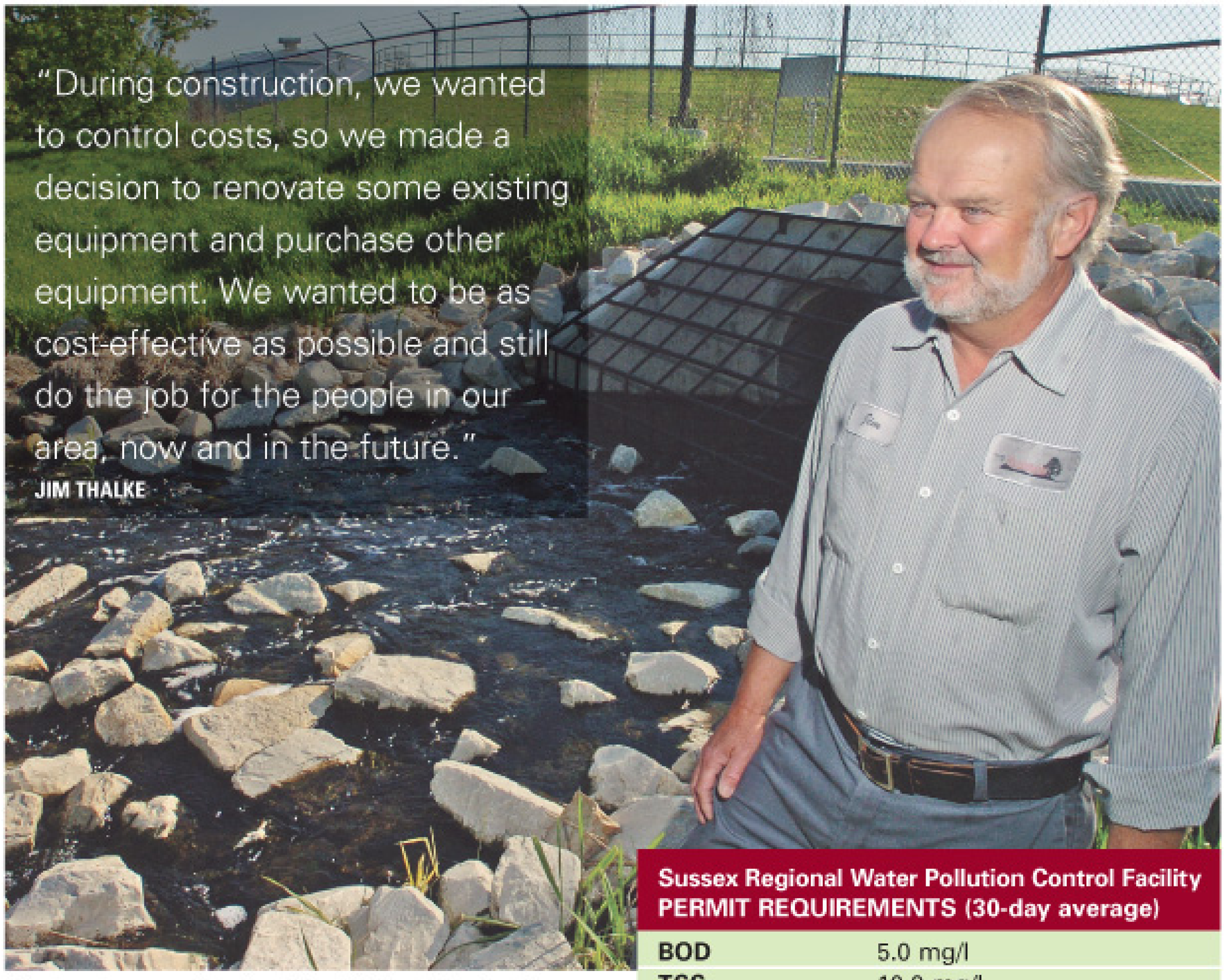
The design of the Sussex Regional Water Pollution Control Facility helps it perform not just in routine conditions but also in wet weather and even flood conditions, at peak flow up to 17 mgd.

During extreme rain events, a splitter box enables the facility to blend secondary- and tertiary-treated water. That means the plant can process high flow without having to run the entire volume through tertiary filtration, says Jim Thalke, wastewater superintendent.

Thalke and his staff analyzed water samples to demonstrate to the Wisconsin Department of Natural Resources that the blended water would meet permit conditions. "We saved $1.2 million in 2004 by avoiding installation of two more tertiary cells," Thalke says.

Good technology and a strong staff served the facility well during a flood in June 2008. Thalke said his team was "very lucky" that three 75-hp vertical turbine raw sewage pumps (Fairbanks Morse) had been installed in a recent upgrade and were operating during the storm. "Our collection system held up well, and we didn't have to blend effluent during that period," Thalke says.

Operator Dennis Wolf checks out the UV disinfection system.



Wastewater superintendent Jim Thalke at the plant's outfall into Sussex Creek, a tributary of the Fox River.

Sussex Regional Water Pollution Control Facility PERMIT REQUIREMENTS (30-day average)	
BOD	5.0 mg/l
TSS	10.0 mg/l
DO	7.0 mg/l
Total P	1.9 mg/l
Chlorides	511 mg/l
Fecal coliform	400/100 ml

DIVERSE SOURCES

The facility's collection system includes nine lift stations: three in Sussex, three in the Town of Lisbon, two in the Village of Lannon, and one in the Village of Menomonee Falls. The plant also receives substantial amounts of holding tank waste from homes and businesses that lie beyond the reach of the collection system and are built on soils not suitable for septic systems.

At the plant headworks, a 3/4-inch bar screen removes rags, sticks and other coarse material from the wastewater, which then flows to a wet well where it is pumped up to two grit collectors that centrifugally remove inert solids.

From there, the wastewater travels to the oxidation ditch and is mixed with return activated sludge. Eight computer-controlled disk aerators (Siemens) maintain the desired dissolved oxygen level and keep the mixed liquor in suspension. Ferric chloride is added for phosphorous removal in the last channel of the oxidation ditch, and from there the wastewater flows to the secondary clarifiers.

The effluent passes over the weirs of the clarifiers and is pumped to four anthracite media filters for tertiary treatment. It is disinfected by the UV system before discharge. The UV system, which replaced chlorine disinfection, has been highly effective against fecal coliform: Counts typically run in single digits. Thalke notes that the tertiary-treated effluent is so clear and low in TSS that the UV bulbs get only a light coating and require little maintenance beyond a routine, periodic wiping-off.

The facility produces class B biosolids without anaerobic digestion. Waste activated sludge at about 0.5 percent solids is delivered to the gravity thickener, which dewaters it to 2.5 to 3.5 percent solids.

The material is then pumped to the biosolids storage tanks, from which water is decanted to achieve up to 4 percent solids. The finished biosolids are trucked by a private hauler (Super Nova Contractors) to two agricultural sites in the immediate area and to several permitted locations in Washington County, to the north. It is land-applied by injection.

Thalke is proud of the Sussex facility's record and its ability to serve a growing area with a small staff. "We have built our system wisely with good equipment and good people," he says. "We should be able to keep up with the region's growth for the foreseeable future." **tpo**

more info:

Fairbanks Morse
800/356-6955
www.fairbanksmorse.com

Headworks Inc.
877/647-6667
www.headworksusa.com

L.W. Allen
800/362-7266
www.lwallen.com

Siemens Water Technologies
866/926-8420
www.water.siemens.com

Strand Associates
608/251-4843
www.strand.com

Trojan Technologies Inc.
519/457-3400
www.trojanuv.com

Weir Specialty Pumps
801-359-8731
www.weirpowerindustrial.com

Winning Big in Atlantic City

THE CITY ISLAND (N.J.) WASTEWATER TREATMENT PLANT CONTROLS ENERGY COSTS WITH OLD-FASHIONED ENERGY CONSERVATION AND LARGE-SCALE WIND AND SOLAR POWER INITIATIVES

By Mike Grennier

Atlantic City is known for gambling, but the City Island Wastewater Treatment Plant's energy and environmental initiatives are far from a roll of the dice. Instead, this 40-mgd activated sludge plant finds success by combining strategic energy conservation practices with some of the largest wind and solar initiatives in the wastewater sector.

It's all about rate stabilization and environmentalism, says Tom Lauletta, P.E., vice president for the Wastewater Division of the Atlantic County Utilities Authority (ACUA), which oversees the plant and the regional wastewater collection system.

"We were looking at 15 percent annual increases in combined energy costs every year at one time," Lauletta says. "Everything we do is designed to keep our rates affordable and efficiently treat the wastewater."

The strategy has paid off. The plant saves more than $1.6 million per year in energy costs. Additionally, energy represents 20 percent of the plant's overall budget, down from 30 percent only a few years ago. The efforts have even turned the plant into a tourist attraction, and its operation has received numerous awards from the National Association for Clean Water Agencies.

"We were looking at 15 percent annual increases in combined energy costs every year at one time. Everything we do is designed to keep our rates affordable and efficiently treat the wastewater."
TOM LAULETTA, P.E

ACUA teamed with WorldWater & Power Corp. (now Entech Solar) and SunDurance Energy LLC to install a 500-kW photovoltaic system at the treatment plant in 2005. The system includes 2,800 Sharp solar panels in five arrays. In the background, one of the plant's five wind turbines is shown. (Photos courtesy of Atlantic County Utilities Authority)

Each of the plant's six aeration tanks requires four aerator impellers. To save energy, the plant switched out the old-style impellers with more efficient screw-type mixers manufactured by Philadelphia Mixing Solutions. Construction of a wind turbine can be seen in the background.

