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IN MY WORDS:
**Exploring
post-retirement
career options | 38**

TECHNOLOGY DEEP DIVE:
**Rental blowers for
short-term needs | 28**

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Senior Superintendent of Operations
Owen County, Ky.

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HIGH-QUALITY WATER AND A SECURE
SUPPLY FOR TWO KENTUCKY CITIES | 30**

SUSTAINABLE OPERATIONS:
**CSO control in
King County, Washington | 16**

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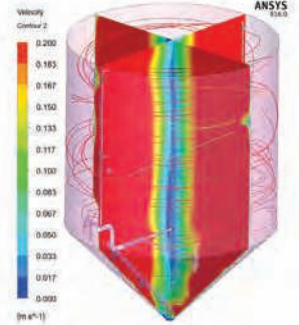
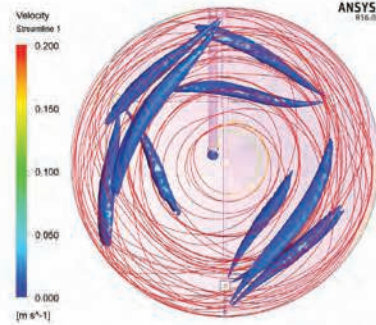
AERZEN	Aerzen	15	Komline-Sanderson	Komline-Sanderson	57
AllMax Software, Inc.	AllMax Software, Inc.	55	KROHNE, Inc.	KROHNE, Inc.	4
American Water Works Association	American Water Works Association	25	LAKESIDE	Lakeside Equipment Corporation	3
AMETEK Brookfield	AMETEK Brookfield	23	LaMotte Company	LaMotte Company	51
Analytical Technology, Inc.	Analytical Technology, Inc.	58	Lovibond	Lovibond Tintometer	43
ASCO	ASCO	27	Blue-White Industries	Blue-White Industries	2
Blue-White Industries	Blue-White Industries	2	Burkert Fluid Control Systems	Burkert Fluid Control Systems ...	29
Burkert Fluid Control Systems	Burkert Fluid Control Systems ...	29	Crane Pumps & Systems	Crane Pumps & Systems	11
Crane Pumps & Systems	Crane Pumps & Systems	11	delta	Delta Treatment Systems, LLC ...	59
Delta Treatment Systems, LLC	Delta Treatment Systems, LLC ...	59	eagle	Eagle Microsystems, Inc.	49
Eagle Microsystems, Inc.	Eagle Microsystems, Inc.	49	Flowline, Inc.	Flowline, Inc.	45
Flowline, Inc.	Flowline, Inc.	45	FLOWROX	Flowrox, Inc.	17
FLOWROX	Flowrox, Inc.	17	Force Flow	Force Flow	8
Force Flow	Force Flow	8	JDV	JDV Equipment Corporation	27
JDV Equipment Corporation	JDV Equipment Corporation	27	KELLER	Keller America Inc.	7
KELLER	Keller America Inc.	7	Komline-Sanderson	Komline-Sanderson	57
Komline-Sanderson	Komline-Sanderson	57	KROHNE, Inc.	KROHNE, Inc.	4
KROHNE, Inc.	KROHNE, Inc.	4	LAKESIDE	Lakeside Equipment Corporation	3
Lakeside Equipment Corporation	Lakeside Equipment Corporation	3	LaMotte Company	LaMotte Company	51
LaMotte Company	LaMotte Company	51	Lovibond	Lovibond Tintometer	43
Lovibond Tintometer	Lovibond Tintometer	43	Markland Specialty Engineering Ltd.	Markland Specialty Engineering Ltd.	37
Markland Specialty Engineering Ltd.	Markland Specialty Engineering Ltd.	37	Meaty-Delivery	Meaty-Delivery	57
Meaty-Delivery	Meaty-Delivery	57	MYRON L COMPANY	Myron L Company	35
Myron L Company	Myron L Company	35	NamWon Turbo One Inc.	NamWon Turbo One Inc.	60
NamWon Turbo One Inc.	NamWon Turbo One Inc.	60	Seametrics	Seametrics	53
Seametrics	Seametrics	53	SNF Polydyne	SNF Polydyne	43
SNF Polydyne	SNF Polydyne	43	suez	SUEZ - Water Technologies & Solutions	19
SUEZ - Water Technologies & Solutions	SUEZ - Water Technologies & Solutions	19	Vaughan	Vaughan Company, Inc.	5
Vaughan Company, Inc.	Vaughan Company, Inc.	5	VEGA Americas, Inc.	VEGA Americas, Inc.	33
VEGA Americas, Inc.	VEGA Americas, Inc.	33	YSI, a Xylem brand	YSI, a Xylem brand	39
YSI, a Xylem brand	YSI, a Xylem brand	39	CLASSIFIEDS	CLASSIFIEDS	57
CLASSIFIEDS	CLASSIFIEDS	57			

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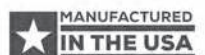
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contents April 2019

- 8 LET'S BE CLEAR: **STAYING RELEVANT**
At every age, including post-retirement, a fulfilling life needs to include continuing to make a difference: at home, in the community, in the world, somewhere.
By Ted J. Rulseh, Editor
- 10 @TPOMAG.COM
Visit daily for exclusive news, features and blogs.
- 16 SUSTAINABLE OPERATIONS: **RECYCLING THE RAIN**
A wet-weather treatment station in Washington's King County will help control CSOs and furthers a wide range of sustainability goals.
By Steve Lund
- 18 HEARTS AND MINDS: **TEACHING WATER'S JOURNEY**
NYWEA presenters deliver hands-on wastewater education to fifth-graders at a county soil and water conservation field day event.
By Sandra Buettner
- 26 PLANTSCAPES: **BRILLIANT DISGUISE**
A berm richly adorned with desert plantings and boulders hides a Nevada wastewater treatment plant from view.
By Jeff Smith
- 28 TECHNOLOGY DEEP DIVE: **AIR FOR RENT**
Aerzen USA offers rental blowers to help wastewater treatment plants meet emergency and other short-term aeration requirements.
By Ted J. Rulseh
- 36 HOW WE DO IT: **ROOM TO GROW**
Ole Miss gets an expanded wastewater treatment facility to meet the challenges of strict permit limits and highly variable flows.
By Chris French
- 38 IN MY WORDS: **CAREERS RECYCLED**
John Hart became an equipment sales engineer after retiring from operations. He sees many opportunities for retirees to stay active and engaged in the industry.
By Ted J. Rulseh
- 46 PRODUCT FOCUS:
MONITORING AND INSTRUMENTATION
By Craig Mandli
- 52 CASE STUDIES:
MONITORING AND INSTRUMENTATION
By Craig Mandli
- 53 EXAM STUDY GUIDE
By Rick Lallish and Drew Hoelscher

top performers



12 LABORATORY TECHNICIAN:
WITH A LOT OF HELP FROM HIS FRIENDS
Rodney Spires has built a career on a large network of industry contacts who have helped him advance and provide a ready source of advice and assistance.
By Jared Raney

20 WASTEWATER BIOSOLIDS:
EVERYBODY'S HAPPY
Orem's award-winning biosolids program delivers a quality product to farmers while holding solids management costs down.
By Jim Force

30 WATER PLANT:
READY FOR THE FUTURE NOW
A 20 mgd water plant along the Kentucky River provides high-quality water and security of supply for the cities of Lexington and Owenton.
By David Steinkraus

[cover story](#)

ON THE COVER: Kentucky River Station II at Hardin's Landing helps Kentucky American Water meet Lexington's demand, now and for well into the future. The plant team led by Nathan Clark received a 2017 Award of Excellence in Water Plant Operations from the Kentucky/Tennessee Section AWWA. (Photography by Martin Cherry)

40 WATER AGENCY:
MORE THAN REQUIRED
The award-winning Boston Water and Sewer Commission outperforms standards in providing excellent drinking water and services.
By Trude Witham

54 PRODUCT NEWS
Product Spotlights:
Water: A more efficient underdrain
Wastewater: Creating drier solids
By Ted J. Rulseh

56 WORTH NOTING
People/Awards; Events

57 INDUSTRY NEWS

coming next month: May 2019 FOCUS: **Annual Company Directory/ACE Pre-Show Issue**

» Let's Be Clear: The power of research » Top Performers: South Valley (Utah) Water Reclamation Facility | Crossville (Tennessee) Drinking Water Plant | Application precision in Sioux Falls, South Dakota | Ben Riles, Moberly, Missouri » How We Do It: Conquering pump rags with motor control » Sustainable Operations: Carbon-free power in Sonoma, California » In My Words: The Water Research Foundation: Priorities and benefits » PlantScapes: Water tank mural in Davis, California » Technology Deep Dive: Tracking BOD in real time

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Staying Relevant

AT EVERY AGE, INCLUDING POST-RETIREMENT, A FULFILLING LIFE NEEDS TO INCLUDE CONTINUING TO MAKE A DIFFERENCE: AT HOME, IN THE COMMUNITY, IN THE WORLD, SOMEWHERE

By Ted J. Rulseh, Editor



When you think of getting old, what do you worry about? Many of us worry about the same things: getting ill or incapacitated, running out of money, losing our vision, missing out on experiences on our “bucket list,” dying.

What worries me perhaps more than anything is: becoming irrelevant. I make no claim to being a huge mover and shaker in my community, let alone the country or the world. But I do make a difference in my own way, always have, at whatever age, wherever I've lived. I hate to think about coming to the point where I no longer matter — where I don't have any real impact on the places or people around me.

OPENING DOORS

Have you ever entertained such thoughts? Such fears? Being relevant doesn't have to mean staying connected with our current profession. We can reach a stage of life where we prefer to close one door and open another — one that directs us toward something new that we're passionate about, or that we've neglected for years due to the demands of work and family.

The point is either to stay active in what we know or open that new door, because doing neither can lead to boredom, intellectual and physical decline and, yes, irrelevance. When I think of staying relevant, I picture my father, now 94, visually impaired from macular degeneration, but otherwise, for his age, in reasonably good health.

After a career as an electrical engineer and technical college instructor, he indulged a lifelong interest in trees. He started by growing several varieties from seed in a makeshift greenhouse in his basement, then planting the seedlings in the yard and nurturing them.

From there, he moved on to donating trees to his home community for parks and street sides and to creating an arboretum at a nearby nature center. Untold numbers of mature trees now stand because of him, and certificates on his apartment wall attest to his contributions. Beyond that, he still crafts objects out of wood, writes letters to the editor and takes an active role in his retirement community. Tree-planting had nothing to do with his work career, yet was highly relevant to him and others.



DEDICATED TO WASTEWATER & WATER TREATMENT PROFESSIONALS

Published monthly by COLE Publishing, Inc.
1720 Maple Lake Dam Rd., P.O. Box 220, Three Lakes, WI 54562

Call toll free 800-257-7222 / Outside of U.S. or Canada call 715-546-3346
Mon.-Fri., 7:30 a.m.-5 p.m. CST

Website: www.tpomag.com / Email: info@tpomag.com / Fax: 715-546-3786

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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 email nicole.labeau@colepublishing.com. Include both old and new addresses.

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EDITORIAL CORRESPONDENCE: Address to Editor, *TPO*, P.O. Box 220, Three Lakes, WI 54562 or email editor@tpomag.com.

REPRINTS AND BACK ISSUES: Visit www.tpomag.com for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email jeff.lane@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email nicole.labeau@colepublishing.com.

CIRCULATION: 68,515 copies per month.

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THE LEISURE TRAP

Many of us are trained to think of retirement as a time of leisure — for coffee get-togethers with friends at a restaurant, for card playing, golfing, fishing, traveling. All that is fine of course, but many retirees find, to their sorrow, that those things alone don't make for a rewarding life.

Mitch Anthony, in his book *The New Retirementality*, argues that retirement is not a finish line. Unfortunately, we've been brought up to believe that it is. Many of us look forward to it the way as kids we looked forward to summer vacation. Just think — a vacation that doesn't end! And yet I can recall in the waning days of a few summers getting hopelessly bored.

Anthony takes that concept a bit further. In a retirement without active engagement, he observes, first we become bored, and then we become *bor-ing*. And maybe in a way, boring is another word for irrelevant.

LIFE EXAMPLES

In one chapter, Anthony tells of a rancher who visited a café where retired folks gathered to chat over coffee and tell stories. He noticed after a couple of weeks all the stories were reruns: that the people didn't keep themselves fit and complained about their health. "I decided," he reports,

Being relevant doesn't have to mean staying connected with our current profession.

We can reach a stage of life where we prefer to close one door and open another.

"that I didn't want to be bored to sickness and eventually death, and there was no way I could endure all those reruns, so I gave up any fantasy I ever had about fully retiring."

A 70-year-old attorney observes, "I've noticed an interesting phenomenon with my retired friends who have become ill and/or died a short time into their retirement. The physical malady almost always seemed to be preceded by a mental one — boredom. They were disengaged from the part of their being that gave them satisfaction their entire life."

The classical retirement model possibly made sense generations ago when life expectancies were shorter — it was a reward and a needed rest from a life of hard work. Today, if we retire at age 60 or 65, we likely have a good number of years left. For the good of our communities and ourselves, it behooves us to use them productively. **tpo**



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OPERATOR INGENUITY

Surviving a Polar Vortex

No matter what you do as an operator, Mother Nature has a way of disregarding your best-laid plans. In the closing days of January, a historic cold front swept through the Midwest, causing problems for water and wastewater systems alike. In this online exclusive article, we talk to water and wastewater treatment plant operators about their struggles working through the extreme cold.

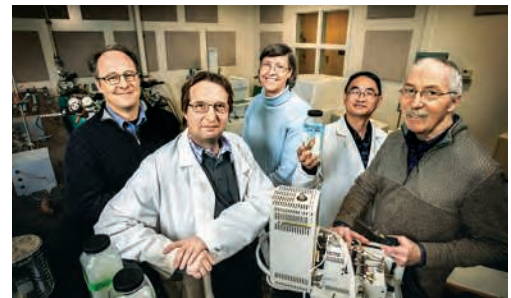
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OVERHEARD ONLINE

“PFAS chemical contamination is a public health crisis and the EPA must act with an urgency that matches the scale of the problem.”

U.S. EPA Announces PFAS Action Plan

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RESEARCH FINDINGS

Microplastics in Aquifers

Microplastics contaminate the world's surface waters, yet scientists have only just begun to explore their presence in groundwater systems. A new study is the first to report microplastics in fractured limestone aquifers, which account for 25 percent of the global drinking water supply. The study identified microplastic fibers, along with a variety of medicines and household contaminants, in two aquifer systems in Illinois.

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NEW DEGREE PROGRAM

Water Science in Wisconsin

The University of Wisconsin-Green Bay will soon establish the UW system's first bachelor of science degree in water science. The major will have a principal focus on water's role in natural processes in Earth's systems, and students will develop an understanding of the chemistry, surface water hydrology, groundwater and biology of freshwater systems. The initiative aims to make Wisconsin a worldwide hub for freshwater science to address real-world water-related issues.