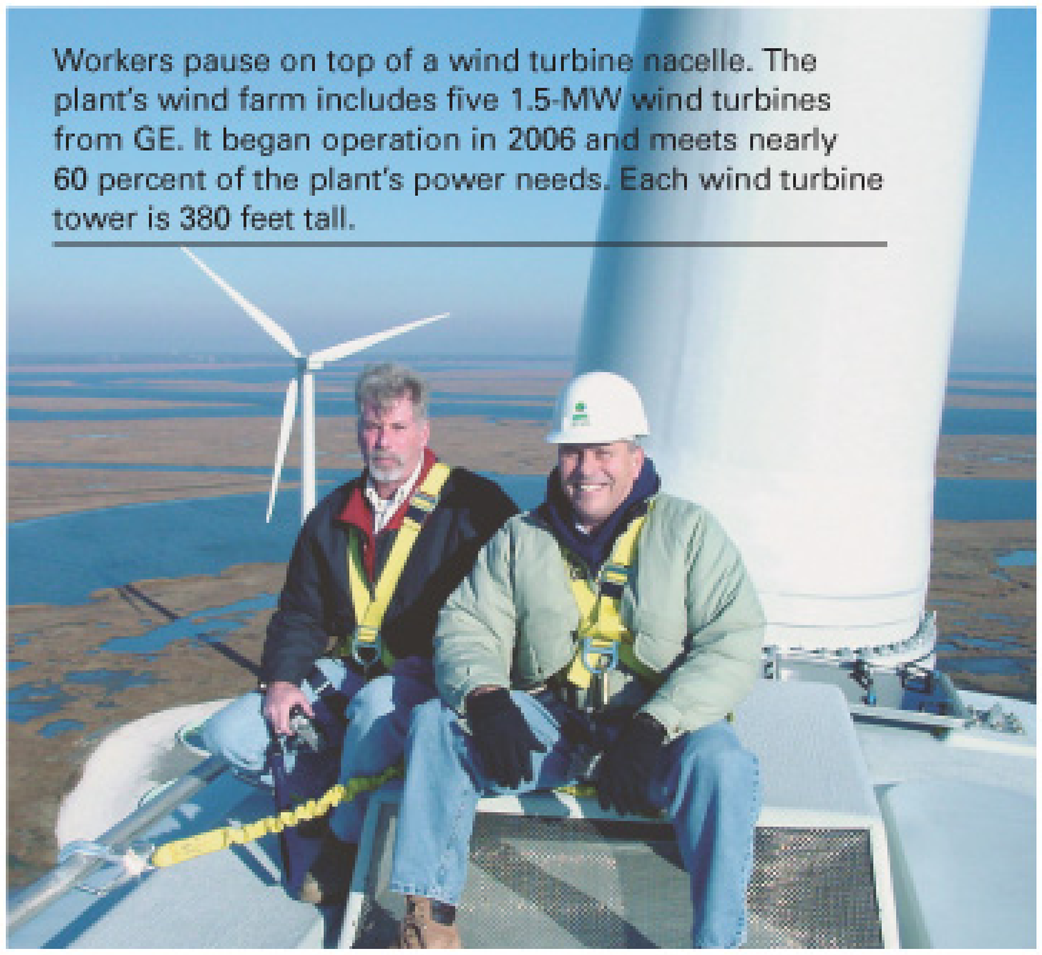
STARTING FROM WITHIN

The City Island plant realized that the first step toward energy savings was to reduce consumption of electricity and natural gas. As such, it targeted improvements in aeration and biosolids processes.

At one point, roughly half the plant's total 2.3-MW demand was for aeration, largely to drive four aerator impellers in each of the plant's six aeration tanks. The plant switched out the old-style impellers with more efficient screw-type mixers manufactured by Philadelphia Mixing Solutions.

It also tied the new mixers into a SCADA system for automated and continuous control based on varying dissolved oxygen requirements. The project was completed in 2006. The result is an 8 percent reduction in energy use, saving $96,000 year.

"Before, we were running our mixers on high speed, possibly exceeding the need for oxygen, or at low speeds, and not meeting the oxygen needs," Lauletta says. "The new aeration process lets us match the oxygen demand throughout the day and all year. We only have to monitor the system as opposed to manually operating it."



Workers pause on top of a wind turbine nacelle. The plant's wind farm includes five 1.5-MW wind turbines from GE. It began operation in 2006 and meets nearly 60 percent of the plant's power needs. Each wind turbine tower is 380 feet tall.

At the same time it tackled aeration, the plant staff set out to feed its incinerator with dryer biosolids to reduce natural gas consumption. They replaced two 20-year-old centrifuges with newer ALDEC 706-G2 centrifuges (Alfa Laval). The new units increased solids content from 25 percent to 32 percent. That, in turn, has reduced natural gas consumption by 23 percent, for annual savings of $429,000.

RIDING THE WIND

While working on energy savings, ACUA began discussions with Jersey-Atlantic Wind LLC, about using wind power to supply part of the plant's electrical needs as part of a long-term lease/power purchase agreement (L/PPA).

"We happen to be in a very windy location and the wind developer thought our site would be ideal for wind turbines," says Lauletta. "They wanted to put the turbines in and we said, 'Okay, as long as it doesn't cost us anything.'"

In addition to its location on the windy Atlantic Coast, the treatment plant had the land and electrical infrastructure in place to accommodate the proposed wind farm. Funded fully by private investors and a variety of government grants, ACUA moved forward with the $12.5 million wind farm in 2005. Considered the first coastal wind farm in the northeastern United States, it includes five 1.5-MW wind turbines (GE). It began operation in 2006 and meets nearly 60 percent of the plant's power needs.

Under the 20-year L/PPA, ACUA will purchase power for 7.95 cents per kWh for 20 years. That compares with approximately 13.5 cents per kWh for utility power. The agreement saved $664,146 in 2008, including $15,000 ACUA collects as the wind farm's landlord. To date, the plant and its ratepayers have benefited to the tune of $1.7 million.

City Island plant operators assist with wind farm maintenance on occasion, although GE is primarily responsible for maintenance. "When the GE person needs help, we provide some labor to assist," says Lauletta, "but we didn't have to staff up for it, plus we actually get a little revenue from it."

An added benefit of the wind farm is publicity for renewable energy sources: The 380-foot-tall towers attract a lot of positive attention. Each year, the treatment plant plays host to thousands of visitors. "I think it was last year when we were giving a tour and a family wanted to know where the gift shop was," says Lauletta.

SOLAR PAYS DIVIDENDS

The notion of cost-effective wind power drove ACUA to consider solar power, as well. "The benefits of wind power were much more than we anticipated, but solar is much, much better than we anticipated," says Lauletta.

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

ACUA teamed with WorldWater & Power Corp. (now Entech Solar) and SunDurance Energy LLC to install a 500-kW photovoltaic system at the treatment plant in 2005. The system includes 2,800 Sharp solar panels in five arrays, which include four separate ground- and rooftop-mounted units. The fifth unit is a canopy array over the employee parking lot.

Through 12 months ending in May 2008, the system generated 665,737 kWh to meet about 3 percent of the plant's power needs. That year, the plant saved just over $90,000 by not having to purchase power. In addition, ACUA can sell Renewable Energy Credits (RECs) to others in the state.

"We happen to be in a very windy location and the wind developer thought our site would be ideal for wind turbines. They wanted to put the turbines in and we said, 'Okay, as long as it doesn't cost us anything.'"

TOM LAULETTA, P.E.

One REC is equivalent to 1,000 kWh. Initially, each REC was worth $150, but that has increased to $640. In 2008, ACUA generated $338,416 by selling the credits. When it's all said and done, the agency expects a five-year payback on the solar system.

Lauletta says solar power is easy to own and operate. "We thought there would be more maintenance, but solar has been wonderful as far as that's concerned," he says. "It just sits there and makes power."

DOING EVEN MORE

ACUA also takes advantage of an energy curtailment program through North American Power Partners (NAPP), an electric utility demand service provider. The program helps industrial users lower energy costs and reduce demand on the grid.

Under the program, NAPP is allowed to ask the treatment plant to reduce power consumption for 15 minutes once a month during the utility's peak demand period. At those times, the plant shuts down its aeration system and effluent pumps. The arrangement generates $50,000 in revenue without adversely affecting processes. The plant receives the savings even when not asked to curtail power consumption. "It has very, very little effect on the system and we're paid to be sitting there ready to do it," Lauletta says.

The City Island plant is looking into more ways to save energy and help protect the environment. The staff is studying the feasibility of capturing waste heat from the plant's incinerator and using it to generate electricity. A fats, oils and grease program is also on the drawing board.

All in all, the plant has made significant strides in reducing its dependence on fossil fuels. Says Lauletta: "We definitely take a lot of pride in our energy program." **tpo**

more info:

Alfa Laval Inc.
866/253-2528
www.alfalaval.com

Entech Solar
817/224-3500
www.entechsolar.com

GE Energy
www.gepower.com

Philadelphia Mixing Solutions
800/733-1341
www.philamixers.com

SunDurance Energy LLC
908/668-5500
www.sundurranceenergy.com

Biological Workforce

MICROBIAL INOCULATOR GENERATORS HELP A TREATMENT PLANT CURE PONDING IN TRICKLING FILTERS AND RESOLVE PERMIT ISSUES WHILE IMPROVING TREATMENT AND ODOR CONTROL

By Scottie Dayton

Assistant operator Mike Pierre checks a Microbial Inoculator Generator unit. (Photos courtesy of Rushville Wastewater Treatment Plant)

Ponding in its two open rock trickling filters and the manifold pressure relief tube spilling over during normal dose cycles plagued the Rushville (N.Y.) Wastewater Treatment Plant and produced dissolved oxygen and ammonia issues. The situation worsened each year with increased flows.

The breaking point arrived when the small lagoon system treating wastewater from the local high school neared the end of its life expectancy. The school board, which owned and operated the system, preferred hooking to the Rushville sewer instead of upgrading its facility. But the additional 8,000 gpd from the school would cause the plant to exceed its permitted discharge of 60,000 gpd.

The village hired Sniedze Associates, an engineering firm in Canandaigua, N.Y., to design a solution. Researching options, Tom Burke, P.E., learned that the town of Savannah, N.Y., had remediated its buried sand filters by using White Knight Microbial Inoculator Generators (Knight Treatment Systems Inc.). A visit to Savannah's facility and data collected on the system convinced Rushville consultants to use the technology to remediate their treatment process.

The solution proved cost-effective and ended ponding and odors, increased plant capacity, and eliminated clogging in both filter beds' pressure distribution manifolds.

THE EXPERIMENT

Each lot in Rushville, population 620, has its own septic tank maintained by the village. The tanks were connected to a sewer when the village treatment plant opened in 1988. It serves 275 residential and 12 commercial accounts generating 55,000 gpd.

Treating wastewater with filtration beds was an experiment for the state Department of Environmental Conservation. Although the technology is common and successful in the hot, arid southwest, bacteria in the exposed, uncovered beds went dormant during New York winters and drowned during spring and summer rains.

The combination created compliance issues. "Our ammonia permit is for 1.5 mg/l, and we hit 3.0 mg/l in winter," says public works supervisor Art Rilands. "We averaged 6.5 mg/l DO in summer, and we're permitted for 7.0 mg/l." Because the worst of the situations lasted only one month, regulatory authorities did not cite the plant.

Until the upgrade, the settled wastewater from individual septic tanks gravity-fed through 4- and 8-inch PVC sewers into three 6,000-gallon community septic tanks, then into a lift station. Two 7.5-hp Hydromatic pumps in the lift station pumped the effluent 35 feet up to the plant, through a drum screen, and out to the dual 110- by 220-foot trickling filters.

SEEKING ANSWERS

To help meet CBOD and DO permit levels, 4-inch pipes at the bottom of the beds collected the liquids. Forty percent of the water gravity-flowed back to the plant for recirculation to the beds. The remainder flowed to a 10,000-gallon concrete aeration basin. A paddle-type aerator in the basin ran continuously to provide sufficient aeration before discharging water to a tributary of Canandaigua Lake.

The original design called for alternate dosing. As flows increased, however, plugged emitters became a big problem. Trying to prevent the open ones from

TPO welcomes news about interesting methods or uses of technology at your facility for future articles in the How We Do It column. Send your ideas to editor@tpomag.com or call 877/953-3301.

Wastewater passes through an aerobic "nursery" with five sections, each containing White Knight Microbial Inoculator Generator units from Knight Treatment Systems Inc.

ponding, Rilands' predecessor switched to dosing both beds simultaneously.

"That didn't work for very long," says Rilands. "He then tried enlarging the 1/8-inch emitters to 1/4 inch in the 2-inch distribution pipes. They did that on one-quarter of the west bed and gave up. It didn't work."