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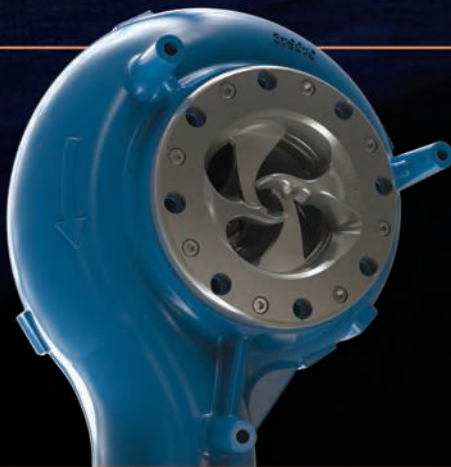


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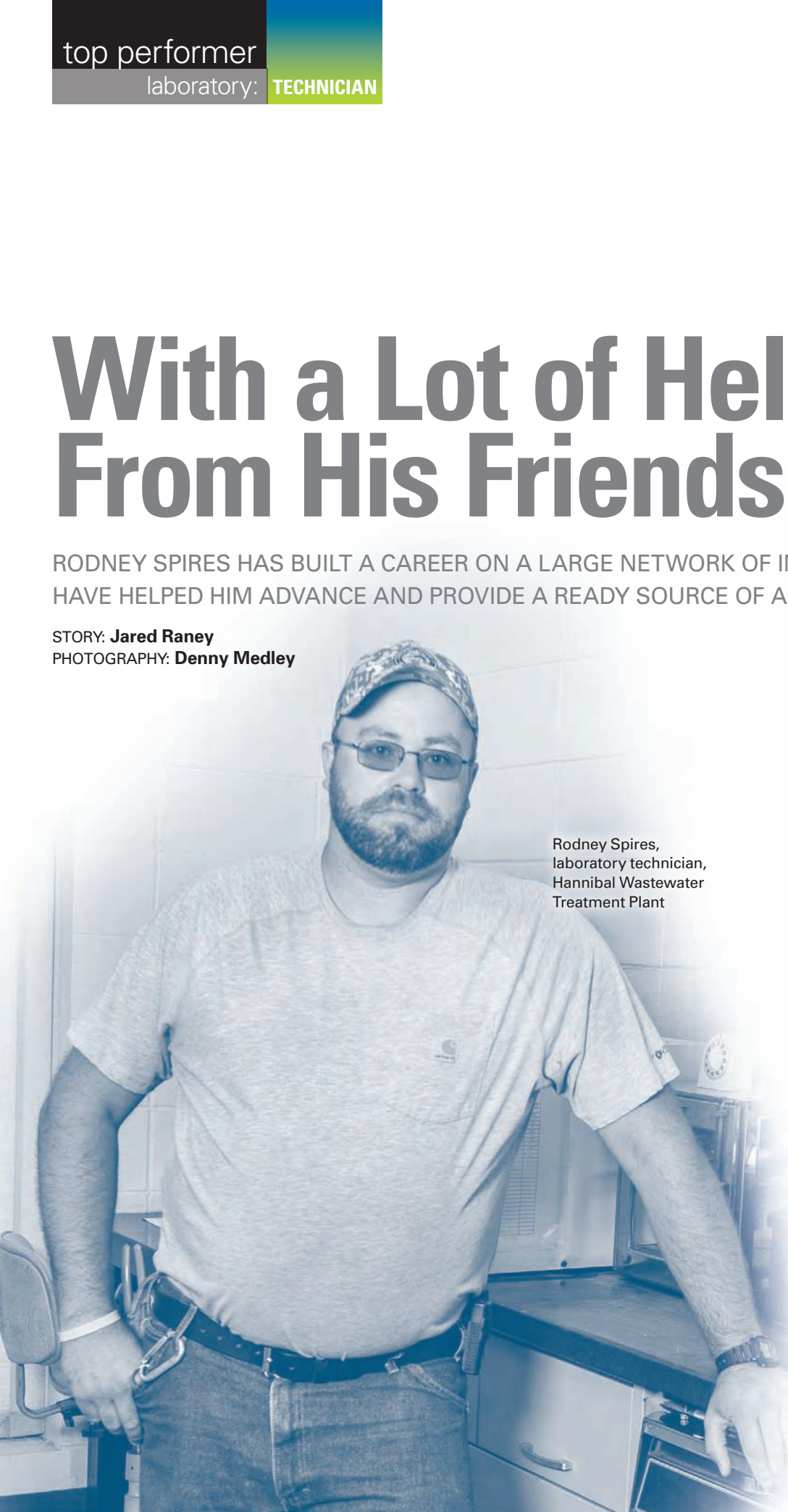
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With a Lot of Help From His Friends

RODNEY SPIRES HAS BUILT A CAREER ON A LARGE NETWORK OF INDUSTRY CONTACTS WHO HAVE HELPED HIM ADVANCE AND PROVIDE A READY SOURCE OF ADVICE AND ASSISTANCE

STORY: **Jared Raney**

PHOTOGRAPHY: **Denny Medley**



Rodney Spires,
laboratory technician,
Hannibal Wastewater
Treatment Plant

“It started out with a good friend of mine” is a common theme on Rodney Spires’ journey. That’s how he got his lab analyst job with the Hannibal (Missouri) Wastewater Treatment Plant, how he joined the Missouri Water Environment Association Laboratory Practices Committee and how he was nominated for the 2017 Missouri Water Environment Association Laboratory Analyst Excellence Award (which he won).

Spires has forged a solid network of industry contacts and friendships in his career. They enable him to juggle full-time work at a challenging pure-oxygen wastewater treatment plant with extracurricular pursuits within and outside the industry.

Alongside these endeavors, Spires works part time assisting with lab work in a small town nearby and volunteering as the New London Fire Department safety officer. Balancing that schedule with family life is a challenge, so his industry friendships are priceless for consulting when roadblocks threaten to slow him down.

Spires hasn’t relied on nepotism and favors to get ahead. The very fact that he got involved with the Missouri Water Environment Association — hosting the annual conference last year, authoring a presentation on polymers in wastewater treatment and achieving a voluntary D level certification for lab work — indicates the drive for success that has put him in the orbit of so many industry peers.

“This spring I had a job interview at a town down the road a couple of hours,” Spires says. “I walked into the office, and the guy giving me the interview knew me from a conference. I didn’t take it, of course, but you

The team at the Hannibal Wastewater Treatment Plant includes George Hausdouf, supervisor; Jeff Williams, pretreatment operator; Rodney Spires, laboratory technician; Corey Means, chief operator; and Jamie Whiteley, operator.



“It’s nice to have those connections. It’s good for if you want to move up the ladder, but it’s also nice to have those contacts if something happens at the plant.”

RODNEY SPIRES

Rodney Spires, Hannibal (Missouri) Wastewater Treatment Plant



POSITION:
Laboratory technician

EXPERIENCE:
12 years with city of Hannibal

CERTIFICATIONS:
Class A Wastewater Operator, Level II Water Distribution, Class D Missouri Water Environment Association Laboratory (voluntary)

GOALS:
Improve lab quality-assurance program and standard operating procedures, ensure GGA quality control compliance

meet hundreds and hundreds of people in the same line of work as you attend these conferences and events. It’s nice to have those connections. It’s good for if you want to move up the ladder, but it’s also nice to have those contacts if something happens at the plant.”

GETTING INTO WASTEWATER

Spires never set out to enter the wastewater field. He started at the city of New London right out of high school as a laborer and from there became a maintenance mechanic with Ralls County Water District, slowly increasing his specialization in the wastewater field. A curiosity about plant mechanics and a willingness to embrace opportunity were all he needed to excel.

His origins at Hannibal trace back to a friend of many years who was in the sewer department. “He asked me about it; he said, ‘Man, you ought to join,’” Spires recalls. “You start going and next thing you know, you get licenses and certifications, and you just keep on moving up. You keep going

forward and forward, not really knowing you are, and you start racking things up pretty quick.”

He hired on with Hannibal in July 2006 as a swing-shift operator. After about two years, he advanced to relief operator, filling in when other operators took vacations and sick time. That included some lab work. “At the time, they had a lab tech, and I would fill in when he was on vacation,” Spires says.

THE LAB BECKONS

The lab work intrigued him; he liked gaining a better understanding of how the plant functioned. So, when the opportunity arose to move into the lab full time, he took it. “The other lab tech became senior operator, so then when he was busy in meetings or whatever, I would do the lab,” Spires says. “Then in 2016, I started doing lab work all the time.”

Since the plant operations crew is fairly small, Spires still assists on the operations side when necessary, but he spends about 95 percent of his time in the lab: “It’s hard to get used to because you’re used to being outside and now you’re stuck in a little bitty room, but it makes the plant more understandable.

“You can’t run your plant effectively without knowing your tests. That’s how we base our plans. We have to understand what’s going on in the plant. You can look at things and kind of guess, based on your experience, but until you run the tests, you don’t really know. You know the tests, you know the plant.”

At the time, Spires held D level wastewater operator certification, the bottom-rung license. The senior operator was at C level and encouraged Spires to advance his training. “It’s always good to have it,” Spires says. “A



Rodney Spires spends most of his time in the lab but assists with plant operations when needed.

lot of operators, they get their D level or C level, and they think they're good to go." He has advanced to A level.

Although there are no regulations for lab certification at present, he believes it's only a matter of time. If that time comes, he is confident the education he has received through the advanced certification will be grandfathered into the new regulations, putting him one step ahead.

BENEFITS OF NETWORKING

Through earning certifications and attending conferences and trainings over several years, Spires had built a solid base of industry contacts by the time he joined the Missouri Water Environment Association Laboratory Practices Committee, a subsection formed in 1993 to "identify the needs and foster a network of resources for laboratory professionals." The committee promotes training and education, mostly through voluntary certifications.

Once again, a friendship made through networking brought Spires into the fold: "A good friend of mine was on the lab committee, and she kind of talked me into it. It's a good way to meet new people from all over the state and to hear new ideas."

It's also a boon for the Hannibal sewer department. With its analyst on the committee, the utility's name is included on everything Spires has a hand in. But more than that, it's a valuable resource when problems arise. "You can call any person on the committee at any time. They'll be right there behind you," Spires says. As part of the Missouri Water Environment Association network of resources, when operators around the state call its headquarters for help, their calls are forwarded to Spires as a regional resource. He also does remote testing for labs that don't have the resources to perform tests themselves.



ABOVE AND BEYOND

On top of all this, Spires finds time for a side job, spending about 1.5 hours a day doing lab analysis for Frankford, a town of only a few hundred people, making sure they are in compliance.

His work is all the more impressive considering the unusual demands of the Hannibal plant's treatment method: It is one of only two fully aerobic, pure-oxygen facilities in the state. Built in 1981, the three-stage treatment process uses oxygen generated on site, treating an average of 3 mgd. The plant creates mid-80 to -90 percent pure oxygen. Its process typically yields effluent with 15 mg/L BOD and 10 mg/L TSS, well below the 30/30 permit limit.

Having a tricky system makes it extra valuable to have a wide sounding board of industry contacts for troubleshooting and creative solutions. "It's a good way to communicate and troubleshoot from one

Corey Means, left, chief operator, and Spires look over the equipment in the plant's oxygen producing area.

“You can look at things and kind of guess, based on your experience, but until you run the tests, you don't really know. You know the tests, you know the plant.”

RODNEY SPIRES

another,” Spires says. “Lab committee members have called each other numerous times. If something happens, it's ‘Hey, well I know a guy. Let me give him a call and I'll ask him.’ What does he do for this kind of pump? What kind of bar screens does he use?”

POSITIONED TO SUCCEED

With a major award under his belt and plenty of career left to explore, Spires is happy with where he is, but he keeps an eye on the horizon. Winning the award was an affirmation that he's going in the right direction with his work in the Missouri Water Environment Association and at Hannibal.

“It's a good honor, and knowing that I was the only one in the whole state to get one, that was pretty special,” Spires says. “I was pretty proud. It's a pick-me-up.” The friendships he has made and maintained have put him in great standing to advance, if he chooses.

“I like doing the lab. It's a challenge, but it's fun to do, just doing lab work and being precise on it,

and helping others. It's a good occupation to be in. It's job security. Everybody's always got to use water. Things have changed, job to job, but this line of work is always going to be here.” **tpo**

video profile



To learn more about the Hannibal (Missouri) Wastewater Treatment

Plant, take a look at a video profile at www.tpomag.com

STAYING BALANCED

Despite his seemingly impossible schedule, balancing volunteer work with a full-time job and side job, Rodney Spires makes sure his commitments don't overshadow his family life.

He states, “You have to take your family first, so you have to think: If you move up the chain, how many more hours am I spending away from my family?”

Right now, as a lab technician, he works a fairly typical 7 a.m. to 3 p.m. schedule. This provides flexibility to spend an hour or two at the nearby Frankford lab after work while maintaining a work-life balance with his two kids and girlfriend.

At the New London Fire Department, Spires decided to take on more responsibility as the safety officer, meaning more time commitment. In that role, he is responsible for training on equipment, safety and safety management.

“I started out just a fireman, and then I kind of went up the ladder,” he says. “With this training and safety stuff, I knew that was going to put more hours into the department, so that's something I make sure my kids understand.”

Though it's a difficult balance, open communication has allowed him to make those commitments with his family's support: “They're backing me 100 percent.”

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The Georgetown Wet Weather Treatment Station site occupies a brownfield that contained leaking underground storage tanks. Demolition materials from the site were extensively recycled and reused.



Recycling the Rain

A WET-WEATHER TREATMENT STATION IN WASHINGTON'S KING COUNTY WILL HELP CONTROL CSOS AND FURTHERS A WIDE RANGE OF SUSTAINABILITY GOALS

By Steve Lund

A new wet-weather treatment station in Seattle's Georgetown neighborhood won't be completed until late 2022, but it has already won a Platinum Achievement Award for Sustainability from the Institute for Sustainable Infrastructure's Envision rating system.

The station will serve an older area of the city that has combined storm and sanitary sewers.

The King County (Washington) Wastewater Treatment Division, which serves 17 sewer districts and more than 1.7 million people in the Seattle area, operates four other wet-weather stations. The older sites use settling and chlorination/dechlorination; the Georgetown station will use advanced settling and UV disinfection.

"When it is completed, the station will be able to treat up to 70 mgd of combined rain and wastewater that would otherwise run into the Duwamish River without treatment," says Norm Mah, a spokesman for the division. "Heavy rains are commonplace for parts of the year here. This plant will enable us to treat the stormwater runoff before it goes through our system and to the outside pipes that go into the Puget Sound."

The amount of rain needed to trigger operation of the wet-weather plants varies with rain intensity and other factors, but a half-inch of rain could do the trick. The Georgetown plant's sustainability award reflects more than the environmental benefit of treating combined sewer overflows. It also reflects the county's commitment to diverting demolition materials from landfills, reducing chemical use, restoring the Duwamish River shoreline and building green infrastructure, such as permeable pavement, green roofs, roadside rain gardens and cisterns.

THREE-PART PROJECT

The \$250 million project began with community planning meetings in 2015 and 2016. Site preparation began in 2017. The project includes the treatment station itself, the outfall to the river and the pipes that connect the two. About half of the money will come from a \$129 million low-interest loan from

the U.S. Environmental Protection Agency's competitive Water Infrastructure Finance and Innovation Act program. Qualifying for that loan could save ratepayers up to \$34 million.

The construction of the outfall by Pacific Pile & Marine, including native planting to improve wildlife habitat at the entry point and logs to stabilize the river bank, will be completed in 2019. Construction of the treatment plant and the pipes connecting the plant to the outfall began in 2018 and will take more than three years to complete.

From the early planning stages, King County saw the Georgetown project as a way to spark economic equity. The county structured construction contracts to encourage small-business participation, require contractors to set aside a percentage of labor hours for apprentices, and set voluntary hiring goals for women and people of color.

The county also partnered with community colleges and unions on job-training programs and apprenticeships. The project is part of a pilot program, Priority Hire, that requires contractors to train and hire workers living in ZIP codes with high poverty and unemployment.

LEARNING OPPORTUNITIES

Besides performing its function, the green infrastructure component will serve as a demonstration. Instead of using underground stormwater storage tanks that can be pumped back to the sewer system during nonpeak times, the plant will have more visible methods for on-site stormwater management, such as landscaping, stormwater reuse, bioretention, permeable surfaces and a green roof.

The county plans to offer tours and on-site interactive lessons to school groups and the general public. The treatment station design includes a public meeting room, and the plans include public art for the building.

When the plant is operating, special lighting along the building will come on, and passersby will be able to see what is happening inside. The pipes will be colored to show how the water moves through the station, and infor-



When completed, the wet weather station will handle up to 70 mgd of combined stormwater and wastewater that would otherwise run into the Duwamish River.

mative signs will be posted. The plant is designed to start up automatically when the combined sewers overflow. Operators will be dispatched to collect samples and pump down and clean out tanks when the overflow event is over.