As a partial solution, Rilands and assistant Mike Pierre jetted the distribution lines twice a year using a DT 100 trailer-mounted pressure washer (Harben Inc.) with 3/4-inch hose. Although the jetter was rated at 8 gpm/3,000 psi, Rilands cleaned at 7 gpm/2,000 psi. It took one day to jet the lines in each bed. During cleaning, a gate valve in the plant diverted the flow to the alternate field.

UP WITH CAPACITY

The upgrade, which increased the plant's capacity to 79,000 gpd, went on-line in late August 2008. For the first time, the high school discharged to the sewer system.

> "The ponding has stopped, the microbes are eating the biomat in the filtration beds, and the odor control is much better."
>
> **ART RILANDS**

Before entering the plant, the settled wastewater now passes through an 80,000-gallon concrete surge tank with a coarse air diffuser, then into a 20,000-gallon concrete aerobic "nursery" tank divided into five sections. Each 4,000-gallon section holds five municipal model White Knight Microbial Inoculator Generator columns.

The 46-inch-high, 16-inch-diameter high-density polyethylene columns have 1-inch tubular growth media in the center. Inserted into the media is a packet of IOS-500 bacterial matrix fixed to an inoculating wand. Microorganisms reproduce on the media and within the mixed liquor flowing through and around the columns.

An air pump introduces a fine bubble mix through a diffuser in the bottom of each column. Rising bubbles oxygenate the wastewater and activate the initial charge of bacteria, which digest the organic constituents. Effluent from the generators is pumped through the drum screen, then to the filter beds. As the microorganisms populate the nursery, enough are discharged to the beds to continue biological remediation.

GETTING BETTER

Effluent is recirculated as before, except that a fine air diffuser has replaced the paddle-type aerator in the aeration basin. "The diffuser works better, allowing us to recirculate only 10 hours a day instead of 24," says Rilands.

Because of the late-season startup followed by a harsh winter, it could take six to 12 months before Rilands sees significant changes in DO, CBOD and ammonia levels, but he has noticed other improvements. "The ponding stopped, the microbes are eating the biomat in the filtration beds, and the odor control is much better," he says.

This spring produced a significant snow melt and heavy rains that exacerbated the treatment plant's serious infiltration issues. At the height of the event, 275,000 gpd ran through the facility without affecting treatment efficiency.

The amount of maintenance at the plant remains the same. The microbial system requires pumping every other month. "Mike and I pull the columns to make sure no debris is sticking to them," says Rilands. "The biggest culprit is paper that sometimes sneaks through. We tap the tubes with a plastic rod to dislodge any film. We also tap a rubber membrane at the bottom of the column to clean it. The work takes half a day."

The upgrade changes anaerobic wastewater to aerobic more quickly, and Rilands sees the whole treatment process working better and more efficiently. **tpo**

more info:

Harben Inc.
800/327-5387
www.harben.com

Knight Treatment Systems Inc.
800-560-2454
www.knighttreatmentsystems.com

TIPS AND TRICKS

The Case of the Failing Fans

Submitted by: Joe Young, wastewater water treatment supervisor, Ecology Management Inc., a business of OK Industries, Fort Smith, Ark. Contact: JYoung@okfoods.com.

We have four blowers that aerate our activated sludge. Three are 100-hp and the other is 150-hp. I was having problems with overheating inside the cabinets, and it was causing all sorts of maintenance problems, including the blowers failing (quite costly at $10,000 to $15,000 per blower).

After observing the cabinets for a few days, I realized that the exhaust fans were failing. We all thought they were going out because of the blower problems, but it was just the opposite. The fans were pulling cooler outside air in past the blowers for cooling purposes. Then it would pull the heated air out of the top of the cabinets. The hot air had to travel over the exhaust fan motors, and the fans could not stand the extreme heat off the blowers.

I had one extra port cut into the top of each of the cabinets, for an extra fan to supply more cool air than the blower demanded. I also had the mounting brackets flipped over. Now the fans push cool air past themselves and through the cabinets, and push the excess hot air out the original intake hole. Basically, we just reversed the path of the airflow. There are no more overheating problems with fans or blowers — and that is a lot better for the budget and the treatment process. tpo

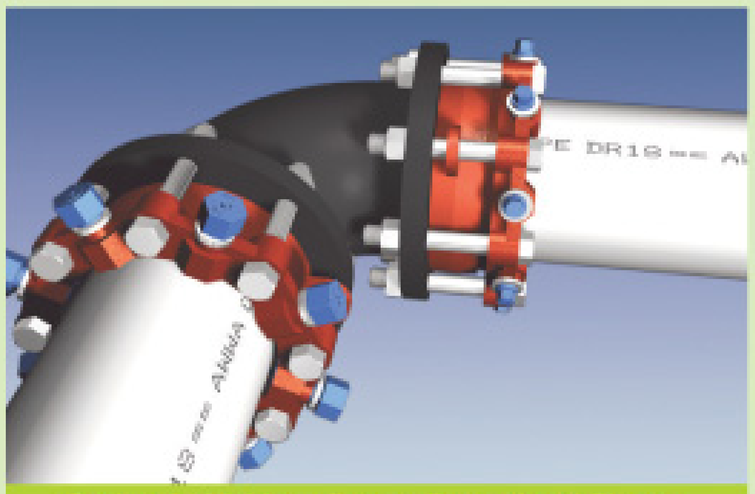
Share Your Idea

Tips and Tricks is an occasional feature of *TPO* in which wastewater operators tell how they took innovative measures to solve problems.

We welcome reader contributions to this column. Please send them to editor@tpomag.com.

Pipes and Fittings

By Benjamin Wideman



Series 2100 Megaflange Restrained Flange Adapter by EBAA Iron Inc.

Flanged pipe fittings from Banjo Corp.

LABELING SOFTWARE

MaxiSoft PipeMarker V.2 labeling software from **K-Sun Corp.** is available for the Windows Vista operating system. It includes more than 500 preformatted ANSI, OSHA, IIAR, CGA, NFPA and ASME compliant pipe and valve markers in Spanish, English and bilingual formats. It contains Microsoft Word templates, providing flexibility for wide-format, in-house label production.

Users can make custom markers by adding/importing multi-line text, symbols, logos, service or emergency contact numbers, temperature and pressure information, company information, and signal words, plus flow arrows and chevrons. Wrap-around arrow tape and custom pattern barrier tape can be printed on continuous marker materials in various ANSI colors.

Users can create warehouse rack or bin labels, banners, product labels, safety labels and more. The software can be used with Windows printers but works best with the K-Sun 9200XXLL thermal transfer printer and adhesive-backed Polydurable media to print adhesive-backed pipe markers up to 50 inches long. **800/622-6312; www.ksun.com.**

MaxiSoft PipeMarker V.2 labeling software from K-Sun Corp.

HANDHELD VALVE OPERATOR

The **RS-2 handheld valve operator** from **E.H. Wachs Co.** is a versatile device for fast, safe and reliable opening and closing of water and wastewater valves. It is designed for quick setup and one-person operation. Transportable and lightweight at 40 pounds, it delivers up to 800 foot-pounds of torque and operates 6- to 60-inch valves. It is available in pneumatic, hydraulic or electric drive.

Optional equipment includes VITALS software with complete data logging and the ability to synchronize RS-2 stored information with a desktop computer. The unit has forward and reverse operation with variable speed control. It mounts to any hand wheel with a universal hand wheel adapter and has a standard digital LCD counter with push to reset. **800/323-8185; www.ehwachs.com.**

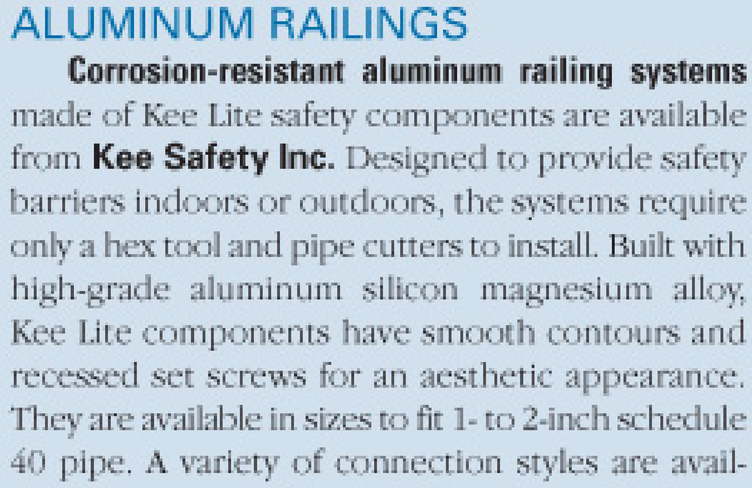
RS-2 handheld valve operator from E.H. Wachs Co.

FLANGE ADAPTER

The **Series 2100 Megaflange Restrained Flange Adapter** by **EBAA Iron Inc.** is a field-adaptable, wedge-style restrained flanging system. It has a restraint ring and a gasket ring for maximum flexibility during and after installation. The device can be used on AWWA C900 and C905 PVC, IPS O.D. (Class) PVC, ductile iron, steel and HDPE pipe. It is available in 3- to 48-inch sizes. **800/433-1716; www.ebaa.com.**

FLANGED PIPE FITTINGS

Flanged pipe fittings from **Banjo Corp.** offer quick and easy assembly in joining pipes, fittings, hoses and valves. Users get a positive seal by mating two flanges with a gasket and stainless steel worm drive clamp. The clamp can be removed for easy disassembly anywhere in the piping system. Flanges offer 360-degree orientation. No pipe sealant or tape is required. The fittings are made of heavy-duty glass-reinforced polypropylene. Gaskets are available in EPDM, FKM and Buna. NPT thread sizes range from 1/2-inch to 3 inches. **765/362-7367; www.banjocorp.com.**



Corrosion-resistant aluminum railing systems from Kee Safety Inc.

ALUMINUM RAILINGS

Corrosion-resistant aluminum railing systems made of Kee Lite safety components are available from **Kee Safety Inc.** Designed to provide safety barriers indoors or outdoors, the systems require only a hex tool and pipe cutters to install. Built with high-grade aluminum silicon magnesium alloy, Kee Lite components have smooth contours and recessed set screws for an aesthetic appearance. They are available in sizes to fit 1- to 2-inch schedule 40 pipe. A variety of connection styles are available to accommodate straight and curved railings, walkways, stairs, mezzanines and other installations. **800/851-5181; www.keesafety.com.**

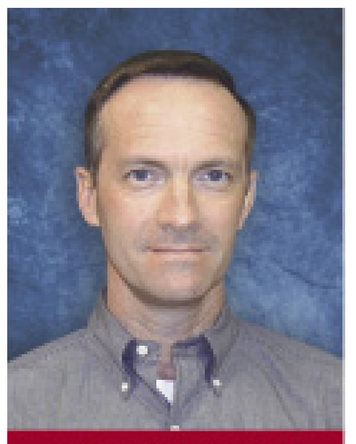
LEVER GATE VALVE

The **MZ Quick-Acting Lever Gate Valve 2x Female NPT Thread** is manufactured in Italy by **Metaltecnica,** a manufacturer of valves and fittings for the liquid waste industry. Made of brass and alloy, the valve is available in 2-, 3-, 4- and 6-inch sizes. **800/881-6720; www.agribusinesssupply.com. tpo**

Taking It to the Road

OPERATORS IN TEXAS LEARN COMPREHENSIVE ADVANCED LABORATORY SKILLS BY WAY OF A FULLY EQUIPPED MOBILE TRAINING UNIT THAT REGULARLY TRAVELS THE STATE

By Ted J. Rulseh


Keith McLeroy

Tighter permit limits facing wastewater treatment plants raise the importance of accurate laboratory testing.

The Texas Engineering Extension Service (TEEX) helps treatment operators meet that need with an Intermediate Wastewater Laboratory course taught at locations around the state in a specially outfitted mobile training unit.

TEEX, part of The Texas A&M University System, offers a wide range of technical training programs in public works as well as fire and rescue services, homeland security, public safety and security, safety and health, and other areas.

The wastewater lab course provides comprehensive hands-on training in analysis of raw and effluent wastewaters, using methods approved by the U.S. EPA and the Texas Commission on Environmental Quality (TCEQ). Instructor Keith McLeroy says he is not aware of any similar program offered in a mobile unit in the country. McLeroy provided details about the course in an interview with *Treatment Plant Operator.*

tpo: Why has your organization placed such a priority on laboratory training for wastewater professionals?

McLeroy: In Texas, as in many states, effluent quality regulations are becoming very tight. BODs are dropping. We now have *E. coli* limits appearing in many wastewater treatment plant discharge permits. Ammonia limits are showing up at less than 3 mg/l.

To get to these new levels of efficiency in treatment, it's got to start in the laboratory. We've had great success with operators and lab technicians taking back the knowledge gained from this class and applying it to get their plants to work more efficiently and to get their laboratories to be more efficient also.

tpo: How does the mobile laboratory fit in with the other training programs that TEEX offers?

McLeroy: My division is water and environmental training, and we are the primary water and wastewater training provider in Texas. There are about 26,000 licensed water and wastewater operators in the state. We train those individuals either for their new licenses or for renewal licenses, which are issued by the TCEQ. Certifications range from Level D, which is the entry level, on up to Level A.

We teach 35 different water and wastewater courses throughout the state, serving about 12,000 students a year. My primary niche is laboratory training. In our mobile trailer over the past six years, we have taught close to 600 students in Intermediate Wastewater Laboratory, and another 500 in Intermediate Water Laboratory. We have about 43,000 miles on the trailer so far, all of it in Texas.

"We couldn't teach our usual class size, which is 12 people, in most in-house labs. And in any case, doing so would interrupt the daily operations of the plant. With the mobile trailer, we're able to get the operators into a full-scale laboratory environment and offer them the latest and greatest in technologies and methods." **KEITH McLEROY**

PHOTOS COURTESY OF THE TEXAS ENGINEERING EXTENSION SERVICE

The Mobile Training Laboratory provides operator training on the latest water and wastewater testing equipment and techniques used at treatment plants throughout Texas.

tpo: What does this mobile laboratory look like? How is it equipped?

McLeroy: It's a 45-foot-long trailer. The total value of the trailer and the truck that pulls it is about $500,000. With all the equipment and laboratory instrumentation onboard, at any given time I'm pulling about $600,000 down the road with me.

The trailer includes a diesel generator that fully runs all the electrical components. We have a working fume hood, a vacuum pump system, and hot and cold running water. Our instrumentation includes

Operators at Texas treatment plants learn advanced lab skills in a mobile trailer developed by the Texas Engineering Extension Service. Instruments onboard include ion-selective electrode meters, DO meters, total organic carbon analyzers, pH meters, spectrophotometers, COD analyzers, and other equipment.

ion-selective electrode meters, DO meters, total organic carbon analyzers, pH meters, spectrophotometers, COD analyzers, and a wide variety of smaller bench-top instrumentation kits and field-portable kits.

We also carry all the general apparatus that's needed: glassware, small portable ovens, analytical balances, and digital microscopes that we can use to project images up on a screen for checking their activated sludge. We also teach bacteriological work and wet chemistry methods, such as titrations and solids weighing. We can do everything a typical treatment plant lab can do, and beyond.

> "Students come in anywhere from 18 years old to 80. I've had people in class who have never touched a piece of laboratory equipment in their lives, and I've also had Ph.D.s. If I get 12 people, I guarantee all 12 will be of different ages, and they'll all be at different levels of expertise."
>
> **KEITH McLEROY**

tpo: Why do you need such a fully equipped mobile unit? Why not just offer instruction in a treatment plant laboratory?

McLeroy: The majority of wastewater treatment plants have very small laboratories. We couldn't teach our usual class size, which is 12 people, in most in-house labs. And in any case, doing so would interrupt the daily operations of the plant. With the mobile trailer, we're able to get the operators into a full-scale laboratory environment and offer them the latest and greatest in technologies and methods.

tpo: How is the class itself structured?

McLeroy: It's a 32-hour class, taught Monday through Friday. It's all hands-on instruction. We teach the operators everything starting from the entry level to get them introduced to the laboratory tests. Then we run actual samples collected from the treatment plant where we're visiting.

We run them through the procedures from start to finish using standard, approved methods. We teach a lot of process control methodology. Our primary goal is to teach the students how to come up with results that meet exacting quality assurance and quality control standards. In Texas, each wastewater treatment plant has to file a monthly discharge report (MDR) for its effluent. We teach them how to take their lab numbers and apply them to their MDRs, how to balance out the plant, and how to meet the state QA and QC regulations and rules.

tpo: Is there an exam at the end of the class?

McLeroy: There is no exam. The students don't get a pass or fail. If they attend the full 32 hours, they get that credit toward certification. The way I know they have learned the material is that during their experiments, I ask questions and facilitate discussions. In addition, they have to prove the QA and QC results of their lab numbers.

We get raw influent and effluent samples and run them exactly as they would in their in-house lab, and at the end of the day, they have to prove that their results are accurate. We wrap up each lab session day by meeting back in the classroom and lecturing on what we learned and where our mistakes were. Then we go through and look at all the lab data and practice our calculations. If somebody has made a mistake, that's where we learn how to backtrack the lab errors and correct for them.

tpo: What is the typical age or level of expertise of students?

McLeroy: Students come in anywhere from 18 years old to 80. I've had people in class who have never touched a piece of laboratory equipment in their lives, and I've also had Ph.D.s. If I get 12 people, I guarantee all 12 will be of different ages, and they'll all be at different levels of expertise.

Also, we have gone to larger cities like Houston and Dallas, where they have full-scale labs at their plants. They like to send their full-time lab technicians to the class to refresh themselves, get updated on new technologies, and ensure that they're still meeting their QA and QC requirements.

In each case, I'll try to get to know what everybody's expertise is, and then divide them into partner teams, so that beginners are teamed with people who have been in the business for quite some time. That way, they all learn from each other.

tpo: What are some of the key points of emphasis in the class?

McLeroy: I teach a lot of troubleshooting — that's very important. Let's say you're running an ammonia analysis. You have to calibrate your analyzer using standards and setting up benchmark curves. If the meter is not calibrating properly, one of the more important things you have to learn in a lab is how to troubleshoot it.

Also, after we get all the results, we teach them the mathematics. I teach the class how to take their lab numbers and put them into an application mode at their treatment plant. That is a very important aspect of meeting their effluent discharge permit limits and getting their plant to run as efficiently as possible.

tpo: How do you ensure that the training keeps up with changes operators and lab technicians will face in the real world?

McLeroy: We stay very well ahead of laboratory requirements and methodologies. That way, if the state approves a new method, or unapproves an old one, we're four or five months ahead of the game.

"We have great relationships with laboratory equipment vendors and high-end instrumentation companies. They often loan us the latest instruments and technologies so that I can introduce them to our students."

KEITH McLEROY

We have very good relationships with the TCEQ in regard to new methods and new regulations. They give us quite a bit of a heads-up, so that we can get that kind of information out to the operators.

We also stay ahead of the technology. Any time new instrumentation comes out, we're ready to purchase it or have it made available for us to get out on the road and teach it. Each year, we spend quite a bit of money on instrumentation. We have great relationships with laboratory equipment vendors and high-end instrumentation companies. They often loan us the latest instruments and technologies so that I can introduce them to our students.

tpo: How do you see the laboratory course affecting the quality of performance in wastewater treatment?

McLeroy: I think it has a huge impact. We've had quite a bit of success over the past six years, where students have taken their knowledge back to their treatment plants and back to their laboratories. Number one, they become more accurate and precise with their data. They may also learn that some methodology they had been using might not be correct, or that they had not been using the most exacting methods.

No matter the size of your lab, a method is a method; technique is technique. Whatever level you're at, it all boils down to your methodology, your techniques and your laboratory skills. That's what our class is all about: Getting operators who aren't full-time scientists to think scientifically when running lab tests, so that they can take the results and make adjustments to get their plants working more efficiently.

tpo: How much does your program cost? How is it supported financially?

McLeroy: The cost of the Intermediate Wastewater Laboratory class is $505 per student. The mobile lab is self-supporting on that basis. That is actually very affordable when you look at the hands-on work we do and how convenient we make it for the cities and utilities to send their personnel.

tpo: What kind of feedback do you receive from students and from the treatment agencies?

McLeroy: We give the students an evaluation form at the end of the class, and about 99.9 percent of the time, the feedback is incredibly positive. The way I know the utility managers and plant managers appreciate the class is when they ask me to come back. I've been back to several cities four or five times already.

tpo: How does the regulatory community respond to the program?

McLeroy: The TCEQ asks me to come and teach them. That's the best feedback there is. The information I give to the treatment operators and plant lab technicians is the same information the TCEQ plant inspectors need. In addition, the TCEQ has at times asked us to set up classes at certain utilities that might be having trouble.

tpo: Could other states replicate the mobile laboratory concept?

McLeroy: In today's environment, it's all about funding. To produce a mobile lab, if you have the money and the design team, you can do it. tpo

DEWATERING

Septic Receiving Station, 10-gauge double wall stainless steel tank, w/4" flanged inlet. Wash assembly, 12" outlet, flow meter/plug valve rock trap stainless auger/bru[illegible] and r[illegible] stainless st[illegible] wa[illegible] iron grinde[illegible] ch[illegible]7 tooth car[illegible] alloy[illegible] 5HP/3.7KW[illegible] troller/Pc2450-1[illegible] interface, [illegible] card reader[illegible] inter[illegible] stop but[illegible] sc[illegible] sys[illegible]# 1005[illegible]

JETTERS-TRUCK

2006 GMC TC6500 cab & chassis truck mounted jetting unit w/Jet Eye camera system, 3000 psi @ 50 gpm, 1000 gallons water, 600' hos[illegible] cfm b[illegible] debris tank and [illegible]nments [illegible]ck!!! RENT ME [illegible] tock [illegible]4)

199[illegible]92[illegible] excel-len[illegible], mounted on 1998 Ford F800, 5.9 diesel hydromatic, 300 gallon water tank. Asking $17,500.

JET VACS

[illegible]91 Intern[illegible] a [illegible]on [illegible]ination[illegible] jet[illegible]it.

POSITIONS AVAILABLE

Established Industrial & Municipal Cl[illegible]g [illegible] seeks O[illegible]on[illegible]anager and S[illegible] Manag[illegible]th successful a[illegible]ts nee[illegible]e self motivat-e[illegible]ds-on[illegible]d communica-to[illegible]ling t[illegible]el & learn the p[illegible] thr[illegible]out Arizona. B[illegible]s based close to Tucson, AZ. Salary based DOE. Benefits, 401K, plus other incentives for the right applicant.