LISTENING TO RESIDENTS

Community input guided plans and grant funding to improve pedestrian access to the Duwamish River and the construction of a 135-foot-long, 12-foot-high green wall along one of the major nearby thoroughfares to reduce dust and improve air quality.

The Georgetown neighborhood was developed as residential, but since the 1960s, it has been mostly commercial and industrial. Now the Geor-

town Merchants Association calls the neighborhood “Seattle’s industrial arts corridor.” Its red brick buildings are filled with art galleries, coffee shops, diners, bookstores and night clubs.

The wet-weather station site occupies what was technically a brownfield, since the state Department of Ecology identified it as having leaking underground storage tanks. A large amount of soil had to be removed, along with materials containing asbestos and lead-based paint, but to a large extent, the materials on the site were reused.

Five buildings were torn down and numerous concrete surfaces were removed, but old-growth timbers from a warehouse were salvaged, and the concrete was recycled. The project reused 85 percent of the demolition materials. The Institute for Sustainable Infrastructure cited the project for creatively addressing community needs, improving air and water quality and demonstrating leadership in planning and design.

MEETING DEMANDS

The Georgetown wet-weather station is designed to reduce untreated CSOs to the Duwamish River by 95 percent. It is one of 14 remaining projects in the county’s CSO control plan. “This is infrastructure that’s needed to meet the growth of the region,” Mah says. “We are one of the fastest-growing cities in the country.”

While the Georgetown project is the first in the state to win an Envision platinum award, the county has been following sustainable practices for many years. Those include programs to encourage use of Seattle’s abundant rainwater. For example, the county works with other entities, including Seattle Public Utilities, to install cisterns and rain gardens that encourage the capture and recycling of stormwater.

“There is a lot of awareness of Seattle as the Emerald City, but people also call it the Rain City,” Mah says. When the Georgetown station is complete, King County will have one more tool to keep rainfall from being a problem. **tpo**



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LEFT: Madison Quinn, rear left, New York Water Environment Association communications manager, and Tanya May Jennings, rear right, operator certification administrator, are shown with fifth-graders at the Conservation Field Day hosted by Oswego County Soil and Water Conservation District. BELOW: Quinn with the EnviroScape model used to simulate the journey of water after it goes down a drain.



Teaching Water's Journey

NYWEA PRESENTERS DELIVER HANDS-ON WASTEWATER EDUCATION TO FIFTH-GRADERS AT A COUNTY SOIL AND WATER CONSERVATION FIELD DAY EVENT

By Sandra Buettner

A part of public outreach for clean-water industry groups is taking part in community events.

To that end, speakers from the New York Water Environment Association (NYWEA) gave presentations last September at the Oswego County Soil and Water Conservation Field Day. There, more than 100 fifth-graders learned the importance of wastewater treatment and their own role as good stewards of the environment.

DIVERSE EDUCATION

In its 30th year, the Field Day event at Selkirk Shores State Park in Pulaski took on a range of topics to engage the students. Besides the NYWEA presentation, topics included tree identification and growth, bird-watching, wildlife rehabilitation and insect identification.

The nearly 500 student attendees were each assigned to five of the 20 available stations. Before the event, teachers received the list of the stations and briefed the students on them. The day started with three presentations in the morning; two more followed after lunch. Madison Quinn, NYWEA communications manager, and Tanya Jennings, operator certification administrator, presented “Bringing Water to the Classroom.”

WORKING MODEL

Using a unique 3D EnviroScape model of where water goes after it goes down the drain, Quinn and Jennings gave an overview of the wastewater process. Using the plastic model, which simulates a city with homes, business buildings and a wastewater treatment plant, the children followed the water's path.

A cocoa/oatmeal mix represented the wastewater that enters the sewer system. White rice represented items in wastewater that do not disintegrate

and are caught in the model's screens (akin to those at the treatment plant). The children saw how those items cause problems.

A blue liquid like Kool-Aid was added to the wastewater arriving at the plant in the model to simulate chlorine and the chlorination process. After that, freshwater was added to simulate dechlorination.

TURTLES RESCUED

Along with the model presentation, Jennings displayed large poster boards of each process in an expanded view. She highlighted true stories to help the student relate to the process steps. For example, she told how several turtles were caught in a wastewater treatment plant's screens in New York City and how the operators rescued them. The workers kept them as pets at the plant, and they lived long and happy lives.

“Through the model and the items we add in, the children see screening, grit removal, primary settling, biological treatment, secondary settling, disinfection and chlorination, and the role each plays in cleaning the water,” Quinn says.

CAREERS TO CONSIDER

The NYWEA presentations opened the students' eyes to the importance of the treatment operator profession. They also learned about other positions in the water industry, including scientists and engineers. After the presentations, NYWEA encourages the teachers to visit their local treatment plants so that the children can see how the processes work in real life.

In addition to public outreach and speaking engagements, NYWEA, which has 2,600 members, offers a strong scholarship program for high school students pursuing college degrees in environmental sciences. Since that program began in 1998, NYWEA has awarded \$476,000 in scholarships to 190 recipients — more than \$50,000 to 10 students in 2018 alone. **tpo**

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Everybody's Happy

OREM'S AWARD-WINNING BIOSOLIDS PROGRAM DELIVERS A QUALITY PRODUCT TO FARMERS WHILE HOLDING SOLIDS MANAGEMENT COSTS DOWN

STORY: **Jim Force** | PHOTOGRAPHY: **Sallie Shatz**

The Orem, Utah, biosolids operation enjoys the best of both worlds — maybe the best of many.

The treatment plant's old but well-maintained dewatering system produces a 15 percent-solids cake. All biosolids are applied on area farms, and there are more takers than the plant can supply. In addition, land application saves the city about \$150 a ton versus landfilling.

Not too shabby. And Orem won the 2017 Outstanding Biosolids Program award from the Water Environment Association of Utah. "We've won the award before, but it's always exciting to get it," says Giles Demke, water reclamation manager. "We have a good operation."

Demke credits Dan Shorten, senior biosolids plant operator, and his staff for their professional approach: "They do a great job testing the solids appli-

cation to the fields and making sure we meet all the requirements. It's very beneficial to the farming community south of Orem."

GROWING COMMUNITY

Orem's 13.7 mgd (design) water reclamation facility serves about 95,000 people in Orem, along with customers in parts of the neighboring towns of Lindon and Vineyard. The community, about 40 miles south of Salt Lake City, has grown rapidly in recent years with the development of technology companies and the expansion of Utah Valley University.

The facility was upgraded in 2012 from its previous dual-train trickling filter and conventional oxidation ditch layout to the current biological nutrient removal configuration. The \$14 million project converted the two ditches



The Orem Wastewater Reclamation Facility.

to phosphorus and nitrogen removal, added a third BNR oxidation ditch, increased settling capacity to relieve a hydraulic bottleneck at the secondary clarifiers and changed the disinfection process from chlorine to UV (SUEZ). Daily flow averages about 8.5 mgd. Effluent is discharged to Powell Slough and then flows about a mile to Utah Lake.

On the biosolids side, a thermophilic digester was added alongside an existing mesophilic unit, and former aerobic digester basins were converted to solids holding tanks.

DOUBLE DIGESTION

Waste activated sludge is thickened in dissolved air flotation units and then pumped to the equalization tanks, where it is mixed with primary sludge and grease. In the thermophilic digester, the material held for about nine days at 120 degrees F and then held for up to 14 days in the mesophilic unit at 100 degrees F. "With the two digestion stages, we get better volatile solids reduction," Shorten says. "We could go to Class A biosolids in the future."

Biogas is captured and used to heat the digesters. The plant has a methane gas boiler and a natural gas boiler for backup and supplemental heat. Unused methane is flared off using a Groth candlestick flare, but that amount is minimal.

Digested biosolids are collected in the holding tank over weekends and fed to two belt presses (Alfa Laval Ashbrook Simon-Hartley) during the day shift Monday through Friday. "After pressing, we fill a dump truck with cake and then store the material on drying beds," Shorten says. The facility produced about 6,300 tons of biosolids in 2018.

The plant's six drying beds provide more than enough storage area for normal operation, with some extra space for periods when biosolids can't be hauled because of weather. City trucks transport the cake to farmers' fields, and while that represents some cost to the utility, Shorten points out that it's much cheaper than landfilling the material.

"The biosolids are free to the farmers, but it's pretty beneficial for both of us," he says. The utility's costs for fuel, truck maintenance and soil testing run to about \$1.25 per ton, versus more than \$25 a ton in tipping fees at the local landfill. "The farmers don't pay us, and we don't pay to get rid of it," Shorten says. "We're both pretty happy."



Orem (Utah) Water Reclamation Facility Biosolids Program

www.orem.org

BUILT:
1958, upgraded in 2012

POPULATION SERVED:
95,000

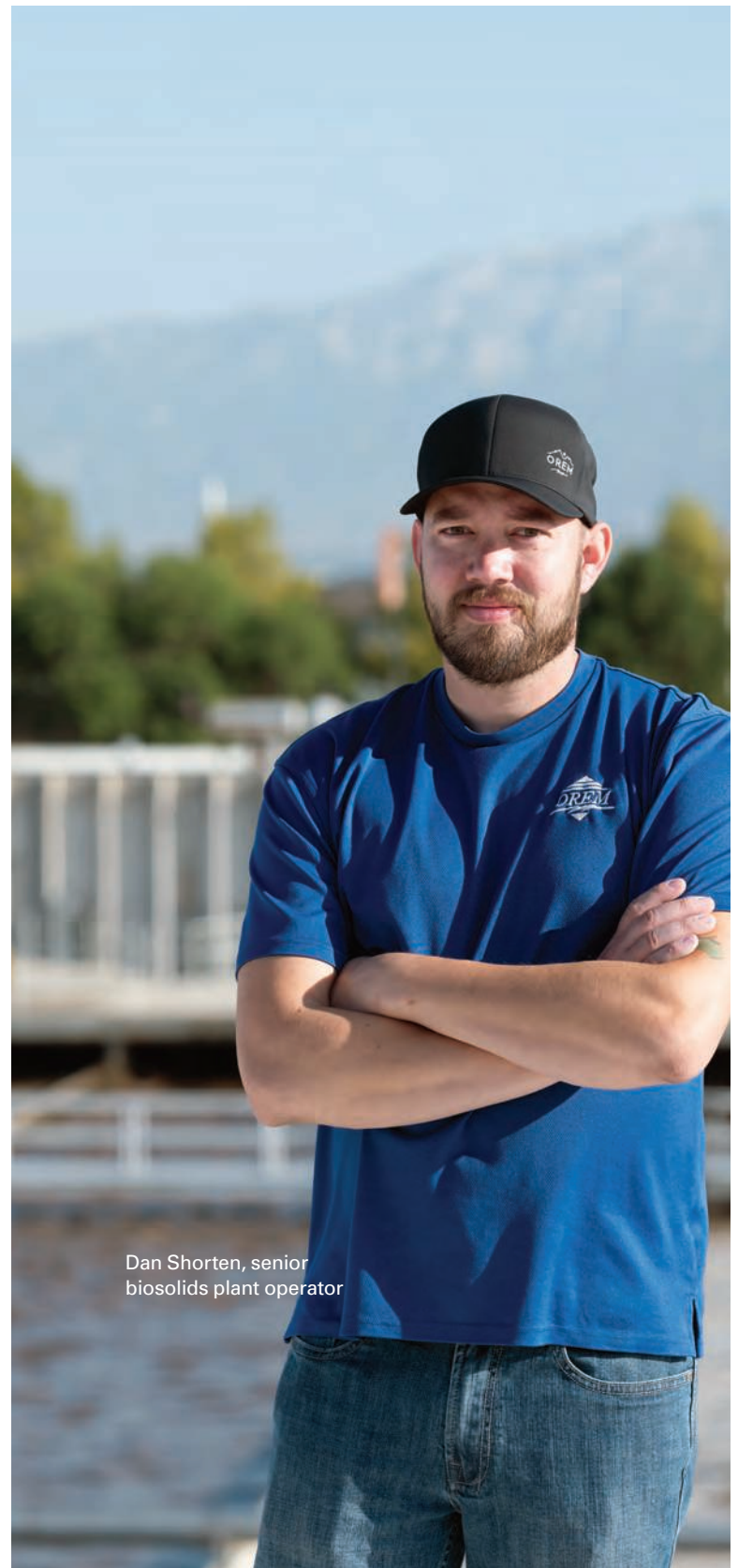
FLOWS:
13.7 mgd design, 9 mgd average

BIOSOLIDS PROCESS:
Thermophilic and mesophilic
digestion, dewatering

BIOSOLIDS VOLUME:
6,300 tons per year

BIOSOLIDS USE:
Applied farmland

STAFF:
Dan Shorten, senior biosolids
plant operator; Brandon Hopkins,
operator



Dan Shorten, senior
biosolids plant operator

“With the two digestion stages, we get better volatile solids reduction. We could go to Class A biosolids in the future.”

DAN SHORTEN

KEEPING THEM RUNNING

While much of the biosolids train is relatively new, the dewatering presses are real veterans, dating back 23 years. The key to their continued success is diligent maintenance. “They’ve been great,” Shorten says. “We’ve hardly done anything to them since they were installed in 1995. We operate them at anywhere from 200 and 240 gpm. We’ve hit 300 gpm at times but that’s really slamming them, and we try to avoid that.”

He says visitors to the plant, some from overseas, always marvel at the dewatering equipment’s durability. Cleaning the belts after each shift is critical. At some point, the belts become worn and need replacement, but other than that and a single gearbox and motor, the units have been essentially maintenance-free. Orem crew members keep the equipment greased and fix any leaks as soon as they occur.

“The farmers don’t pay us, and we don’t pay to get rid of it. We’re both pretty happy.”