RENTAL EQUIPMENT

Liquid w[illegible] we[illegible]al [illegible] cor[illegible]ion [illegible] tre[illegible]eep[illegible]atch [illegible] & [illegible] mo[illegible]

WATERBLASTING

Gardner Denver 620-671 Detroit 20K @ 11 gpm. **Gardner Denver** IL450- Volvo 20K @ 17 gpm. **Aquadyne** GA 200 variable speed 3116 CAT 20K, 20 gpm. **Aquadyne** 0450DS-Cummins 20K @ 36 gpm. **Jetstream** 4220-Cummins 20K @ 17 gpm. **Jetstream** UNX-6V53 Detroit 10K @ 26 gpm. **NLB**-Ultraclean Cummins 36K, 7 gpm. **NLB** 10-600 Cummins 10K @ 104 gpm. **NLB** 5-250 Cummins 3600 psi, 182 gpm. **US Jetting Sewer Unit** 4K @ 14 gpm.

2002 N[illegible]75[illegible]0,000 psi, 3 g[illegible] trailer [illegible]ed, 300' new hos[illegible]0 hrs. [illegible]ct condition. Pr[illegible]5,000[illegible]

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

Pam Burnett of Metcalf & Eddy's Water Resources Practice was named president of the Georgia Association of Water Professionals.

Mike Smart of Avoca, Ark., a water operator for Beaver Water District of Lowell, was named Water Operator of the Year for populations greater than 5,000 by the Northwest District of the Arkansas Water Works & Water Environment Federation. The organization also honored **Cindy Harp** of Rogers, Ark., a laboratory technician for Beaver Water District, as Laboratory Professional of the Year.

Howard Wegis, Lee County Utilities, handed over gavel duties to **Pamela Holcomb,** P.E., CH2M Hill, at the Florida Water Environment Association Annual Meeting and Awards Luncheon.

Jay Merrill of the Ottumwa Water Pollution Control Plant received the Wrencher Award from the Iowa Water Pollution Control Association.

Solar Power Partners Inc., a solar power producer, received the West County Wastewater District's Big Picture Award for special achievement in the construction, ownership, operation and management of the nation's largest dual-axis tracker solar system, now generating green power at the district's Richmond, Calif., facility.

The Village of Magdalena received the New Mexico Rural Water Association Wastewater System of the Year Award.

The Delhi Charter Township (Mich.) Wastewater Treatment Plant received the PISCES Award from the U.S. EPA.

Mark Soucy, superintendent of the Water and Wastewater Departments in Fort Kent, Maine, was named Maine Operator of the Year by the New England Water Environment Association.

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

education

American Water Works Association

The American Water Works Association has announced the publication of two new guides for wastewater treatment operators — "Math for Wastewater Treatment Operators: Grades 1 and 2" and "Math for Wastewater Treatment Operators: Grades 3 and 4." All grade levels of "Math for Wastewater Treatment Operators" are available in AWWA's online bookstore at www.awwa.org/bookstore.

Kansas

The Kansas Water Environment Association is holding its Annual Water and Wastewater School in Lawrence Aug. 4-7. Call 785/357-4780 or visit www.kwea.net.

Kentucky

The Kentucky Water and Wastewater Operators' Association has these workshops:

- Aug. 13 – Confined Space, Bowling Green
- Aug. 20 – Various topics (water and wastewater), Morehead.

Call 502/226-8149 or visit www.kwwoa.org.

North Carolina

The North Carolina AWWA-WEA has these classes:

- Aug. 3-7 – Western Collection and Distribution School, Morganton
- Aug. 17 – Back to the Basics for Wastewater Operators, Fayetteville
- Aug. 26 – Wastewater Treatment, Metro Convention Center, Hickory
- Sept. 1 – Piping, Greenville
- Sept. 9 – Advanced Topics in Wastewater Treatment, Burlington
- Sept. 14-17 – Maintenance Technologist Operators School, Raleigh
- Sept. 29 – Sustainability and Backflow/Cross Connection Updates, Greenville.

Call 919/784-9030 or visit www.ncsafewater.org.

Texas

The Texas Water Utilities Association is offering a Wastewater Collection workshop Aug. 11 in Victoria. Call 888/367-8982 or visit www.twua.org.

Wisconsin

The University of Wisconsin-Madison Department of Engineering Professional Development is offering a CEU, LU, PDH class at the Madison campus Sept. 9-11 in Wastewater Treatment Plants: Processes, Design and Operation. Call 608/262-2061 or visit http://epdweb.engr.wisc.edu. tpo

CALENDAR OF EVENTS

Aug. 4-6
International Society of Automation Water/Wastewater Automatic Controls Division Symposium, Orlando, Fla. Visit www.isa.org/wwac.

Aug. 9-12
Georgia Association of Water Professionals Annual Conference and Expo, Savannah. Call 770/618-8690 or visit www.gawponline.org.

Aug. 9-12
Total Maximum Daily Load (TMDL) 2009: Combining Science and Management to Restore Impaired Waters, Minneapolis, Minn. Visit www.wef.org.

Aug. 9-14
International Association of Hydraulic Engineering & Research (IAHR) Biennial Congress, Vancouver, British Columbia. Visit www.wef.org.

Aug. 11-14
Chesapeake Section American Water Works Association Annual Conference, Rocky Gap, Md. Call 703/716-0770.

Aug. 16-19
American Society of Civil Engineers International Pipelines Conference, San Diego, Calif. Call 703/295-6000 or visit www.asce.org.

Aug. 27-28
Biosolids and Odor and Corrosion Conference, Embassy Suites, San Marcos, Texas. Call 512/693-0060 or visit www.weat.org.

Aug. 31-Sept. 3
Kansas Water Environment Association and Kansas Section of American Water Works Joint Conference, Capitol Plaza Hotel, Topeka. Call Marc Pedrotti at 913/677-3366 or visit www.kwea.net.

Sept. 1-4
Chesapeake Water Environment Association and the Water and Wastewater Operations Association of Maryland, Delaware and the District of Columbia Joint Conference and Exhibition, Clarion Fontainebleau Hotel, Ocean City, Md. Visit www.wwoa-cwea.org.

Sept. 10-12
Canadian National Conference and Wastewater Management Policy Forum, Hilton Fallsview Hotel, Niagara Falls, Ontario. E-mail admin@weao. org or visit www.weao.org.

Sept. 13-15
Canadian Residuals and Biosolids Conference, Hilton Fallsview Hotel, Niagara Falls, Ontario. Call 416/410-6933 or visit www.weao.org.

Sept. 13-16
Rocky Mountain Sector AWWA/ Rocky Mountain WEA Joint Annual Conference, Albuquerque (N.M.) Convention Center. Call 720/859-4338 or visit www.rmsawwa.net.

Sept. 13-16
WateReuse Symposium, Sheraton Seattle Hotel, Seattle, Wash. Call 206/621-9000 or visit www.watereuse.com.

Sept. 13-16
Pacific Northwest Clean Water Association Annual Conference, Boise (Idaho) Centre on the Grove. Visit www.pncwa.org.

Sept. 13-17
Virginia Water Environment Association Conference, Greater Richmond Convention Center. Visit www.vwea.org.

Sept. 14-15
New York Water Environment Association Watershed Science and Technical Conference, Hotel Thayer, West Point. Call 315/422-7811 or visit www.nywea.org.

Sept. 16-18
South Dakota Waste and Wastewater Association Conference, Holiday Inn, Spearfish. Visit www.sdwwa.org.

Sept. 20-23
Western Canada Water Conference and Trade Show, Winnipeg, Manitoba. E-mail wwall@city-plap.com or visit www.wcwwa.ca.

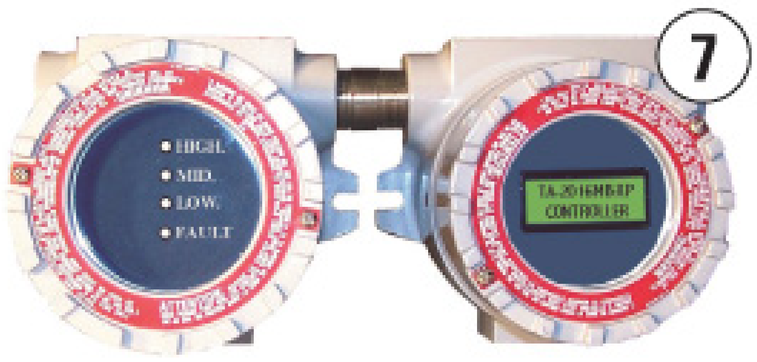
Sept. 24-26
Tri-State Seminar on the River, Primm Valley Resorts, Primm, Nev. Visit www.tristateseminar.com/contact.aspx.

Oct. 3-11
International Activated Carbon Conference and Courses, Holiday Inn Airport, Pittsburgh, Pa. Call Barbara Sherman at 800/367-2587 or visit www.pacslabs.com.

Oct. 10-14
WEFTEC 2009 Water Environment Federation Technical Exhibition and Conference, Orange County Convention Center, Orlando, Fla. Call 800/ 666-0206 or visit www.weftec.org.

Oct. 18-20
Atlantic Canada W&WA Conference, Marriott Halifax Harbourfront, Halifax, Nova Scotia. Visit www.wef.org.

Oct. 19-21
North Dakota Water Environment Association Annual Meeting, International Inn, Minot. Visit www.wef.org.



1. FCI OFFERS DIGESTER GAS FLOW METER

The ST51 mass flow meter from Fluid Components International is designed to measure digester gas, biogas and other methane composition biofuel gases as well as natural gas. The meter features a thermal mass flow element with flow accuracy to plus or minus 1 percent of readings from 0.3 to 400 SFPS (0.08 to 122 MPS) and repeatability of plus or minus 0.5 percent. The flow element is available for use in lines from 2 to 24 inches in diameter. The sensing element features no moving parts and no orifices to clog or foul. It also includes built-in temperature compensation circuitry. **800/854-1993; www.fluidcomponents.com.**

2. CASELLA INTRODUCES TUFF AIR SAMPLING PUMPS

The TUFF line of personal air sampling pumps from Casella USA can detect airborne particulates such as lead, mold or asbestos. The units feature an over-molding sealed case that protects internal electronics from moisture, extreme temperatures, solvents and impact. The pump line includes a standard model, the TUFF Plus and the TUFF Pro and offers a flow range from 5 ml/min. to 4.5 l/min. Each of the pumps has 4.8V NiMH rechargeable battery cells with operational run times of five hours. **800/366-2966; www.casellausa.com.**

3. BADGER INTRODUCES EMETER COMPATIBILITY

The Galaxy AMI platform from Badger Meter, through the use of Readcenter software, is compatible with the eMeter IntegratedMDM meter data management program and supports the installation, operation and management of AMI systems and the data they generate. **800/876-3837; www.badgermeter.com.**

4. AGL INTRODUCES GRADELIGHT 2700

The GradeLight 2700 pipe laser from AGL Corp. is 10.5 inches long and is designed to fit tight inverts and small pipe-jacking pits. The light will self-level over a plus or minus 40 percent to minus 10 percent grade. Grade display is color-coded (green for positive grades and red for negative) to reduce setup errors. The unit can be powered by a Li-Ion rechargeable battery pack, alkaline batteries or a 12-volt DC source with an optional power cord. One set of slide legs covers multiple pipe sizes. **800/643-9696; www.agl-lasers.com.**

5. AQUATERR OFFERS WIRELESS REMOTE MANAGEMENT

The eight-input remote control kit from Aquaterr offers wireless, solar-powered transmission and reception of signals for wastewater man-

agement systems and other applications. Kits include a transmitter, receiver and omni-directional antenna. Input sensors command the transmitter to send radio signals to a corresponding receiver. Transmitter input signals can include temperature, moisture and flow detection, as well as water level and alarms. The transmitter signal travels over any terrain, regardless of hills and buildings. Featuring a 5-mile range, the signal is encoded and redundant to avoid tampering. No radio license is required and there are no cell phone costs. Solar panels keep transmitters powered up and can function for several weeks without sun. The rechargeable batteries last up to five years. **949/646-7274; www.aquaterr.net.**

6. AIR N ARC INTRODUCES SMART START POWER SYSTEM

The Force Diesel all-in-one Smart Start power system from Air N Arc is a diesel-driven welder/generator/air compressor that runs on demand. Powered by a Tier 4 Kubota diesel engine, the system can be switched between normal and on-demand mode. Models 200 and 250 also are compatible with certain biodiesel blends. **888/872-7151; www.air-n-arc.com.**

MELTRIC OFFERS DECONTACTOR SERIES MOTOR PLUG

The Decontactor Series switch-rated motor plug from Meltric Corp. enables workers to safely make and break electrical connections, even under full load, while providing the NEC-required line of sight. Disconnecting a motor is initiated by pressing a pawl on the unit, which causes it to break the circuit and eject the plug to its rest position. A quarter-turn of the plug enables it to be totally withdrawn from the receptacle. When the plug and receptacle are separated, a safety shutter prevents access to live parts. **800/824-4031; www.meltric.com.**

7. MIL-RAM OFFERS GAS DETECTION DIGITAL CONTROLLER

The TA-2016MB-XP gas detection explosion-proof digital controller from Mil-Ram Technology Inc. features a 16-channel system utilizing the RS-485 Modbus RTU network, which eliminates separate wiring to each transmitter. The unit includes four relays, 10 amp common to all channels, low, mid, high and fault relays, LED alarm indicators and explosion-proof enclosures. External alarm stations are optional. **888/464-5726; www.mil-ram.com.**

IPC INTRODUCES MICRO A07 CITRIC ACID CLEANER

Micro A07 citric acid cleaner and Micro-90 concentrate from International Products Corp. are designed to remove suspended solids from effluent filters in wastewater treatment plants. Unlike bleach, the cleaners will not corrode filter frames or degrade filter media. Micro-90 is a mild but powerful alkaline cleaner that targets oil, grease, wax, tar, flux, particulates, hard-water stains and biological debris. Micro A07 is biodegradable and phosphate-free and removes scale, oxide, mineral deposits, rust and other inorganic soils. **609/386-8770; www.ipcol.com.**

8. ALLMAND OFFERS HIGHER STATIC PRESSURE PORTABLE HEATER

The Maxi-Heat portable heater from Allmand Bros. Inc. features higher static pressure and longer ducting. A new fan-motor combination offers 1.5 wg in static pressure for the unit that can accommodate up to 110 feet of 16-inch ducting. Two heater units produce up to 1,010,000 Btus and can be operated independently. A 1,800-rpm, liquid-cooled Isuzu diesel engine with regulated generator provides power for the heaters and electrical accessories. A 191-gallon fuel tank provides more than 24 hours of operation. **800/562-1373; www.allmand.com.**

product spotlight

Leak-Resistant Bulkhead Fittings Eliminate Need for Bolt Holes

By Ed Wodalski


Pipe fittings from ModuTank Inc.

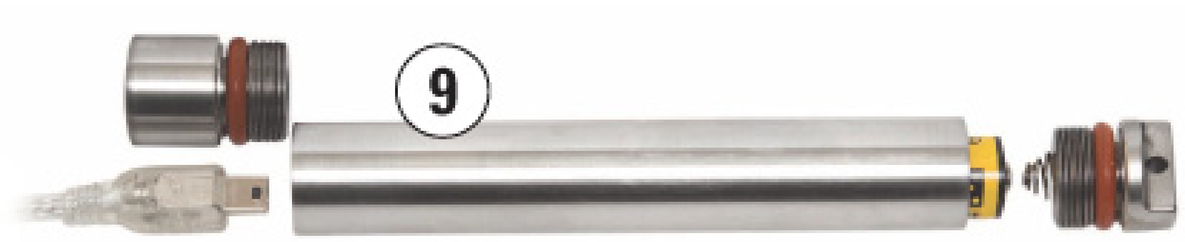
Sometimes it's not practical to drill multiple holes through concrete or weld a bulkhead fitting to a thin-walled metal tank. Multiple bolt holes also increase the chance for leaks. Through-the-wall pipe fittings from ModuTank Inc. require only a single hole for the piping. Wall-piercing bolts are eliminated, as is bolt-related leakage and the need for wall sealants.

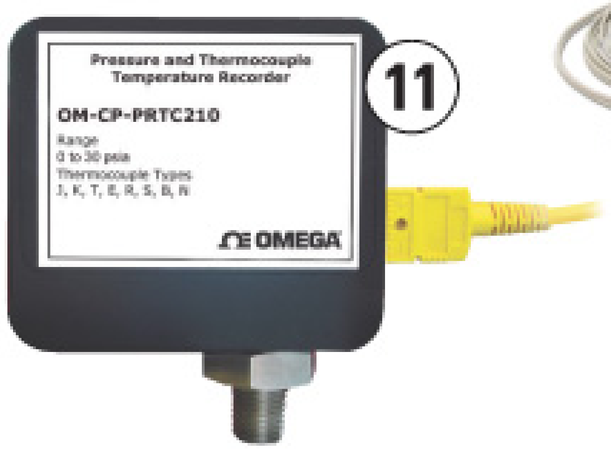
"If you have a steel tank, usually what happens is they weld a nozzle to the steel wall," says fitting inventor Ed Pitchon, applications engineer and ModuTank consultant. "But what happens if you have a very thin-walled tank, as we do? You can't weld to the wall — it's 16 gauge. So how do you make a connection that's 12 inches in diameter without any welding?"

ModuTank uses wide, thick gaskets that seal the fittings to the walls of the tank. Tight, leak-resistant connections are achieved by adjusting the pressure on the external fitting. "We use flanges on either side of the walls to make the seal," Pitchon says. "On the outside we usually put an expansion joint because there's always a little misalignment when they do piping. The expansion joint makes up for that. And then you can put in any piping you want thereafter."

Made of plastic, carbon steel, stainless steel or Hastelloy, the fittings are available in standard sizes 2 through 12 inches in diameter. Larger custom diameters are available. The fittings can be used on new or existing steel and concrete tanks, with or without epoxy or glass coatings, or membrane liners. They are virtually maintenance-free, can accommodate any wall thickness, and are removable for repeated installation on other tanks.

The fittings are resistant to water as well as caustic liquids and highly concentrated acids. **For more information, call 800/245-6964 or visit www.modutank.com.**





9. DICKSON INTRODUCES HIGH-HEAT, WATERTIGHT DATA LOGGER

The HT 200 high-heat and watertight data logger and HT 220/HT 225 piercing probe models from Dickson are temperature-resistant to 257 degrees F and have a watertight, stainless steel case. The units are USB-enabled for high-speed data downloading and have user-replaceable one-year batteries. Models HT 220 and HT 225 have extra-sturdy reinforced probes. **800/757-3747; www.dicksondata.com.**

10. BIOFUELBOX PRODUCES LOW-SULFUR FUEL FROM FOG

The BioFuelBox Solution remediates FOG at treatment plants by converting the material into ASTM standard low-sulfur biodiesel. BioFuelBox partners with treatment plants by providing a completely outsourced on-site service at no cost to the operator. **888/383-5269; www.biofuelbox.com.**

11. OMEGA INTRODUCES PRESSURE, THERMOCOUPLE DATA LOGGERS

The OM-CP-PRTC210 series of pressure and thermocouple temperature data loggers from Omega Engineering Inc. accept thermocouple types J, K, T, E, R, S, B and N. Models are available with pressure ranges from 30 to 50,000 psi and feature high-speed download, real-time operation and programmable start time. **203/359-1660; www.omega.com.**

12. SEDIMENT CONTROL INTRODUCES SLUDGE SLED DREDGE

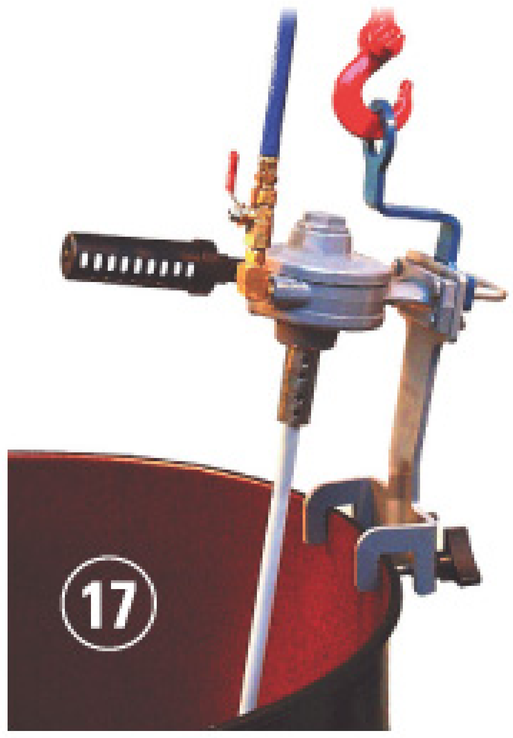
The Sludge Sled dredge from Sediment Control Systems is designed to remove sediment from wastewater lagoons, ponds and settling basins. The dredge consists of a submersible pump attached to a double-ended scoop suspended from a float. It measures 7.5 feet long, 3 feet wide and 1.5 feet high. Made of aluminum, the dredge collects sludge by sliding along the bottom of the lagoon on runners and is moved by ropes or cables attached to a pair of winches. **603/632-7594; www.sedimentcontrolsystems.com.**

13. SEL OFFERS ARC-FLASH DETECTION RELAY

The SEL-751A feeder protection relay from Schweitzer Engineering Laboratories Inc. provides fully automatic protection again arc-flash events. The AFD is designed to interrupt power to the arc flash before it can cause significant damage. The relay uses fiber-optic, arc-flash light sensors to detect the light produced by an arc-flash event. To prevent false tripping, the unit looks for an overcurrent that coincides with the light flash. When both conditions are met, it sends a trip signal to the circuit breaker in as little as 2 milliseconds. **509/332-1890; www.selinc.com.**