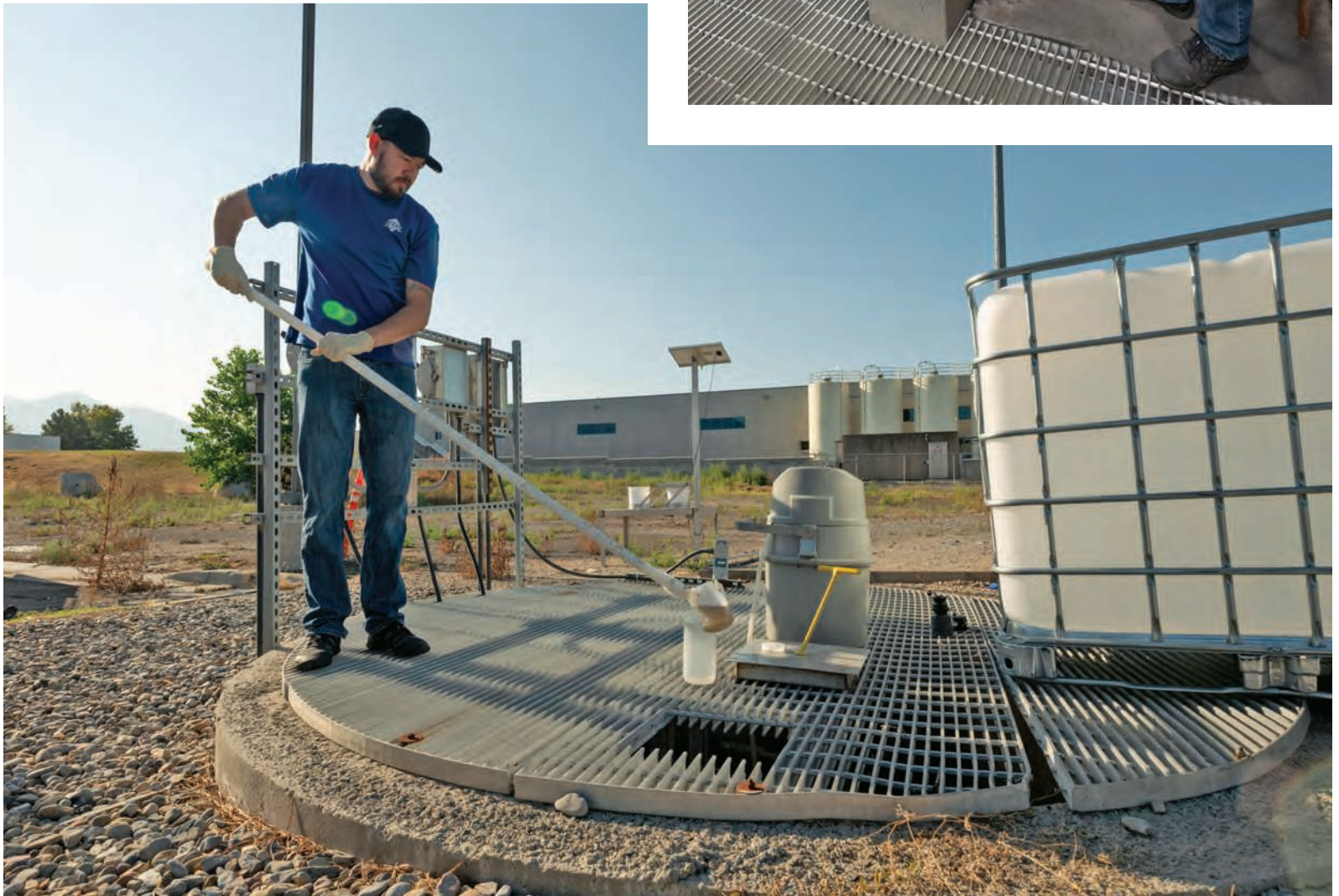
DAN SHORTEN

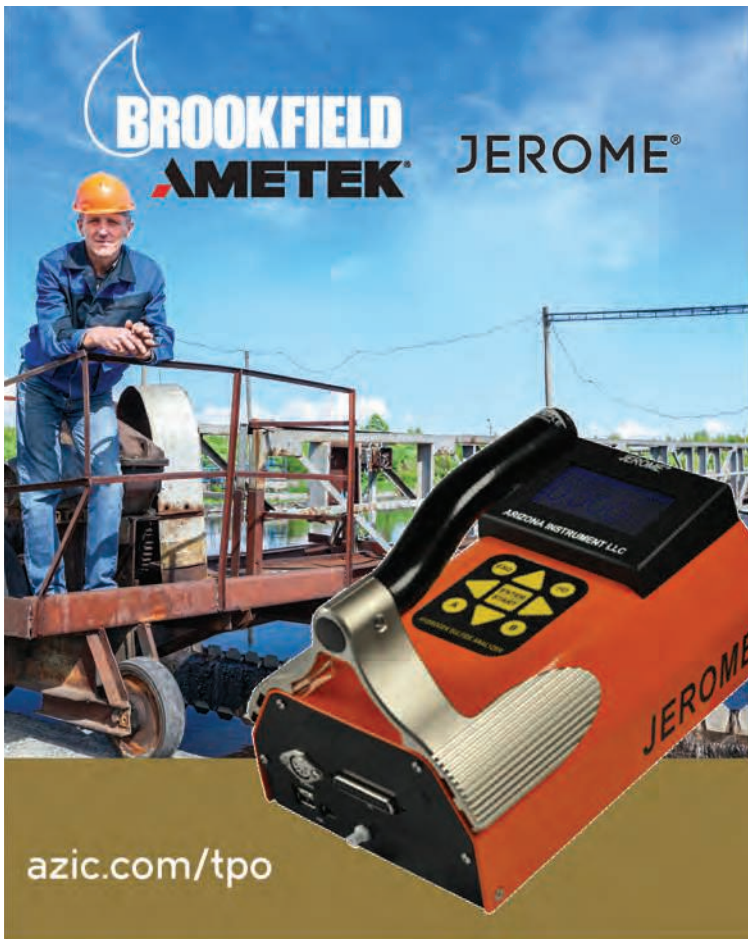
“Our long belts have averaged about three years of service, the short belts about a year,” Shorten says. “On our short belts, we replace the wires that hold the belts together as soon as they’re broken. This prevents tearing and has allowed the belts to last longer. On the longer belts, we replace the wires about once a year.”

Orem’s two biosolids operators share tasks: one operating the presses,



RIGHT: Dan Shorten adjusts the dosing of polymer (SNF Polydyne) in the press room. BELOW: Shorten, shown drawing a sample for analysis, is proud of how his team maintains the plant’s dewatering presses.





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while the other tends to maintenance and other work. They rotate weekly. The team has experimented with dewatering polymers and determined that a polymer from SNF Polydyne works best.

TO THE FIELDS

The farms lie 10 to 20 miles south of the city; farmers spread biosolids on fields averaging 20 to 30 acres. Crops include grass hay, alfalfa and in

some cases silage corn. Orem requires proper spreading methods and approved equipment. About half a dozen farms take part at any one time.

Shorten says some farmers have reported yields of 1.5 to 2 times greater than they achieved with conventional fertilizers. “Our farmers are close to neighbors,” Shorten says. “Some live right in the middle of their fields. We’ve never had complaints — no flies, no odors, no nothing. Usually, the demand for the biosolids is more than we can supply.”

DOWN ON THE FARM

How do farmers like using biosolids from the Orem Water Reclamation Facility? “It’s good for our crops, good for the environment and good for the citizens of Orem,” says J. Lynn Partridge, who farms 300 acres. He’s been farming all his life and is close to retirement.

It’s not just that it’s “a lot better to go green,” in his words. He has seen an increase in crop production with the biosolids after just over a year in the program. He reports a 1.5-ton-per-acre increase in hay production on the first cutting.

Partridge takes loads of biosolids in the spring before hay is planted, in the summer between cuttings and in fall after harvest. He uses a 5-ton John Deere articulated truck with a hydraulic gate to apply the biosolids, mechanically scatter-

ing material on the fields to let it dry a little more. Eventually he discs it into the ground.

He prefers the biosolids to commercial fertilizer, which is more likely to leach into water sources. The organic matter in biosolids makes the soil healthier, he says. “We see earthworms and benefit from the soil aeration they provide.”

Partridge enjoys the staff from the Orem plant: “They’re excellent to work with. In fact, one of them used to work in farming. They understand what our needs are.”

A biosolids sample is measured for solids content (ZSA 120 Analytical Balance, Scientech).





“One farmer had his crops grow so much that people would drive by and ask what happened. The fields really took off.”

DAN SHORTEN

Brandon Hawkins, left, plant operator, and Dan Shorten.

cent of biosolids reused or recycled, maintenance, operations, absence of odors or other complaints, recordkeeping and application site management.

“After reviewing a couple of programs, I voted for the Orem Water Reclamation Facility,” says Weston Gardner of South Valley Water, one of the award reviewers. “They maintain an in-depth and detailed logbook of the locations where the biosolids are being applied and the test results of each load. They’re also creating lasting relationships with the farming community.”

LOOKING AHEAD

Orem’s program does face challenges, and one of them is demographics. “This area is growing like crazy,” Shorten says. “We’re seeing a lot of farm fields being converted to housing and commercial developments. Farmland could disappear.”

Accordingly, Orem is considering major upgrades to its biosolids system and less reliance on agricultural use. The utility is looking at changing to Class A biosolids and converting its dewatering operation to screw presses to save on energy and increase cake solids. That would reduce storage space requirements.

“We could sell the Class A biosolids as a fertilizer, or keep it and give it to the city’s parks department for use on green spaces and golf courses,” Shorten says. “I think eventually we’ll go to Class A, but it’s several years down the road.”

In the meantime, Orem will continue to provide biosolids to the farming community, with award-winning results: “We’ve worked with these farmers for a long time. Once in a while we’ll add someone new, but normally we get more requests for than we can fulfill. One farmer had his crops grow so much that people would drive by and ask what happened. The fields really took off. There was no odor. It spoke to the quality of our product.” **tpo**

The Orem staff conducts the necessary soil testing. Team members test the soil at depths of 1 to 5 feet at several points, depending on the acreage. “We check for nitrates, phosphorus and ammonia in the soil. We also test the biosolids for nitrates, phosphorus, total nitrogen, fecals, metals and chelation.”

The samples are submitted to Brigham Young University Environmental Analytical Laboratory, American West Analytical Laboratories and Richards Laboratories of Utah for verification of 503 regulations. None have ever exceeded regulatory levels.

The program was a natural for the Water Environment Association of Utah biosolids award. The criteria include beneficial reuse of biosolids, per-

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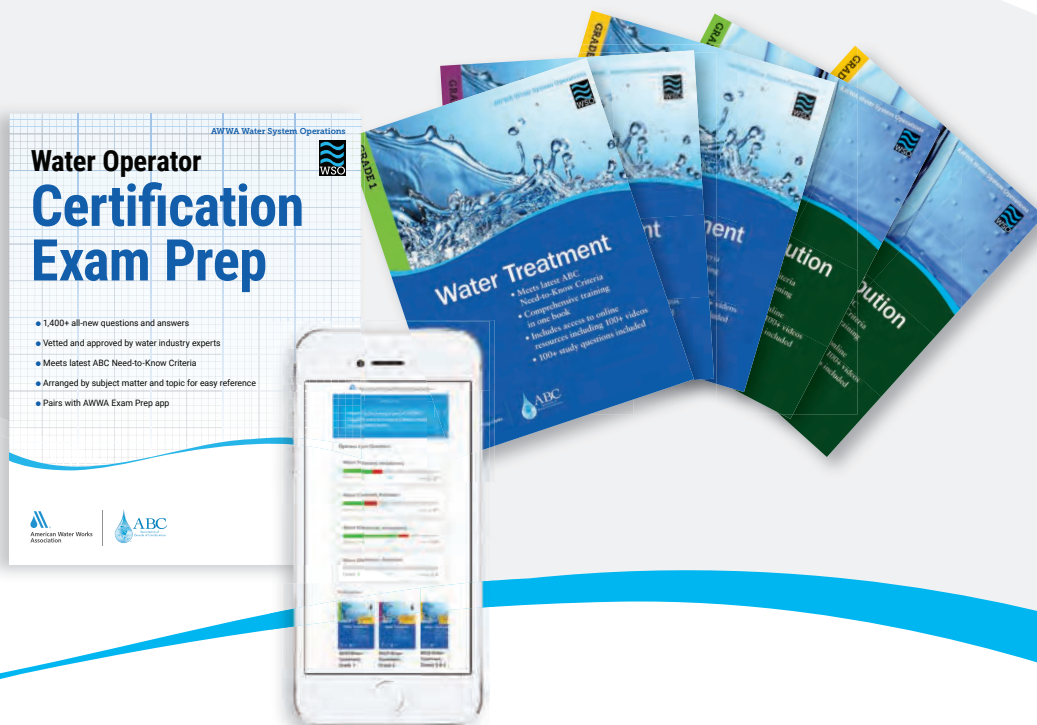
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Brilliant Disguise

A BERM RICHLY ADORNED WITH DESERT PLANTINGS AND BOULDERS HIDES A NEVADA WASTEWATER TREATMENT PLANT FROM VIEW

By Jeff Smith

Even though its 20-acre site is nearly surrounded by houses, the Southwest Water Reclamation Facility in Henderson, Nevada, is nearly invisible to neighbors and passersby.

The site presents a 35-foot high berm, landscaped to blend into the surrounding countryside of sloping mountains, stones and boulders, and vegetation typical of the Mojave Desert. “Some of the newer homes have been built to within 300 yards of the side gate of the plant and around the back side of the berm,” says Howard Analla, wastewater operations manager in charge of the city’s two wastewater treatment plants.

The berm, which cost nearly \$1 million, was the first thing built when construction of the state-of-the-art facility began in 2008. “The whole idea was to block the view from the outside world during construction, then hide the facility once it was done,” Analla says.

BURSTS OF COLOR

Now the berm displays a colorful palette of lush native plants, bushes, shrubs, stones and ground cover, visible to the outside world and to plant operators and staff. The administration building is low-profile, and all process structures are totally enclosed. Some are underground.

More than 2,000 shrubs, 320 trees, 200 succulents and cacti, and nearly 225 boulders are carefully located on and around the berm. Together, they create a startling landscape of natural beauty that hides the operations of the membrane bioreactor facility. Combined with underground or enclosed biofilters, UV disinfection and granular carbon canisters for odor control,

PHOTO ABOVE: The Southwest Water Reclamation Facility. St. Rose Parkway is on the right, and a neighboring residential area is in the background.

the 8 mgd (design) plant functions with most citizens not knowing it’s there.

“It isn’t one of the best wastewater plants to give a tour in because you are always saying, ‘Behind that wall, this is what’s happening,’” Analla says. “Visitors can’t see or smell the operation, and that is what we wanted.”

The vegetation is arranged in rows and evenly spaced. Native species such as desert spoon and desert cassia, red hesperaloe, trailing indigo, gold lantana, and Rio Bravo and thunder cloud sage were all planted as full and bushy shrubs. More than 160 red-tipped ocotillo bushes, each 6 feet tall, are included in the mix.

DESERT DISPLAY

“Considering we get less than 7 inches of rainfall each year, the principles of xeriscape landscaping were considered in the design,” Analla says. “We do have an irrigation system for the berm, but our water use is very low.” Trees such as thornless mesquite, Rio Salado desert willow, shoestring Acacia, desert museum Palo Verde and purple Texas mountain laurel were all 5 to 9 feet tall when planted.

Large and colorful landscape boulders, with names like Mojave gold, mineral park gold and Sedona, and palomino coral add visual balance to the landscape. Twenty-two gold and tan cleaved sandstone boulders are strate-



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“Considering we get less than 7 inches of rainfall each year, the principles of xeriscape landscaping were considered in the design.”

HOWARD ANALLA

gically placed throughout. Contours and slight undulations define the berm. Vegetation is separated by areas of ground cover made from decomposed granite and rock.

An attractive wrought iron fence protects the front of the facility, which abuts a city park and a popular multiuse trail that meanders through the landscape and provides a buffer to the homes across the street. As an added feature, bollard lights illuminate the trail and highlight an architectural stone retaining wall that passes in front of the facility. The berm is maintained by the city Parks Department.

CONSULTING THE PUBLIC

Before the plant was built, public meetings were held with a neighborhood advisory committee to solicit input and build support for the project. “It was a good relationship and had a lot of participation that led to the acceptance of the facility,” Analla says. “Key concerns were noise, odors, aesthetics, traffic and chemicals.

“One of the professors at the University of Nevada, Las Vegas, whose students now do research at the facility, said he drove by the place for almost two years and didn’t know it was a wastewater treatment plant. That’s pretty good hiding, I’d say.” tpo

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2



Air for Rent

AERZEN USA OFFERS RENTAL BLOWERS TO HELP WASTEWATER TREATMENT PLANTS MEET EMERGENCY AND OTHER SHORT-TERM AERATION REQUIREMENTS

By Ted J. Rulseh

Water and wastewater treatment plant teams are well familiar with rental electric power. If there's an emergency or some other short-term need, call a rental company and order a generator with the necessary power rating; keep it for as long as needed.

Generators aren't the only equipment available on the rental market. All sorts of items from power tools to earth-moving machinery can be rented. It makes more sense to rent for contingency needs than to try and own every conceivable item.

Now Aerzen USA, a manufacturer of aeration blowers for wastewater treatment, is entering the rental business. Aerzen Rental offers blowers in a wide range of capacities, ready to ship with ancillary equipment to wherever they're needed.

The units are essentially the same as those Aerzen builds for the new-equipment market. They can supply supplemental air, provide continuity in case of machine breakdowns and help preserve capital. Matt Piedmonte, director of the rental business for Aerzen USA, talked about the offering in an interview with *Treatment Plant Operator*.

tpo: What is your company's experience in the blower rental market?

Piedmonte: We have been in the rental business in Europe for almost 20 years. We've proven that there is a need and that customers can benefit from rental blowers for wastewater treatment plant aeration. We're looking to replicate that success in the United States.

tpo: How quickly can you respond to customers' requests for equipment?

Piedmonte: The business is built for very quick response time. From the time someone places an order and says, "I'm ready to go," we can load a truck inside of an hour for almost any project. We've designed all the componentry so that one person using rigging equipment can manage the loading and manipulation of all the material needed to fill an order.

tpo: From where do your shipments originate?

Piedmonte: Our initial location is in Atlanta. We have plans to spread across the country in the next several years and increase the number of depots as the business grows. From Atlanta, we can ship to anywhere in the United States. All of the equipment is shipped by flatbed. We have a test stand so we can test the units before shipment and ensure they will be reliable and operative when they arrive.

tpo: What are the main features of the blowers you supply for the wastewater market?

Piedmonte: For the wastewater business, we supply rotary-lobe positive displacement blowers. Each unit includes a variable-frequency drive so that users can very accurately control the flow of air into the process. Units come in standard Aerzen sound-attenuated enclosures. The entire fleet has remote monitoring, so we can monitor the machines 24/7 while they run on customer sites. Every blower is oil-free and is outdoor-rated for extreme ambient conditions.

tpo: What is the significance of oil-free equipment?

Piedmonte: Oil-free means there is absolutely no oil in the air intro-



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duced to the process. It's the same kind of air used in pharmaceutical plants and the same kind that can come into contact with food products. The wastewater industry uses almost exclusively oil-free blower equipment.

tpo: What ancillary equipment is included with the blowers?

Piedmonte: We supply all necessary electrical cable and pipe. When we lay out a project, we determine how far the blower will be from the connection point, the kind of connection point, the size of the flanges and more. It's like an Erector Set. We send every component the customer needs for setup, including gasket kits and bolts.

tpo: Do you perform installations and provide operational support on site?

Piedmonte: We typically do not travel to customer sites to install equipment. That saves customers the travel time and expense for a technician. The installation is very simple. Since we supply all the pieces of the puzzle, the vast majority of customers can install it on their own. For the others, we can walk them through it over the phone.

tpo: What size of projects can you handle with rental equipment?

Piedmonte: We can handle projects from 100 cfm to essentially unlimited because we can supply multiple machines operating side by side to deliver higher flows.

tpo: What is the advantage of using rental blowers as opposed to standard "plant air" for short-term aeration needs?

Piedmonte: Typical in-plant air compressors are designed to deliver air at about 100 psi. That is significantly different from the 7 to 10 psi required for wastewater aeration. If using plant air compressors in a wastewater application, you're expending all the energy to compress the air up to that much

higher pressure, and then throttling it down to the pressure you actually need. That is very wasteful in terms of energy.

tpo: How can rental blowers help treatment plants avoid capital expenditures?

Piedmonte: Suppose a customer needs a source of air for a year during a plant reconfiguration. Traditionally, they would have to buy a machine, commission it, carry the risk of owning it, carry it on their books and use

“The business is built for very quick response time. From the time someone places an order and says, 'I'm ready to go,' we can load a truck inside of an hour for almost any project.”

MATT PIEDMONTE

capital dollars. Today, with the rental option, they could simply rent a machine for that one year. Also, a plant that has a peak season where it might run short on air could bring in a rental unit to provide supplemental aeration for that time period. Rental lets operators think differently: Where do I spend capital dollars? And where do I rely on the rental industry?

tpo: Does Aerzen Rental help customers prepare in advance for situations that would require rental blowers?

Piedmonte: We will build contingency plans where we identify in advance all the things that customers would need to do in the event of an emergency need for compressed air. In some cases, customers need to do work in advance in order to be prepared for an emergency. **tpo**



Plant operator Jerry McKenzie checks the temperature of a batch sample at the Kentucky River Station II at Hardin's Landing.

Ready for the Future Now

A 20 MGD WATER PLANT ALONG THE KENTUCKY RIVER PROVIDES HIGH-QUALITY WATER AND SECURITY OF SUPPLY FOR THE CITIES OF LEXINGTON AND OWENTON

STORY: **David Steinkraus** | PHOTOGRAPHY: **Martin Cherry**



A new drinking water plant opened beside the Kentucky River a few years ago, but its main customer, the city of Lexington, is about 30 miles away.

The plant helps Kentucky American Water meet the city's water demand, now and for many years. The team at Kentucky River Station II at Hardin's Landing received a 2017 Award of Excellence in Water Plant Operations from the Kentucky/Tennessee Section American Water Works Association.

Kentucky American Water operates the drinking water system in Lexington. A 31-mile, 42-inch pipe connects Lexington and its 322,000 people to the Hardin's Landing plant. A 20-mile, 16-inch pipe connects the plant to the city of Owenton, about 16 miles north.

“Our operators are all well-qualified and well-trained, so we knew what they do would stand up to anyone else.”

NATHAN CLARK

SUSTAINING FLOW

The 20 mgd (design) Hardin's Landing facility supplements Lexington's own drinking water plants: the River Station plant built in the 1950s and the Richmond Road plant built in the late 1890s. The new plant offers many advantages, according to Nathan Clark, senior superintendent of operations for the northern division of Kentucky American Water. One relates to how Kentucky River water is divvied up among users.

There are 14 locks on the river, all installed for navigation. Four are in use, and the others are sealed. In a dry summer weather when no water flows over the dams, the pools between the locks essentially become reservoirs. “That was a problem for Lexington because when water stops flowing, they're stuck with a fixed amount of water that they can draw from that pool,” Clark says. That has led to water shortages.

Pools between the locks are numbered, starting with Pool 1 at Carrollton on the Ohio River. Lexington draws from Pool 9; the Hardin's Landing plant is the only one that draws from Pool 3. “We still are allowed through the Public Service Commission to draw only a certain amount of water from the river, but the plant gives us the option of pulling an additional 20 million gallons if Lexington is drawing the most it can,” Clark says.

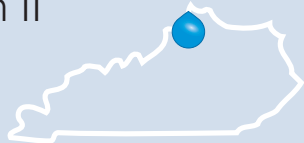
ANOTHER CUSTOMER

In 2013, Kentucky American Water acquired the Owenton water system, serving 1,500 people. The company decommissioned the city's water plant. Owenton is now served by the Hardin's Landing facility and can draw water from Lexington if needed by way of the interconnection.

Kentucky River Station II at Hardin's Landing

Owen County, Kentucky

www.amwater.com



BUILT:
2010

COMMUNITIES SERVED:
Lexington, Owenton

EMPLOYEES:
7

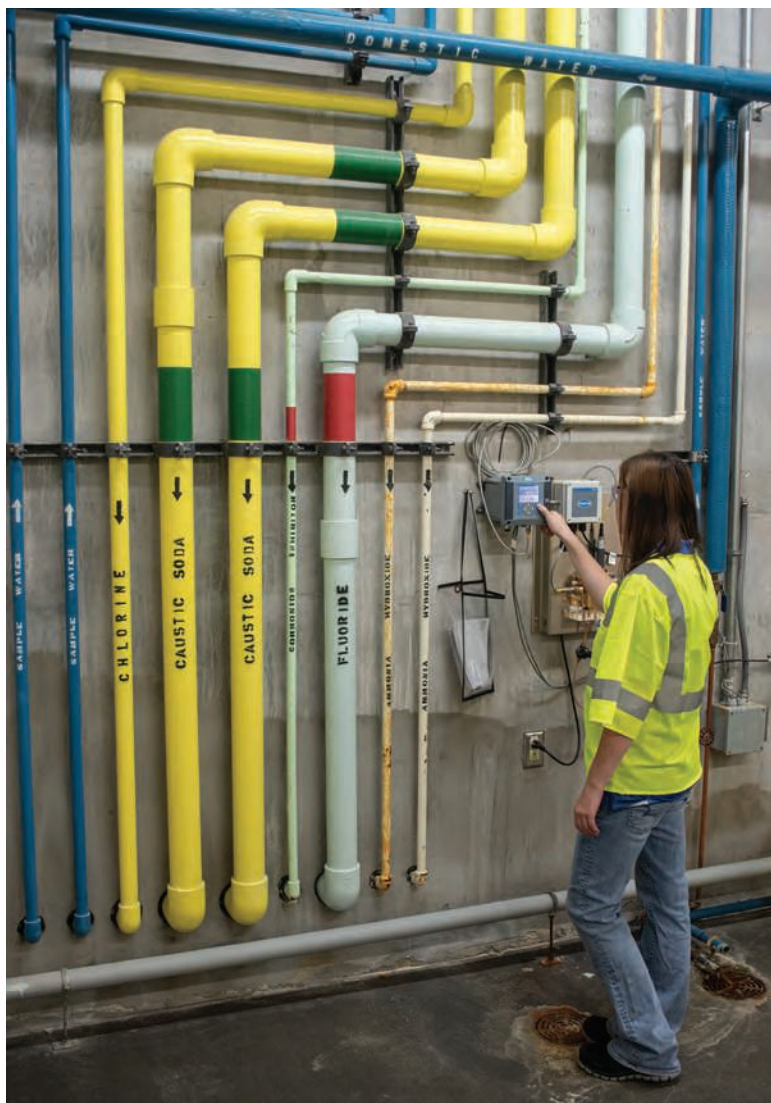
FLOWS:
20 mgd design, 7.5 mgd average

TREATMENT PROCESS:
Conventional

SOURCE WATER:
Kentucky River

ANNUAL BUDGET:
\$20 million (operations)

KEY CHALLENGE:
Providing a drought-resistant water supply



Jerry McKenzie works with a Hach sc200 universal controller.

Kentucky American Water is now replacing distribution pipes in Owenton. Low pressure has been a problem because some customers on side streets long ago installed their own pipes. “Customers installed what they thought would handle the demand, but now it isn’t enough to provide for the people who moved into the area,” Clark says. “The issue now is that people want water, but it isn’t as easy as expected to give them water service.”

New pipes are being installed where the most people are and where growth is occurring. Because of the cost, it’s a long-term project.

CAPABLE TEAM

Clark was not supervising the Hardin’s Landing plant when the team won the operations award. “We knew this was a good plant,” he says. “Our operators are all well-qualified and well-trained, so we knew what they do would stand up to anyone else.”

Team members are Jason Case, production supervisor; Bill Allen, David Pittman and Jerry McKenzie, Class IV operators; and Brennan Browning, Class III operator. This group communicates regularly with the team in Lexington to keep the water moving.

“Since this plant was put in service, it has given us the ability to do periodic maintenance on the plants in Lexington and to pursue other capital projects.”

NATHAN CLARK

The process at Hardin’s Landing begins at an intake structure in the Kentucky River. Four pumps (two Weir Floway and two Flowserve) run based on demand: two 700 hp pumps with variable-frequency drives and two 500 hp pumps with fixed-speed drives.

Under typical daily demand of 7.5 mgd, just one of the 700 hp pumps is sufficient. If demand rises to 10 or 15 mgd, operators can use one of the 500 hp pumps and fine-tune the raw water flow with one of the pumps with VFDs. All that power is needed to lift the water up a 400-foot bluff through a 42-inch pipe to the plant.

Potassium permanganate is fed at the intake. At the head of the plant, the water goes through a rapid mixer where polyaluminum chloride is added. Four settling basins with paddle mixers build the floc. The paddle in each basin spins slower than the paddle in the previous basin. Then water flows through plate settlers.

Sludge is pumped to a settling basin on the front lawn of the plant site. Two belt presses (Alfa Laval Ashbrook Simon-Hartley) and a conveyor dewater the material, which is spread on land to dry. The water removed flows to a pair of clarifiers and is returned to the river.

Drinking water flows through standard mixed-media sand and anthracite filters. It then flows into a clearwell or, if the turbidity is too

Bill Allen, treatment plant operator, and Nathan Clark, senior superintendent of operations, in the plant control room.

(continued)



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video profile
 To learn more about
 Kentucky River Station II
 at Hardin's Landing,
 take a look at a video profile at
tpomag.com

The plant team includes, from left, Bill Allen and Jerry McKenzie, Class IV operators; Nathan Clark, senior superintendent of operations for the northern division of Kentucky American Water; and Jason Case, production supervisor.



high, into the clarifiers and then back through the process. Chlorine, fluoride, orthophosphate and ammonia are added before distribution.

ADDING FLEXIBILITY

The Hardin's Landing plant provides insurance against prolonged dry spells. In 2016, almost all Kentucky counties experienced drought. With its interconnections and potential for expansion, Hardin's Landing will take some of the sting out of the next drought.

Getting to that stage required significant time and effort before the plant began operating in 2010. The approval process before the Public Service Commission lasted more than a year, and once the commission gave its approval, people in the path of the pipeline mounted a court challenge that was ultimately unsuccessful. Officials in Louisville, about 60 miles northwest of Lexington, proposed supplying water from the Ohio River, but the Public Service Commission rejected that option.

There were small glitches when the plant started up, but those were soon solved and the plant has been running smoothly. "Since this plant was put in service, it has given us the ability to do periodic maintenance on the plants in Lexington and to pursue other capital projects," Clark says.

In the past, there were times when Lexington could not shut down because demand required that it keep operating. Now the region is better prepared for an unpredictable future. **tpo**

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BUILDING DOWN

In addition to awards for operations, the drinking water plant at Hardin's Landing in Kentucky won an award for its design. It's what you don't see that matters. What you don't see makes work easier on team members because they don't have to go outside.

"If you were to pull up the parking lot, there are two floors belowground, below the offices," says Nathan Clark, senior superintendent of operations for the northern division of Kentucky American Water. "Instead of making our footprint real wide, we tried to condense the overall footprint of the plant."

It's easier for operators to be in one building instead of walking around a campus. "We do have more steps to climb," Clark observes.

Bad weather reveals other advantages of the design: "If it's pouring rain and lightning takes out a pump, everything is right here in this one building. It's just a matter of going down and verifying that the pump did shut down. Run back up a flight of steps to the control room and you can do your other checks."

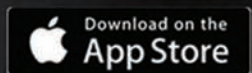
The Grand Honor Award for design came from the American Council of Engineering Cos. of Kentucky for 2013. The judges also cited the plant's raw water intake, a sump installed to a depth of 80 feet with jet grouting to strengthen the surrounding soils.

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Room to Grow

OLE MISS GETS AN EXPANDED WASTEWATER TREATMENT FACILITY TO MEET THE CHALLENGES OF STRICT PERMIT LIMITS AND HIGHLY VARIABLE FLOWS

By Chris French

Significant operational challenges. That's something of an understatement when making wastewater treatment enhancements at an international research university that after 170 years continues to expand.

Known as Ole Miss, the University of Mississippi approached Engineering Solutions Inc. (ESI) in 2010, seeking guidance on an upgrade to its wastewater facility, built in 1972 as a dual-basin extended aeration plant.

ESI designed a project to convert one of the basins to a 0.75 mgd oxidation ditch (Lakeside Equipment), replace the clarifier equipment and recirculation pumping, upgrade the headworks and convert the other aeration basin to flow equalization.

The new oxidation ditch uses a closed-loop-reactor process consisting of reactors with a single feed point for raw wastewater and return activated sludge. The basic design uses a racetrack configuration that provides a straight-line flow between the headworks and the final clarifiers.

At the core of the closed-loop-reactor process is the horizontal Magna Rotor (Lakeside), which sustains a high population of microorganisms in the reactor to provide simple process control. It delivers precise oxygen input to the biological process through adjustment of rotor immersion by raising or lowering the level-control weir and by adjustment of the rotational speed.

VARIABLE FLOWS

The university's wastewater facility is different in several ways, according to Mike Falkner, ESI principal and civil engineer. "First, there are very wide swings in on-campus population depending on the school calendar. This can range from almost no campus population during the Christmas break, to normal student loading and then to home football games, for which the Ole Miss Rebels attract sellout crowds in excess of 60,000."