14. ASSMANN INTRODUCES BC450 STORAGE TANK

The BC450 double-wall, low-profile, chemical storage tank from Assmann Corp. holds 450 gallons, enabling intermediate bulk containers to be quickly emptied and back on the road. Made of crosslink polyethylene or FDA-approved and NSF-certified linear polyethylene, the base container is designed to hold chemical tote bins for up to three-and-a-half hours and offers a partially sloped bottom for near complete draining from top suction. Features include molded-in forklift access, 2 1/2-inch-thick mild steel epoxy-coated grating and complete fill assembly, including ball valve and chemical transfer hose. Other features include a maximum load capacity of 4,500 pounds and 11-inch threaded access cap with gasket, recessed into the primary tank dome for protection. **888/357-3181; www.assmann-usa.com.**



15. EPG OFFERS OIL, WATER SEPARATORS

OS Series oil and water separators from EPG Companies Inc. are designed to produce an effluent concentration of 10 mg/l or less of oil droplets 30 microns and larger in non-emulsified, sheen-free, free and dispersed oils. FLOPAK coalescing media readily remove settleable solids. The units have fiberglass or steel construction. Options include influent feed, effluent pump-out and oil pump-out packages. **800/443-7426; www.epgco.com.**

16. GRIFFIN OFFERS STAINLESS STEEL SUBMERSIBLE PUMPS

Electric submersible pumps from Griffin Pump and Equipment Inc. are made of stainless steel to withstand corrosive environments. The fully self-priming pumps are available from 120-volt single phase to 460-volt three phase and are designed for flows of a few gallons per minute to several hundred gpm as well as heads to several hundred feet. **800/431-1510; www.griffinpump.com.**

17. DRUM-MATES OFFERS DRUM/TANK MIXER

The DM-55RAS open drum or tank mixer from Drum-Mates Inc. has four blades blending on all container levels, creating a rapid fluid flow at virtually any shaft speed. Available in zinc plated or stainless steel models, the adjustable swinging turbine impellers work in open head drums and tanks or fit through a 2-inch bung hole, opening to 6 inches and closing automatically. **609/261-1033; www.drummates.com.**

HEADWORKS INTRODUCES TURBODRUM SCREEN SERIES

The TurboDrum series of screens from Headworks includes the TurboDrumIF internally fed drum screen with openings as small as 0.25 mm for fine liquid-solid separation and the TurboDrumIN in-channel inclined drum screen designed to be installed at a 35-degree angle for gravity-fed applications. The TurboStat sidehill status screen is available in stainless steel or fiberglass and requires only minimum maintenance with flows up to 1,000 gpm. **713/647-6667; www.headworksusa.com.**

18. INDUSTRIAL SCIENTIFIC INTRODUCES MX4 GAS DETECTOR

The MX4 iQuad gas detector from Industrial Scientific can detect from one to four gases. A rubber over-mold covers the IP66 and IP67 certified housing. Made of polycarbonate, the housing is dust-tight and resistant to both water jets and submersion. The detector uses a combination of ultra-bright LEDs, a 95-dB audible alarm and vibration to warn users of hazardous gas levels. **800/338-3287; www.indsci.com.**

19. GRISWOLD OFFERS VERTICAL TURBINE PUMPS

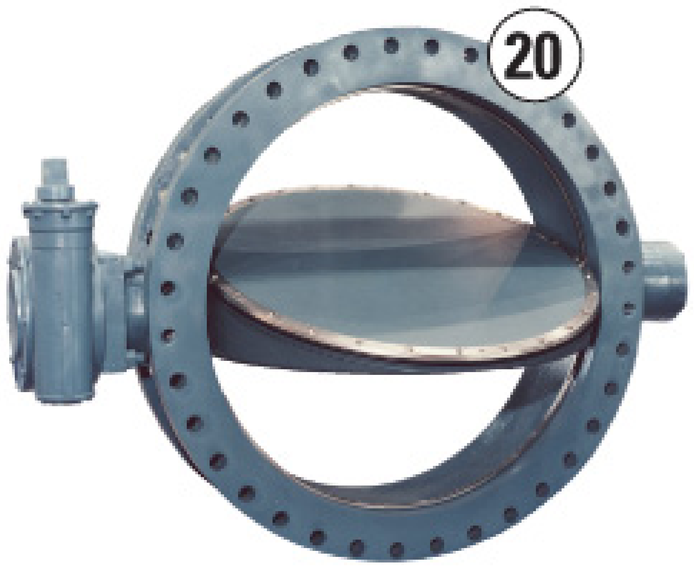
Vertical Turbine Series pumps from Griswold Pump Co. deliver from 60 to 14,000 gpm with head pressures up to 250 psi and include vertical hollow shaft, vertical solid shaft, electric motor drive or right-angle gear pump drives. Discharge heads are cast for either above-ground discharge or fabricated for various discharge configurations. Pump bowls are available in 6-inch through 24-inch diameters. Impellers are precision-designed, made of bronze, and machine- and hand-finished. **800/843-9222; www.griswoldpump.com.**

SIERRA INSTRUMENTS INTRODUCES SELF-CLEANING PURGE PORT

The Steel-Mass 640S immersible thermal flow meter features a self-cleaning purge port. Made of 315 stainless steel wetted materials, the meter is designed for dirty flows where residue buildup can occur. **800/866-0200; www.sierrainstruments.com.**

ASCO INTRODUCES TWO-WAY VALVES

The 8262/8263 Series two-way direct acting solenoid valves from ASCO feature AC and DC pressure ratings and real-time online configuration and ordering. The valves can be used to control the flow of air, water and light oil and are available in 1/8-inch, 1/4-inch and 3/8-inch pipe sizes. **800/972-2726; www.ascovalve.com.**



20. VAL-MATIC OFFERS VALVES WITH LS ACTUATORS

American-BFV butterfly valves from Val-Matic are available with a traveling nut manual actuator, featuring externally adjustable stops. The actuator provides characterized closure, enabling the valve to slowly close during the last half of travel to reduce pipeline surges. The valve is available in 150B and 250B AWWA classes for flanged connection sizes from 3 to 108 inches and mechanical joint-end connections from 4 to 48 inches. **630/941-7600; www.valmatic.com.**

21. STACO INTRODUCES FIRSTLINE EMERGENCY LIGHTING SYSTEM

The FirstLine 924 three-phase uninterruptible Power Supply for 20- and 30-kilowatt central emergency lighting systems provides continuous computer grade power during blackouts, while isolating and protecting the connected load from damaging sags, swells, harmonics, noise and voltage imbalances in the primary AC supply. In the event of an AC power failure, the system automatically transfers to battery power, providing a continuous power supply for 90 minutes. When power returns, the system automatically recharges the batteries. A front panel LCD display shows system status and alarms. **866/261-1191; www.stacoenergy.com.**

22. ELECTRO-CHEMICAL OFFERS TCA-22 CHLORINE ANALYZER

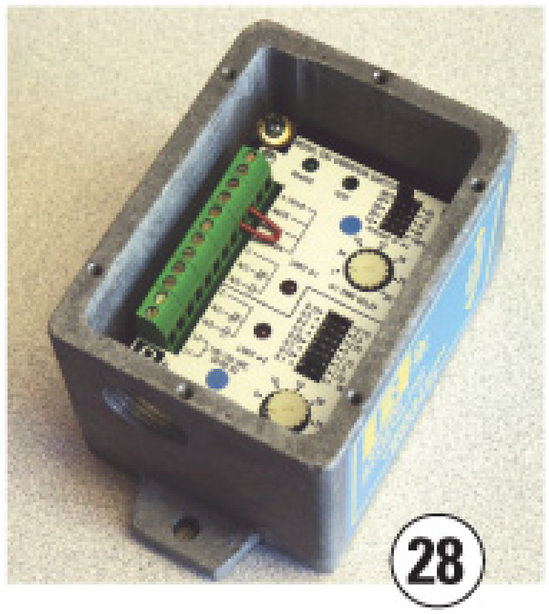
The TCA-22 total chlorine analyzer from Electro-Chemical Devices Inc. is designed for wastewater or other water samples with a chlorine range of 0-20 ppm. The system's amperometric sensor features a built-in pH detector that automatically compensates for samples with a 4 to 12 pH concentration. The sensor features a three-electrode design that measures all chlorine species in the water, combined chlorine and free chlorine. It features one gold cathode, one silver halide anode and a 304 stainless steel counter electrode. A micro-porous membrane allows ions to diffuse in and out of the sensor. While amperometric chlorine sensors are flow-sensitive, the TCA-22 has a constant flow control design. **800/729-1333; www.ecdi.com.**

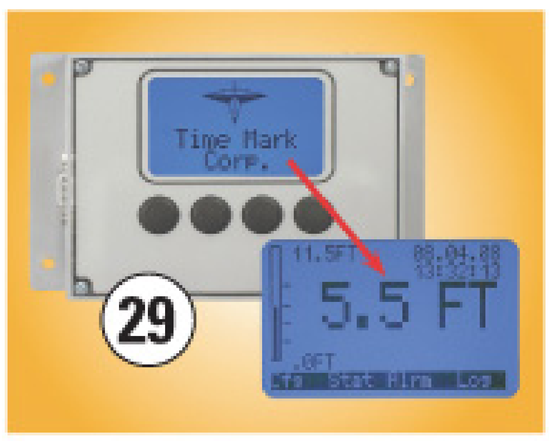
23. ANUE OFFERS WELL-WASHING SYSTEM

The EP-1315 well-washing system from Anue Environmental Inc. cleans wet wells and provides wastewater conditioning to promote aerobic activity. The system will remove up to 98 percent of fats, oils and grease buildup through agitation and homogenization of the wastewater. **800/559-7159; www.anueenv.com.**

24. SAT4D REMOTE MONITORING WORKS WITHOUT PHONE SERVICE

The Sat4D remote monitoring system from Sensaphone provides remote coverage of wastewater facilities where phone lines or cell phone service is not available. Using satellite communications, the stand-alone monitoring and alarm notification system is able to audit remote pump stations, lift stations, storage tanks or any site that needs monitoring. It is powered by an internal five-year battery. It can monitor up to four dry-





contact inputs. When an event occurs, up to eight designated users are notified by voice phone calls and e-mail. In addition, the system will send two status reports per day to its Web site, enabling users to check status or make programming changes. **877/373-2700; www.sensaphone.com.**

25. EMUPORT OFFERS PACKAGED LIFT STATIONS

Emuport packaged lift stations from Wilo EMU USA include a high-density polyethylene sump, guide pumps, lifting chains, internal plumbing, valves and Wilo EMU submersible sewage pumps and impeller. The lift stations are available for wet-pit and dry-pit applications and for above-ground or underground installations. **866/476-0323; www.wilo-emu-usa.com.**

26. IDEAL INTRODUCES CLAMP-PRO METER

The Clamp-Pro clamp meter from Ideal Industries Inc. is designed to troubleshoot industrial and commercial electrical systems up to 600AAC. Model 61-744 has a non-contact voltage indicator, auto/manual ranging, data hold, auto power off and CAT 111-600V rating. Model 61-746 also features True RMS measurements for harmonic environments. **800/947-3614; www.idealindustries.com.**

27. LOGIC BEACH ADDS DATA INTERFACE TO INTELLILOGGER

The Modbus/RTU Master feature of the IntelliLogger data logging and alarming instrument from Logic Beach Inc. provides data acquisition from Modbus Slave instruments, controls, smart transducers and other Modbus-enabled devices. Scanned Modbus register values can be processed, logged to memory, used to trigger alarms and incorporated into FTP, e-mail and Web pages served by the IntelliLogger. **619/698-3300; www.logicbeach.com.**