“The current configuration has a flow capacity of 1.5 mgd with a peak of 2 mgd. It is designed to be highly energy efficient because the aerators are controlled based on dissolved oxygen levels in the mixed liquor using variable-frequency drives.”

MIKE FALKNER

Influent flows can range from 0.3 to 0.4 mgd to an average of 0.6 to 0.7 mgd, to a high of 1.2 mgd. This creates challenges in maintaining a stable biomass within the treatment reactor.

"Also, due to a campuswide push to convert to low-flow plumbing fixtures, wastewater flows were not increasing as a linear function of population," Falkner says. "However, the concentrations of contaminants such as ammonia in the waste stream continued to rise, often to levels difficult to effectively treat using normal municipal processes. The rising ammonia levels



Original closed-loop reactor on the left; new closed-loop reactor on the right.

were not identified in pre-design sampling for the 2010 plant rehab project. The source has been confirmed by on-campus sampling conducted as an independent study."

EXPLORING ALTERNATIVES

As the campus population continued its rapid growth, the Physical Plant Department in 2013 asked ESI to investigate wastewater treatment options. At that time, the university operated a separate single-oxidation-ditch treatment facility, permitted for 0.95 mgd and scheduled for upgrade in the 2015 project to the dual-basin configuration with nutrient removal capability.

Faced with a growth rate that would overwhelm the wastewater facilities as early as 2017, and experiencing periods of overload before that, the university sought the most feasible approach from economic, environmental and social perspectives to last the next 20 years.

ESI saw that while campus water conservation had been beneficial in many respects, it had placed higher demands on the wastewater facility, especially when required to meet an ammonia nitrogen discharge limit of 2 mg/L.

One alternative was to send wastewater to the city of Oxford treatment plant. The city had capacity to treat the university's flow, but that would mean constructing some 12,500 feet of 24-inch gravity sewer to make the connection, including a bore under a state highway. The potential benefits included lower capital cost, elimination of operating and maintenance expenses for the university's plant, and less environmental liability. It would also allow the university to clear the treatment plant site, on a prime property next to the football stadium.

However, the analysis showed that the drawbacks outweighed the benefits. The city's commercial treatment rates were high, and the university would be vulnerable to rate increases. There would also be charges for maintenance and for expansion and replacement of existing collections system components.

OPTING FOR EXPANSION

After lengthy consideration, ESI recommended increasing the university plant's capacity while maximizing existing assets. ESI proposed a second Lakeside oxidation ditch along with the addition of anoxic tanks upstream of both ditches for enhanced biological nutrient removal. This would help maintain compliance with more stringent NPDES permit limits.

The proposed new process train would need slightly more capacity than the existing ditch, and new headworks would be built to optimize the flow balance between the two. Other components would also have to be modified to handle pumping, sludge treatment and chemical treatment.

The plan meant the university retained full control of wastewater treatment. Annual debt service plus operational costs would be substantially lower than for off-campus treatment. The capital cost was higher and the treatment plant would remain next to the stadium, but visual and odor impacts would

be attenuated by using covers and air scrubbers.

Falkner observes, "The most recent project added a third clarifier, new screening and grit removal systems, a headworks odor control scrubbing system, an aerobic digester and a UV disinfection system."

The equipment includes the Spir-aGrit system (Lakeside), which has no submerged bearings and so is easy to maintain. The compact system efficiently removes grit over a wide range of flow rates in a mechanically induced vortex. Rotating paddles maintain the flow velocity in the vortex chamber, keeping organics in suspension while allowing heavier grit to settle.



The Magna Rotor aeration system (Lakeside Equipment) provides precise oxygen input to the biological treatment process.

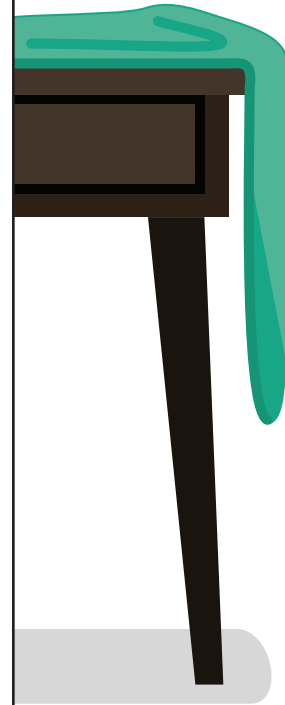


The closed-loop reactor at Ole Miss is shown during construction.

Lakeside also supplied a Raptor Micro Strainer, which captures small debris that passes through other screens. The screenings are washed, compacted and dewatered to 40 percent solids, reducing volume by half and weight by two-thirds, lowering reducing disposal costs.

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STILL GROWING

The university's growth was underlined in fall 2016 when enrollment reached an all-time high of 24,250 students. Enrollment has grown by 40.5 percent over the past decade and by 13.1 percent in the past five years alone.

"The current configuration has a flow capacity of 1.5 mgd with a peak of 2 mgd," Falkner says. "It is designed to be highly energy efficient because the aerators are controlled based on dissolved oxygen levels in the mixed liquor using variable-frequency drives. This means they only inject as much oxygen and mixing as needed to maintain high-quality effluent."

"Investing in Lakeside's robust engineering was very much a part of our commitment to the long-term well-being of the university's wastewater treatment facility. It is tough, reliable equipment that requires only basic maintenance." **tpo**

Careers Recycled

JOHN HART BECAME AN EQUIPMENT SALES ENGINEER AFTER RETIRING FROM OPERATIONS. HE SEES MANY OPPORTUNITIES FOR RETIREES TO STAY ACTIVE AND ENGAGED IN THE INDUSTRY.

By Ted J. Rulseh

While waves of water and wastewater operators retire in the years ahead, demand for their skills will certainly not decline.

That means there's ample opportunity for retiring plant operators, superintendents and managers — not to mention mechanics, collections people and lab personnel — to stay active and engaged in the industry, if they want to. One who has made that choice is John Hart, who retired in 2016 as deputy director of Saco (Maine) Water Resource Recovery Department.

Today, he's a sales engineer with Russell Resources, a manufacturer representative firm based in Brewer. Through his work, he maintains relationships he built during a 45-year career in his native state and New England while sharing his experience and knowledge with plant personnel, giving back to the industry and continuing to learn.

Hart's background is extremely diverse: municipal wastewater operations, industrial wastewater treatment, project management, contract operations, plant safety auditing, operator training and more. He has won a long list of the industry's top honors, including the William D. Hatfield Award and Water Environment Federation Fellow induction. He also spent 32 years in the U.S. Coast Guard Reserves.

In an interview with *Treatment Plant Operator*, Hart talked about life after retirement from full-time work and the various ways in which operators can keep contributing to the profession long after their last official day on the job.

tpo: How did you come into the clean-water profession?

Hart: I fell into it by chance. I grew up just south of Portland. After high school I was thinking of going to college to be an industrial arts teacher, but I had an opportunity to visit a handful of wastewater treatment plants in southern Maine, and I got the bug, so to speak. I went to the Wastewater Training Institute for operators and from there went right to work at the Scarborough Sanitary District.

tpo: What led you to embark on such a diverse career in the industry?

Hart: I could have stayed at Scarborough for my whole career, as a friend of mine did who just recently retired, but I saw other opportunities. I was intrigued and inspired by new challenges.

tpo: Why did you decide to stay active in the industry after you retired?

Hart: I have a hard time saying no and a hard time slowing down. The water environment industry is a family, and I feel very connected to a lot of people in it. I wanted to continue in some way to add value and be of service.



John Hart made a transition from wastewater operations to wastewater equipment sales.

“I believe in staying challenged, involved and paying forward. If you're coasting, you're going downhill.”

JOHN HART

I like problem-solving. If you enjoy puzzles, you can go into a lot of wastewater treatment plants and find somebody who has an issue they're trying to deal with. I believe in staying challenged, involved and paying forward. If you're coasting, you're going downhill.

tpo: What exactly is your role with Russell Resources?

Hart: The company serves the six New England states. I cover New

Hampshire and southern Maine. We represent a wide variety of equipment: disinfection, pumping, dewatering, aeration, controls, biosolids processing, chemical feed, odor control, headworks, filtration and more.

tpo: What does your work schedule look like?

Hart: My typical work week is Tuesday, Wednesday and Thursday. On those days, I hit the road running. I keep in touch with engineering firms that are projecting various jobs. I also look for other projects that might hit the radar screen, such as construction projects where I feel we might be able to help. Every day is different. There are so many facets of the industry to discover. What I might plan as a drop-in, say hello and leave a card, often turns into a 30- to 60-minute conversation about challenges an operator has overcome or is facing.

tpo: How would you characterize the value you add for your clients?

Hart: By having 45 years of hands-on and supervisory experience in a variety of facilities, I'm able to share best practices and expertise from areas I've worked in, or refer operators to someone else who can help them. It's nice to be able to inspire trust by coming in and talking the same language. If I'm taking a walk through a facility, I might be able to hand off ideas of what has worked at my previous facilities or other facilities that I know of. I'll also give operators accolades for coming up with something I haven't seen before and then put that in my tool bag for helping somebody else.

tpo: For operators who plan to retire, what other options exist for those who would like to remain connected to the profession?

Hart: I was approached by an engineering firm about being a clerk of the works, like a resident inspector, for construction. There are also opportunities to work for engineering firms that offer assistance with process control. Some of those firms do contract operations. I've seen a few folks who have been senior people at a facility stay on the books after retirement and work a couple of days a week or help with special projects. They use their expertise and experience to help a newer crew.

tpo: Do you see recent retirees as potential temporary resources for plants that are short staffed because of their own staff retirements?

Hart: That's an excellent opportunity. I don't know how often it actually takes place, but that can be a win-win for both sides, if somebody can do that without traveling great distances.

tpo: Do you see any opportunities for retirees on the regulatory side?

Hart: I don't think regulatory work would be a fit as I'm not sure if too many state regulatory agencies would accommodate a part-time employee.

tpo: What about lending their hands-on expertise and perspectives to engineers designing plants or upgrades?

Hart: That's something we could use more of: tying in grounded, deck-plate experience from the operational side with the expertise of somebody looking at things on paper. Designers could be missing opportunities if they don't take advantage of that end-user experience.

tpo: What are the rewards of continuing to work after you officially retire?

Hart: I'm having a blast reconnecting with my extended network of water professionals who are working every day to protect the environment. Also, due to my extended regional territory, I have the extreme pleasure of meeting countless others who have the same can-do attitude of continuous improvement.

tpo: What do you see as the biggest challenge facing the industry today?

Hart: During my visits, I hear the same universal message: *We're really short-handed. We're down two operators. We're down a mechanic. We just interviewed and we can't get anybody.* It's an understatement to say we need help.

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“I'm having a blast reconnecting with my extended network of water professionals who are working every day to protect the environment.”

JOHN HART

The industry is crying for talented, passionate, interested professionals to fill the void as people like me move on. Fortunately, a number of facilities have made fantastic new hires who are doing outstanding work. I do my best to welcome them to the industry and encourage them to keep moving forward in their careers.

tpo: What do you love about the wastewater treatment profession?

Hart: What I love is seeing how far we have come since the early 1970, especially since the Clean Water Act of 1972, when I graduated from school. Until the late 1970s, there were no plants treating wastewater in the greater Portland area, and there was raw sewage in Portland Harbor. Now it's been brought back to a high quality of pristine water, thanks to wastewater operators. That's true across the state, the country and the globe. This is a can-do, feel-good industry where you can see what the results are when you're done.

tpo: What advice would you give to clean-water professionals who are at or near retirement?

Hart: Don't let all your experience and skills go to waste. Try to repurpose it as much as possible. In some manner, be engaged, and try to mentor someone — encourage a replacement. As you leave, you should try to solicit at least two new people to get into the field.

tpo: Do you ever see a time when you will step away completely?

Hart: When it's not fun anymore or when someone else lets me know it's not fun anymore, I'll move on. **tpo**

Heath Capela, left, and Larry Coudo, contractors for Boston Water and Sewer Commission, dewater an excavation made to replace an old water main.



More Than Required

THE AWARD-WINNING BOSTON WATER AND SEWER COMMISSION OUTPERFORMS STANDARDS IN PROVIDING EXCELLENT DRINKING WATER AND SERVICES

STORY: **Trude Witham** | PHOTOGRAPHY: **Scott Eisen**



You won't find a treatment plant at the Boston Water and Sewer Commission. You will find a highly dedicated operations team that serves more than a million people.

Some 450 team members maintain 1,000 miles of water pipes and 1,500 miles of stormwater and drainage lines. They are responsible for maintenance and emergency repairs to the water and sewer mains, service connections, hydrants and drains.

Their success comes from ongoing training and capital improvements. They are strongly committed to education and environmental protection. Sustainability is a priority, and so is maintaining predictable rates. Challenges include rain events and stormwater management, along with a pipe replacement program.

The commission has received awards for drinking water quality and for sustainable operations and community outreach. These include an Outstanding Performance Award for drinking water from the Massachusetts Department of Environmental Protection in 2017.

In 2018, the commission received a Sustainable Water Utility Management Award from the Association of Metropolitan Water Agencies. That award recognized improving operations, maintaining fiscal responsibility, and increasing public awareness to improve water quality and protect the environment.

MUCH IMPROVEMENT

The commission was established in 1977 to maintain and improve the quality and reliability of water, sewer and stormwater services in the city of Boston. Governed by a three-member board, the

commission's main goals are efficient delivery of service, cost control and environmental protection.

The potable water distribution system serves 670,000 residents and 600,000 daily commuters in Boston's 48 square miles. Treated water comes from the Massachusetts Water Resources Authority through 29 metered connections at various delivery points. Raw water is drawn from the Quabbin and Wachusett reservoirs and the Ware River.

The Operations Department handles the maintenance and operability of the water, sewerage and

“Our leak detection program has reduced leaks to 8 percent. It used to be 50 percent.”

JOHN SULLIVAN



A saw is used to cut through an old water main.

Boston Water and Sewer Commission

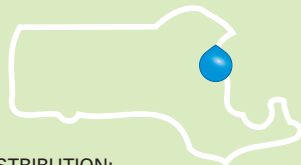
www.bwsc.org/home/home.asp

ESTABLISHED:
1977

POPULATION SERVED:
1.2 million

SERVICE AREA:
City of Boston

SOURCE WATER:
Supplied by the Massachusetts Water Resources Authority



DISTRIBUTION:
1,000 miles of water pipe, 1,500 miles of sewer pipe

KEY CHALLENGE:
Rain events, stormwater management

Leak detection and repair is a major focus of the Boston Water and Sewer Commission. That includes digging up and replacing old and leaking water mains.

drainage infrastructures. Team members perform preventive maintenance and emergency repairs to water mains, service pipes, hydrants, gates, valves, catch basins, manholes, sewers and storm lines. They also maintain the materials and equipment inventory, fleet vehicles, buildings and properties, and administer the cross-connection control and grease trap inspection programs.

Overseeing all this is John Sullivan, chief engineer, who has been with the commission since the beginning. “The cast iron pipes date back to 1848,” he says. “When the commission was formed in 1977, the pipes were in bad shape. Since then, our capital improvement program has rehabilitated 95 percent of the water system infrastructure, by a process of cleaning and cement lining.”

Aggressive leak detection/repair and progressive metering programs continue to reduce unbilled and unaccounted-for water. The commission initiated several meter programs, switching to smaller meters and installing smart meters (Aclara).

HIGHLY DECORATED

Besides the awards mentioned earlier, the commission has won others, including:

- 2018 National Environmental Achievement award for operations and environmental performance, National Association of Clean Water Agencies
- 2017 STAR L (Systems Taking Action to Reduce Lead), state DEP.

The commission also won the 2017 New England’s Best Drinking Water Taste Test competition held by the New England Water Works Association. It was ranked highest in customer satisfaction in the Northeast by J.D. Power in its 2018 water utility residential customer satisfaction study.

Sullivan believes the commission won these awards for doing better than the standards. “DEP looks at performance and whether you have any violations,” he says. “They look at your cross-connection programs and whether you protect public health. We survey buildings to make sure no one is changing the plumbing. Our leak detection program has reduced leaks to 8 percent. It used to be 50 percent.”



The commission has replaced all lead pipes in its public water mains. “We do more than is required,” Sullivan says. “The STAR L award acknowledged our collaboration with the city’s public schools and our efforts in the community to protect children from the dangers of lead.”

The lead replacement incentive program encourages property owners to replace lead water services. “We give them a credit up to \$2,000 toward the cost of replacement, and the ability to pay interest-free over 48 months.”

(continued)

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DEDICATED TEAM

Of the commission's 450 team members, 206 work in operations, including water and sewer and support people. Most laborer positions are equipment operator, service repair and service repair foreman. "Some specialize in water or sewer, but they all have to take training classes in both and they are able to work on both if a situation requires it," Sullivan says.

Sullivan has 46 years in the industry and certifications in water treatment and distribution. "My father retired as chief engineer at the commission after 40 years, and my grandfather before him retired after 52 years as division engineer," he says. "I have replaced pipes that my grandfather put in." As chief engineer, Sullivan oversees 90 people and all consultants. He reports to Henry Vitale, commission executive director.

Reporting to Sullivan is Paul Canavan, director of operations, who has been with the commission for 22 years and oversees four superintendents. He holds Grade 4 water distribution and Grade 2 water treatment licenses.

Sullivan credits the staff with keeping customers happy: "Our customers expect a lot. Every customer has unusual conditions and needs, and every problem is different. Our people have to face that situation, so empathy is important. We have some remarkable people who do a great job."

The commission believes in employee recognition. Each quarter, an All-Star Award goes to a team member. Employees may nominate a co-worker; a call for nominations is sent by email and is posted on three digital signs around the facilities. The executive director chooses the winner. Award criteria includes creative problem-solving skills, enthusiasm, commitment to teamwork, and resourcefulness.

"Most people love their jobs here," Sullivan says. "We know that our guys will jump in a hole full of water when it's freezing outside and it's the day before Christmas. That shows all the commitment I need to see."

SUSTAINABLE RATES

Sullivan feels the commission's greatest achievement is keeping rates low by planning for improvements and spreading the costs out over time: "We take care of business in the most cost-effective manner possible. That allows

us to keep rate increases under 5 percent. We have very few people showing up at our rate meetings."

The greatest challenges are rain events and dealing with stormwater. "During a small rain event, we drain to the ocean," Sullivan says. "For extreme events, our emergency preparedness plan ensures that we have the right personnel and equipment available." The staff checks storm drains in low-lying areas to make sure they are free of debris and free-flowing. There are flap gates in flood-prone neighborhoods. Tide gates are inspected monthly, regardless of weather.

An ongoing challenge is pipe replacement. Sullivan says, "We have televised every sewer pipe, so we know what shape they are in. We continually need to upgrade; it's a never-ending program. It's the same with the water pipes. Even though our leak detection program has dramatically reduced leaks, it's like a weight-loss program — you have to keep after it or it comes back."

EDUCATING THE PUBLIC

The commission is deeply involved in education. A full-time education coordinator, Adriana Cillo, presents daily to classrooms, senior housing residents and community groups. She also leads youth and adult volunteers in a citywide storm drain stenciling program. Participants mark

“Our customers expect a lot. Every customer has unusual conditions and needs, and every problem is different. ... We have some remarkable people who do a great job.”

JOHN SULLIVAN



John Sullivan, chief engineer with the Boston Water and Sewer Commission

FIXING THE LEAKS

At the Boston Water and Sewer Commission, leak detection teams have played a major role in greatly reducing unaccounted-for water. Leak detection has also helped prevent potential paralysis of busy areas and essential services in the city.

In November 2017, a commission leak detection team responded to reports of water entering a Massachusetts Bay Transportation Authority vent. Led from headquarters by Roodly Dorleans, manager of field engineering, leak detection and dye testing, the team went to work.

They surveyed the area, a busy street near City Hall, with a real-time digital leak noise correlator (DigiCorr from Itron) and quickly identified a compromised 16-inch water main. A dig crew immediately excavated, found the leak and replaced rotting bolts that secured a coupling. If that water main had given way, the shopping district known as Downtown Crossing, and the area's two major Massachusetts Bay Transportation Authority routes, would have been severely affected.



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Sewer and Storm Ready



“We have televised every sewer pipe, so we know what shape they are in. We continually need to upgrade; it’s a never-ending program.”

JOHN SULLIVAN

storm drains with decals that remind residents that the drain leads to a waterway.

The commission works with river associations and makes grants available that help them educate the public. The commission also partners with the Massachusetts Water Resources Authority on community education.

The commission’s water truck is another community service. “It allows us to distribute our tap water to Boston residents and visitors attending events and walking through the city,” Sullivan says. The truck has six taps for filling water bottles, four drinking fountains and two doggy bowls.

The truck is featured at community events and social functions: “It’s especially good in warm weather since the water is chilled. In fact, we are the only source of freshwater at the Esplanade on July 4, where people are sitting out in the heat waiting for the Boston Symphony to perform.”

Sullivan sees a bright future for the commission but sees a challenge in climate change: “We know we will get bad storms from which we will have to recover in 24 hours and get right back to normal. But I’m confident that we will make it.” **tpo**



An old water main is shown after replacement by contractors.

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Monitoring and Instrumentation

By Craig Mandli

Analytical Instrumentation

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MetriNet from Analytical Technology



ChemScan mini Ammonia Analyzer from ASA Analytics

ASA ANALYTICS CHEMSCAN MINI AMMONIA ANALYZER

The ChemScan mini Ammonia Analyzer from ASA Analytics is easily serviced and requires low maintenance. No recalibration is needed, and the analyzer utilizes a sample line auto-cleaning option. Discharge is nontoxic, and no mandatory service contract is required. The analyzer can be installed in a ChemScan mini Outdoor Enclosure, which provides a turnkey solution for housing the analyzer and

related items. The enclosure is rated NEMA 4X and can be either wall- or rail-mounted for indoor or outdoor use. The enclosure holds the ChemScan mini, reagents, cleaning solutions, power supply and surge protection. Manufactured out of fiberglass, the enclosure is insulated and has a heated sample line, providing a stable environment and the ability to locate the analyzer at or near the sample source. This minimizes degradation of unstable samples and improves cycle time for analysis. **800-665-7133; www.asaanalytics.com**

DE NORA WATER TECHNOLOGIES MICROCHEM WATER ANALYSIS SYSTEM

The MicroChem water analysis system from De Nora Water Technologies is available in panel-mounted, factory-configured packages in four options for easy ordering and trouble-free installation. Modular configurations



MicroChem water analysis system from De Nora Water Technologies

with separate electronics and measure cells are still available. The system offers both measurement and control of chlorine-based compounds and other critical elements in one versatile instrument that can be specifically tailored to individual applications. It can be used as an analyzer or controller and offers USB connectivity, with easy initial setup and software updates, with data log downloading. It has multiple proven wet end measurement options, a touch-screen interface and six language options. **215-997-4000; www.denora.com**

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Phosphax sc LR Phosphate Analyzer from Hach

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SES System from KSB

or manufacturer. It can record process variables and vibration levels through on-site measurements, including pressure, rotational frequency, fluid and bearing temperature, analog signals 0/4-20mA and vibration, performing frequency analyses to identify causes of damage. The report and presentation of findings include an action plan and profitability analysis. **804-222-1818; www.ksbusa.com**

Controllers

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InGenius control panels from AdEdge Water Technologies



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multiCELL Type 8619 from Burkert Fluid Control Systems

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The SITRANS LUT400 from Siemens Industry Process Instrumentation includes pump control parameters that can be set to minimize pumping activity during on-peak pricing and maximize savings. The Siemens Cost of Water – Economy Pumping calculator lets users see just how much they can save by incorporating economy pumping strategies into their plant. Learn how to save thousands in energy costs through economy pumping. Water and sewage processing demand surges during times of peak electricity use, which leads to peak pricing and higher costs for energy consumed by pumping systems. However, this allows pump routines to be scheduled for off-peak times. **800-365-8766; www.usa.siemens.com/cost-of-water-calculator**



SITRANS LUT400 from Siemens Industry Process Instrumentation

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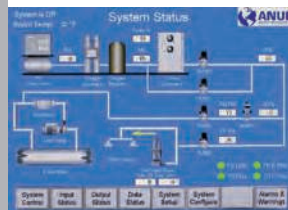
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Flow Control and Software



Flo Spec Control Software from Anue Water Technologies

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Flo Spec Control Software from Anue Water Technologies is a fully SCADA-compliant program that allows for bidirectional monitoring and control of each system with access to Wi-Fi or satellite/local Cat5 internet connectivity. It is manufactured in a NEMA

4 cabinet and includes Phantom I and II (point source odor control), FORSe 2 oxygen generation systems (force main corrosion control), and FORSe 5 combination ozone and oxygen systems (larger odor and corrosion control applications). It allows for stand-alone remote system monitoring, and programming options include specific alarm alerts that can be sent to any computer or smartphone to identify and correct problems quickly. **760-727-2683; www.anuewater.com**

VEOLIA WATER TECHNOLOGIES AQUAVISTA PLANT

AQUAVISTA Plant from Veolia Water Technologies provides a holistic digital solution for optimization of the consumption of energy and chemicals, biological and hydraulic capacity enhancement, stable operation and increased compliance of wastewater treatment plants and sewer networks. With advanced analysis of online sensor measurements in real time, it continuously determines optimum setpoints and updates those settings in the plant control system automatically through a dedicated portal. Significant gains in performance, capacity and efficiency have been verified in wastewater systems using its advanced controls. The system is suitable for small and large municipal and industrial wastewater systems and is applicable to a wide variety of systems including complete collection systems, CAS/biological nutrient removal systems, biofilters, moving bed biofilm reactor/integrated fixed film activated sludge, oxidation ditches, UASB systems and deammonification. **919-677-8310; www.veoliawatertech.com**



AQUAVISTA Plant from Veolia Water Technologies

Gas/Odor/Leak Detection Equipment

AMETEK ARIZONA INSTRUMENT JEROME J605

The Jerome J605 from AMETEK Arizona Instrument is designed to detect hydrogen sulfide at concentrations as low as 3 ppb with a resolution of 20 ppt. It has a survey mode that allows the user to continuously draw in samples of air in order to sweep an area for hydrogen sulfide hot spots or leaks so corrective action can be taken. Its wide detection range makes it useful for multiple applications, including regulatory compliance and odor control at wastewater and landfill facilities, scrubber efficiency testing and monitoring corrosion in control rooms. **602-529-3723; www.azic.com**



Jerome J605 from AMETEK Arizona Instrument

(continued)

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H2S Scrubber Monitoring Systems from MSA Safety provide wastewater treatment plant operators with a tool in their fight against hydrogen sulfide gas odors that are a potential safety hazard and an annoyance to downwind neighbors. They determine the gas levels in scrubber inlets and outlets for optimum removal

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Meters

BADGER METER DYNASONICS TFX-500W

The Dynasonics TFX-500w transit time ultrasonic flowmeter from Badger Meter measures volumetric flow of clean water. It is suited for building automation, water distribution and wastewater collection in new and retrofit applications. In addition to having lower installation costs than an in-line flowmeter, by clamping on the outside of the pipe, it can be installed while the system continues to operate. It offers a large, easy-to-read display, provides Modbus RTU and BACnet MS/TP connectivity, and integrates with BEACON and AquaCUE advanced metering analytics cloud-based software suites. Programming is done through the front panel or USB cable using SoloCUE configuration software. It is available in sizes of 1/2 to 10 inches and can handle flows ranging from 0.1 to 9,800 gpm and temperature ranges of 40 degrees below zero to 250 degrees F. **877-243-1010; www.badgermeter.com/brands/dynasonics**



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FCI - Fluid Components International's ST100 Series thermal flowmeters accurately measure digester waste gas resulting from the waste-

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FCI - Fluid Components International's ST100 Series flowmeters

GREYLINE INSTRUMENTS DFM 6.1 DOPPLER FLOWMETER



DFM 6.1 Doppler flowmeter from Greyline Instruments

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pulse output or alarms and 26 million-point data logger for greater flexibility of data monitoring and control. The user can monitor flow rate, volume total, run hours and diagnostic information through only two wires with the optional Modbus RTU or HART serial communication option. **888-473-9546; www.greyline.com**

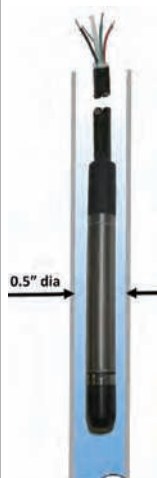
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MassaSonic PulStar Plus 95 from Massa

and come with an IP68 submersion rating. It accurately measures from 8 inches to 20 feet, comes with no false echoes intelligence to simplify setups and works in environments with vapors. Multiple models are available offering 0-10 volt DC, 4-20mA, TTL and RS-485 output, Modbus compatible. It is field-proven for wet well pump control, lift screen operations and tanks. Since it has a narrow 8-degree total beam, it is ideal in applications where complex target structures or interfering infrastructure can exist. **781-740-6119; www.massa.com**



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PMC ENGINEERING MTM 3000 SERIES

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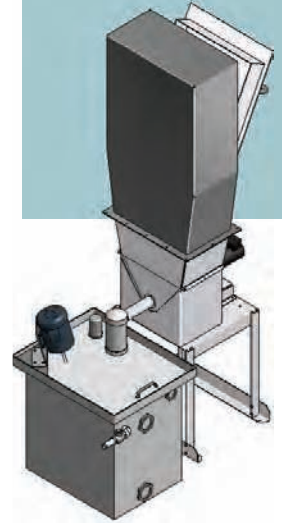
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SEALEVEL SYSTEMS SEACONNECT 370W

The SeaConnect 370W from Sealevel Systems is an Industrial Internet of Things edge device that remotely monitors and controls the status of real-world I/O processes. The module features a powerful, integrated event engine that is configured using an intuitive web-based interface to send alerts and trigger actions when specific conditions are met. The 370W is designed to work with the Sealevel SeaCloud IIoT platform. It features a TI SimpleLink CC3200 ARM Cortex-M4 microcontroller unit with a certified Wi-Fi interface and WPA2 encryption for a secure connection to your wireless network. The module includes a variety of I/O interfaces and two 12-bit A/D converters. An optional QuickStart module is available for demonstration and testing purposes. **864-843-4343; www.sealevel.com**



SeaConnect 370W from Sealevel Systems

Process Control Equipment

FORCE FLOW CHLOR-SCALE TON CONTAINER SCALE AND 150

The Chlor-Scale Ton Container Scale from Force Flow provides an accurate way to monitor the amount of chlorine used in a disinfection process, allowing the operator to document that target disinfection levels have been consistently met and know how much chlorine remains in the tank. The steel, rectangular tube platform is robotically welded and then epoxy powder-coated to ensure maximum strength for safety and durability. The Chlor-Scale 150 provides a simple and reliable way to monitor the amount of chlorine or ammonia used and the amount remaining in the cylinder. The solid PVC scale platform provides a strong defense against the corrosive environments associated with gas-feed applications. **800-893-6723; www.forceflow.com**



Chlor-Scale Ton Container Scale from Force Flow

KELLER AMERICA LEO-3

The LEO-3 intelligent transmitter with digital display from Keller America provides a local display and 4-20mA output for connection to PLCs, process meters and SCADA systems. It is available in pressures up



LEO-3 intelligent transmitter from Keller America

to 15,000 psi and in a choice of 1/4-inch NPT or G-series 1/4-inch pressure connections. **877-253-5537; www.kelleramerica.com**