28. BALMAC OFFERS PROGRAMMABLE VIBRATION SWITCHES

The Model 550 programmable vibration switch from Balmac is designed for 24-hour monitoring of vibration levels on large motors, pumps, compressors, centrifuges, blowers, cooling towers and more. It features two user-programmable vibration limits (alarm and shutdown) and time delays. Limit 2 (shutdown) has 16 maximum set points. Limit 1 (alarm) adds 10 pre-alarms per set point for a total of 160 settings. **614/873-8222; www.balmacinc.com.**

29. TIME MARK 42A CONTROLS UP TO 3 PUMPS

The Time Mark 42A pump controller is a liquid level pump management system that can control up to three pumps with a 4-20mA input or two pumps with a 4-20mA input and backup floats. Alarm inputs for seal failure, over temp, contractor fail and alarm output relay are provided. The graphic display shows current depth, liquid level with set points, date/time and alarm status. Four buttons provide access to configuration settings (password protectable), pump status with run-time meters, alarm status and real-time alarm event logs with alarm type, date and time. **800/862-2875; www.time-mark.com.**

DAIMER INTRODUCES ECO-GREEN CLEANING CHEMICALS

Eco-Green cleaning chemicals from Daimer Industries feature 100 nontoxic, plant-based formulas and Micro-Blasting technology, designed to break down dirt and stains. **800/471-7157; www.daimer.com.**

RAIN FOR RENT OFFERS AIR-OPERATED DIAPHRAGM PUMPS

Air-operated diaphragm pumps from Rain for Rent can handle a variety of fluids, from water to heavy solids, and have the ability to run dry without damage, are self-priming and can be fitted for 100 percent submergence. Other features include leak-less operation, true-solids handling design, portability and the ability to be pressure controlled by system parameters for automatic operation. **800/742-7246; www.rainforrent.com. tpo**

TPO CLASSIFIED ADVERTISING

AUGUST

BOILERS

2006 Bryan Water Boiler. Model CLM-210-W-FDGG, two million BTU. Operates on methane and natural gas. Well maintained. Call Dover, Ohio WWTP for details. 330-343-3443. (8)

DEWATERING

ALAR 660 AUTOVAC DEWATERING PLANT. HUGE SAVINGS ON DISPOSAL COSTS!!! MUST SELL. Price reduced to $215,000 OBO. Complete plant, like new. Vac skid with electrical control panel, fully automated system. Grease interceptor and septic separation primary use. All electric, location plans, manuals. Too much to list! CALL TODAY. 808-848-1569. (P7)

Alar, Model 650, very good cond. Completely automatic with all controls and panels, filters down to 1/2 micron, sludges generated by septic and grease haulers. Reducing BODs, F.O.Gs, TGS, total phosphorus, meters and NH3-N. 770-917-0377. (PBM)

DEWATERING

550 gallon Polymate Polymer Unit, 20 yard IDS dewatering box. Used 6 months. $18,000. Call Terry 304-425-5329 or 304-887-2316. (P7)

WATERBLASTING

2 Gardner Denver 610XVSDT variable speed, Cummins, 25gpm/10k, 43gpm/7.5k, GD 610DT Cummins, 22gpm/10k, 2 American Waterblaster, 3-53, 12gpm/10k. O'Connell Jetting Systems. Mike 707-747-4848. oconjet@pacbell.net. (C9)

Carolina Equipment Boss Blaster. Electric 3-phase 480. 15,000 psi. Assorted hoses, nozzles and protective gear. Call Joe @ 651-436-6869. (C7)

For Sale: 2007 325 hp Jet Stream hydroblasting pump. 11.5 gpm @ 40,000 lbs. Less than 150 hrs. Tier 3. $115,000. 925-691-1721. (CP7)

FILL
a job opening

BID OUT
an upcoming job

ANNOUNCE
contracted services offered

SELL
used equipment

OBTAIN
a position wanted

Reach over **60,000** dedicated professionals each month in TPO!

DON'T DELAY
FAX completed classified form to be included in the next available issue
715-546-3786

FIND what you're looking for!

TREATMENT PLANT OPERATOR tpo

CLASSIFIED AD FORM Treatment Plant Operator

$2.00 per word, per month. Please print ad legibly below with ***correct punctuation*** and ***phone number.*** Circle each word to be bolded, if any. ($2. 00 extra per bolded word)

CLASSIFIED AD RATE
$2.00 per word, per month, with a 20-word minimum or $40.00. $2.00 extra per bold word (key words only).

COLEpublishing
1-800-257-7222
or 715-546-3346

MAIL this completed form with payment to:
COLE Publishing Inc., PO Box 220, Three Lakes, WI 54562
FAX this completed form to: **715-546-3786**

CALCULATE THE AMOUNT DUE:
_____words X $2.00 = _____ X _____ Months = $_____
($40 minimum) (# of months to run the ad) Total Amount Due

ADVANCE PAYMENT REQUIRED
No billing for classified ads. Payment must be received in advance before publishing.

COMPANY NAME: _____

ADDRESS: _____ PHONE: _____

CITY: _____ STATE: _____ ZIP: _____

FASTEST SERVICE
FAX this completed form to
715-546-3786

PLEASE FILL OUT CREDIT CARD INFORMATION COMPLETELY INCLUDING V-CODE (3-DIGIT NUMBER FOUND BY YOUR SIGNATURE)

CREDIT CARD NO.: _____ V-CODE: _____ EXP. DATE: _____

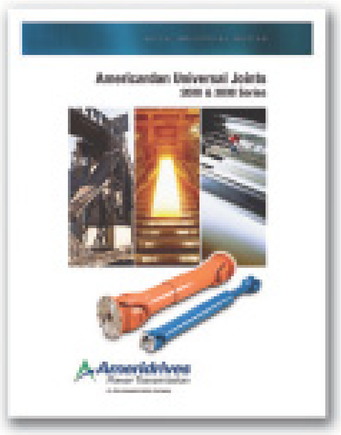
CARDHOLDER NAME: _____ PHONE: _____

We accept: VISA

Staco Names Haddon-McClellan Manufacturer's Representative

Haddon-McClellan Associates Inc. has been appointed manufacturer's representative for Staco Energy Products and its line of single- and three-phase uninterruptible power supplies, voltage regulators and test equipment in Georgia, Florida and Alabama.

Ameridrives Releases Latest Catalogs



The latest catalogs from Ameridrives Power Transmission offer engineering data, application service factors, selection information and procedures for ATF's Series 2000, 3000 and 5000 Americardan Universal Joints. The catalogs are available at www.ameridrivespowertransmission.com. The 2000 and 3000 series joints are designed for industrial applications requiring high-torque capacity and flexibility to operate at high misalignment angles, while the 5000 series are heavy-duty, high-torque units.

Hypex Centrifuge Technology Group Moves to New Complex

The Centrifuge Technology Group for Hypex Inc. has moved to its new facility in Lansdale, Pa. The 15,000-square-foot ISO 9001 centrifuge repair center has overhead bridge cranes, lathes, welding capability and machining centers.

Pump Pro Launches New Web Site

Pump Pro has launched its new Web site, www.pump-pro.com. The site offers wastewater product information as well as information about the company and staff.

Allmand Names Vinroe Regional Manager


Kevin Vinroe

Kevin Vinroe has been named northeast regional manager for Allmand Bros. Inc. He is responsible for promoting the company's products, working with manufacturer sales representatives and educating customers about equipment. He has 28 years of sales experience.

Kyocera Solar Modules Power New Jersey Plant

The Morristown, N.J., wastewater treatment facility's solar electric generating system is powered by 2,550 solar modules from Kyocera Solar Inc. The system is designed to produce more than 635,000 kilowatt-hours per year, enough to serve about 73 homes and offset an estimated 359 metric tons of CO_2 emissions.

Littleton Joins JJG as Wastewater Technology Leader

Helen Xiaoxin Littleton has joined Jordan, Jones & Goulding, a Georgia-based engineering, planning and consulting services firm, as wastewater technology leader. With 30 years' experience, she is considered an industry expert in aerobic and anaerobic biological process design and has been involved with sustainable water and wastewater projects in China and the U.S. Littleton is a member of the Water Environment Federation Municipal Wastewater Treatment Design committee and has participated in a number of World Bank wastewater projects. tpo

Every day is Earth Day.™

"We must be one of the earliest plants to employ full-scale UV. We're proud of the fact that we are not adding chemicals to our discharge. We maximize the biological activity — let the microbes do their thing. Engineers design the best plant they know how to, and contractors build it as well as they can. In the end, though, it's the operators who make it work."

Joni Emrick
An Original Environmentalist
WATER RESOURCE MANAGER
Kalispell (Mont.) Wastewater Treatment Plant

Read about original environmentalists like Joni each month in *Treatment Plant Operator.*

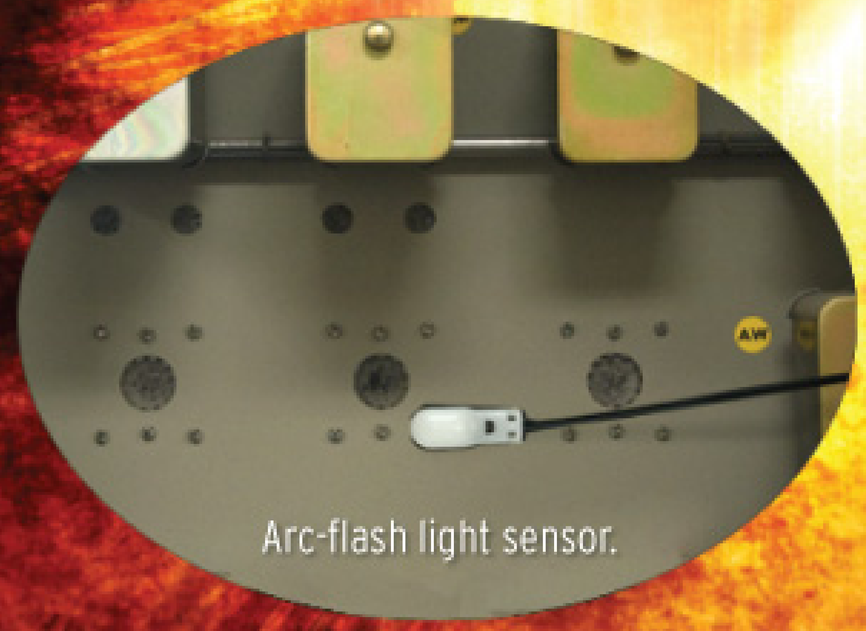
tpo

COLE PUBLISHING INC.
tpomag.com

Proudly Serving the Environmental Service Industry Since 1979

Arc-Flash Protection

at the Speed of Light



Arc-flash light sensor.

- Trips as fast as 2.5 milliseconds
- Innovative light-sensing and overcurrent technology eliminates false trips
- Class I, Division 2 approved
- Protects personnel and equipment

WORLDWIDE 10 years WARRANTY

Learn more at **www.selinc.com/8tpo.**

SEL Celebrating 25 Years of Innovation

www.selinc.com
info@selinc.com
+1.509.332.1890