PHOENIX CONTACT EAGLEi

EAGLEi remote monitoring solutions from Phoenix Contact provide a way to cost-effectively collect data from distributed assets without the large capital investment of a traditional SCADA system. No software purchases or maintaining of data servers is required. It provides the location of an asset, historical data and trends, alarming, and communication history, so the user can see information about levels, temperatures, runtimes and many other digital and analog inputs. Configuration is web-based, so



EAGLEi remote monitoring solutions from Phoenix Contact

no software programming tools are required. It can be set up in three easy steps. First, wire the desired inputs. Second, call to activate the cellular connection, start accessing data via webpage and sync the unit. Third, configure permissions, users and parameters for the unit on the webpage. It transmits data using a 4G cellular modem over a private cellular network to secure servers for a monthly fee. **800-888-7388; www.phoenixcontact.com**



Pump Watch Express from PRIMEX

PRIMEX PUMP WATCH EXPRESS

Pump Watch Express from PRIMEX is a comprehensive family of 4G LTE/3G compact cellular RTUs and Gateway used for monitoring pumping systems. It offers a simple tool for management of multiple sites, including alarm notification, data logging and graphic system visualization. Features include a lithium-ion backup

battery for power loss detection and notification, SMS/email/web portal alarm notifications, graphic HMI with simple and clear station status display, interactive pumping station map, data logging and historical trending, first year of service included, and optional web portal customization. The NEMA 4X control panels come in three versions: lite, premium and gateway. **844-477-4639; www.primexcontrols.com**

PULSAFEEDER BLACKLINE PRO

Whether measuring for water quality control in boilers or adding chemicals needed for municipal water treatment, the Blackline Pro from Pulsafeeder delivers the mode of operation needed. It offers 10 operating modes, including constant, batch, pause-work, weekly program, analog mA, analog volt, PPM, Pause-percentage, MLQ and pause, is easy to update via USB port and can be retrofitted on existing Blackline pumps. The dosing system has an intuitive display and easy navigation Jog-dial-selector to reduce the time required to make dosing changes, and an easy-to-read color-coded view provides visual alerts when the system is running, needs maintenance or a failure has occurred. Modbus controls connectivity enabling the user to monitor their system remotely to identify potential maintenance needs. **800-333-6677; www.pulsafeeder.com**

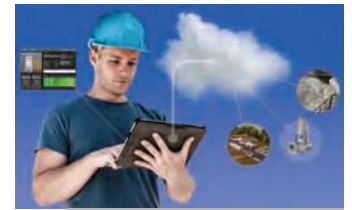


Blackline Pro from Pulsafeeder

SCADA Systems

FLYGT - A XYLEM BRAND CLOUD-BASED SCADA

Operating budgets are decreasing, and the need for more information to enable intelligent decisions well before a problem occurs has never been greater. Cloud-based SCADA from Flygt - a Xylem Brand offers a cost-effective software as a service solution: high-end SCADA capabilities that are still simple to use, with no upfront costs, a low monthly fee, and proven performance and reliability. Systems are built on years of customer feedback as well as years of experience. The system not only informs the user of issues so they can address them quickly, it alerts to future situations that enable the user to take preventive action, saving time and money. **855-995-4261; www.xylem.com**



Cloud-based SCADA from Flygt - a Xylem Brand

TRIHEDRAL ENGINEERING VTSCADA HISTORICAL DATA IMPORT UTILITY

The VTScada Historical Data Import Utility from Trihedral Engineering lets users replace their aging SCADA software while retaining a complete view of their process history. This simple utility imports historical data from applications based on other brands of software. Export the data from the outgoing application to a CSV file, format the file as described in the help files and drop it into the root folder. The historian imports the data on restart or when triggered



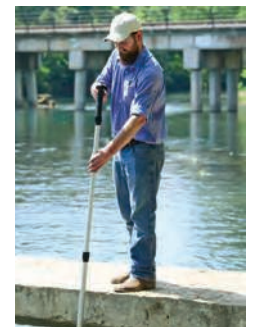
VTScada Historical Data Import Utility from Trihedral Engineering

by the source debugger. No user interface is required. VTScada has always reduced the cost of replacing obsolete systems by converting I/O databases and communicating with existing PLCs and RTUs. Now, new users can retain even more value from their old systems. **800-463-2783; www.trihedral.com**

Sensors

GLOBAL WATER, A XYLEM BRAND, FLOW PROBE

Ideal for stormwater runoff studies, sewer flow measurements, measuring flows in rivers and streams, and monitoring water velocity in ditches and canals, the Global Water, a Xylem brand, Flow Probe is an accurate, versatile instrument that consists of a protected water turbo-prop positive displacement sensor coupled with an expandable probe handle ending in a digital readout display. The water flowmeter incorporates true velocity averaging for the most accurate flow measurements. It offers a digital display in feet or meters per second, records 30 data sets, has a rain-proof digital computer, debris shedding turbo-prop, telescoping handle with staff gauge, and a padded carrying case for easy storage. It is CE certified. **979-690-5560; www.ysi.com**

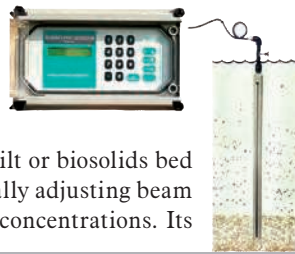


Flow Probe from Global Water, a Xylem brand,

MARKLAND SPECIALTY ENGINEERING AUTOMATIC SLUDGE BLANKET LEVEL DETECTOR

The Automatic Sludge Blanket Level Detector from Markland Specialty Engineering controls solid-liquid interface levels and automates

biosolids removal. Used in primary, secondary and backwash clarifiers and settlement tanks (including lamellas, dissolved air flotation units and decanting tanks), its use of LEDs enables it to locate both the settled silt or biosolids bed and overlying cloud layer, automatically adjusting beam intensity to accommodate different concentrations. Its slim profile is ideal for obstructed/constricted areas. It allows users to program pumps to operate only when necessary, helping prevent carryover, optimize feed density for enhanced dewatering and avoid pumping thin biosolids or large volumes of water (as when a core hold is pulled). These efficiencies help reduce energy use, wear and tear on pumps and downtime for maintenance. No calibration is required. **855-873-7791; www.sludgecontrols.com**



Automatic Sludge Blanket Level Detector from Markland Specialty Engineering

SHAND & JURTS 94406/7 DEFLAGRATION FLAME ARRESTORS



94406/7 Deflagration Flame Arresters from Shand & Jurs

Shand & Jurs in-line confined 94406/7 Vertical and Horizontal Deflagration Flame Arresters are designed to provide a positive flame stop for in-line gas piping systems containing flammable vapors having a low flashpoint. The units not only provide protection against propagation of flame, but offer maximum flow capacity. They are designed with taps to accommodate temperature-monitoring devices to activate a quick-closing valve when a flame is detected through controls or SCADA. The taps can also be used to monitor differential pressure to help with scheduled periodic maintenance. Available in a range of flange sizes from 2 to 12 inches, these units are Factory Mutual approved and certified to ATEX Directive in compliance with ISO 16852 and shall be installed per approval requirements. **708-236-6000; www.ljtechnologies.com**

Security Equipment/System

RITRON XT SERIES GATEGUARD WIRELESS INTERCOM AND ACCESS CONTROL SYSTEM

The XT Series GateGuard Wireless Intercom and Access Control System from Ritron provides reliable, long-range (up to 1-mile, line-of-sight), two-way voice communication with visitors at gated entry points. The result is a more secure facility without compromising your ability to communicate. This wireless intercom system eliminates the trenching and maintenance associated with wired systems. The rugged, industrial-grade callbox is weatherproof and tamper resistant, and it includes a built-in relay to allow for remote gate control. The system includes a callbox with built-in relay, companion portable two-way radio and desk-top base station radio. The system is available in either the VHF or UHF license-required frequency band or in a license-free, VHF MURS model. **800-872-1872; www.ritron.com tpo**



XT Series GateGuard Wireless Intercom and Access Control System from Ritron

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Order Code 1974-I

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System solves waste treatment challenges for rural town

Problem

The 30,000-gpd wastewater treatment system in Section, Alabama (population 770), was designed to treat residential and commercial wastewater. The town needed an easy-to-monitor system with tight control.

Solution

The objective was to treat 30,000 gpd at 300 mg/L BOD and TSS and to handle average daily flow fluctuation over a range of 50 to 100 percent. **ECOPOD units** from **Delta Treatment Systems** were installed in poured-in-place concrete tanks with aluminum hatches. A 14,200-gallon flow equalization tank was installed before the treatment reactor tanks. This tank includes duplex pumps to ensure that flow surges do not reduce efficiency. A 19,190-gallon primary tank precedes the flow equalization tank. Effluent also passes UV disinfection. A drip disposal system includes an effluent pump chamber, headworks, tubing, controls and all necessary valves and fittings. A concrete building houses electrical controls and equipment.



RESULT:

The system has performed as promised. **800-219-9183; www.deltatreatment.com**

Analyzer helps track sludge blanket depth

Problem

Efficient secondary clarifier operation is critical for the Tres Rios Water Reclamation Facility in Pima County, Arizona. The facility's continuous sludge blanket monitors were obsolete and failure-prone and led to periods in which blankets were not monitored.

Solution

The county installed an **IFL 700 IQ sludge blanket level sensor** from **YSI, a Xylem brand**, on 14 secondary clarifiers. A trial period proved the units were able to provide reliable data to enable process adjustments to minimize sludge blanket depth. The mounting was designed in-house to lift the sensor out of the water as the skimmer arm passes and to allow convenient removal for maintenance. The sensors were easy to install and set up and were programmed to ignore subsurface obstructions, including the rotating sludge rakes.



RESULT:

After five years, operators are pleased with the performance and durability of the sensors. The monitoring system is part of a solution that reliably produces clarifier effluent satisfying water reuse standards. **800-765-4974; www.ysi.com**

Radar gets accurate level measurement in challenging lift station

Problem

A wastewater treatment plant in New York's Hudson Valley had tried for years to get accurate level readings in lift stations. Floats, gauges, pressure sensors and ultrasonic devices all eventually failed. Problems were caused by steam, high humidity, grease, rags and even an instance of spiders getting in the way. The stations needed a noncontact technology that would work in the harsh environment.

Solution

VEGA Americas provided the **VEGAPULS WL 61 radar sensor**, designed to make accurate measurements independent of the product, process and ambient conditions.



RESULT:

Since the unit was installed, the plant has had no level measurement errors. Technicians can adjust the radar sensor to ignore certain structural components inside the lift station. The facility bought a second unit as a backup, removed all other level sensors from that lift station and purchased many more for other difficult situations. **800-367-5383; www.vega.com**

Wastewater plant upgrades to cleaner and easier sludge level measurements

Problem

A wastewater treatment plant in St. Louis was measuring sludge blankets in primary and secondary clarifiers and digesters with 15-foot sampling tubes. Operators complained of getting wet, lifting awkward tubes overhead and being unable to get consistent, accurate sludge level readings.

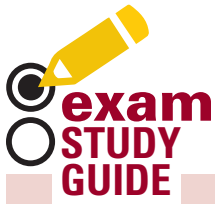
Solution

Raven Environmental Products provided a portable **SID Rotary Sludge Interface Detector** for a six-month trial. The lightweight and portable unit uses a sensor that is lowered to the tank bottom like a fishing reel. As the operator reels in the sensor, a counter provides the sludge level in inches. There is no touching of wet surfaces and no overhead drips. The unit works with a base plate that is mounted on the railing and holds the unit over the tank for simple operation. The base plate provides a consistent sample point. A freestyle handle is available for tanks without railings.



RESULT:

The operators are happy to measure sludge levels in all weather, day or night, knowing the procedure will be easy and clean and provide consistently accurate measurements for optimum process control. **800-545-6953; www.ravenep.com tpo**



exam STUDY GUIDE

Licensing exams can be challenging. Our **Exam Study Guide** helps you prepare by presenting questions similar to those on an actual exam. You can find many more sample questions on the *TPO* website at www.tpomag.com/study.

WASTEWATER

By Rick Lallish

What will happen if you lose vacuum to the feed line on a chlorinator?

- A. Water feed to the chlorinator will be lost.
- B. Excess chlorine will be drawn from the cylinder.
- C. The chlorinator will close, stopping gas flow.
- D. Nothing will happen; the chlorinator will run normally.

ANSWER: C. Basic operation of a vacuum-based chlorine gas system is a fundamental that operators need to understand. Most chlorinators operate under a vacuum condition at the injector from the chlorinator. Understanding how this process works will help in troubleshooting chlorinator and disinfection problems. According to the Water Environment Federation *Wastewater Treatment Fundamentals 1 – Liquid Treatment* textbook, “The injector creates a vacuum that pulls chlorine gas from the chlorinator and into the water being treated. If a leak develops anywhere between the chlorinator and the injector, air will be pulled into the line. Loss of vacuum causes the chlorinator to close, stopping the flow of gas from the cylinder or container.”

DRINKING WATER

By Drew Hoelscher

What types of pumps typically feed chemical solutions at a potable water treatment plant?

- A. End-suction centrifugal or split-case pumps
- B. Jet or split-case pumps
- C. Peristaltic or diaphragm pumps
- D. Dynamic or centrifugal pumps

ANSWER: C. Peristaltic pumps and diaphragm pumps are positive displacement pumps that can maintain constant and steady flow rates, regardless of changing head pressure or fluid viscosity. Peristaltic pumps move fluid by a spinning rotor with several rollers that isolate a section of tube or hose as they rotate. The fluid contained in the isolated section advances to the discharge end of the pump by the rollers’ continuous motion. Diaphragm pumps move fluid using a reciprocating diaphragm. The back-and-forth linear motion of the diaphragm allows fluid to enter and exit the pump head assembly.

ABOUT THE AUTHOR

Rick Lallish is water pollution control program director, and Drew Hoelscher is program director of drinking water operations at the Environmental Resources Training Center of Southern Illinois University Edwardsville. tpo



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www.kohlerpower.com



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877-244-3267; www.bigassfans.com

product spotlight water

A more efficient underdrain

By Ted J. Rulseh

The bolt-down **Leopold Type 360 underdrain system** is designed with efficiency in mind. The system for greenfield projects and rehabilitation of water treatment filtration projects includes an innovative 360-degree backwash capability designed to boost efficiency by up to 20 percent.

“The name is actually derived from its backwash flow pattern where water exits the underdrain in a 360-degree pattern,” says Matt Schomaker, national sales manager of **Leopold - a Xylem Brand**.

The bolt-down solution is engineered for reliability with an uplift resistance of over 15 psi. The design includes slots and orifices around the entire underdrain to help clean the filter media from every angle during the backwash process. This eliminates media dead zones that can develop due to gaps in backwashing coverage.

“There are orifices on the top, sides and bottom, which assures you that 100 percent of the media is moving, pulsing, agitating and expanding during backwash,” Schomaker says. “Air during the backwash exits the top of the underdrain and down the side of the underdrain, creating a very uniform and consistent air pattern across the entire filter.”

By washing 100 percent of the media between laterals, the underdrain increases filter runtimes, reduces backwash water consumption and extends

media filter life, leading to lower operating costs and energy savings. The underdrain is compatible with all standard flume and air configurations. With lateral lengths over 40 feet, it is suited for long filter runs and retrofits of existing filters. The modular underdrain blocks are easy to handle and snap together for quick installation.

The Type 360 underdrain helps solve challenges in biologically active filtration systems, indirect and direct potable reuse applications, new drinking water applications addressing the U.S. EPA LT2 rules on contaminants of emerging concern, and the rehabilitation of existing media filters.

Durable reinforced polymer maximizes strength against harsh elements while reducing overall weight for easier transport and installation. The polymer matrix is corrosion-free. Self-cleaning technology, a first for the industry according to the maker, removes sediment buildup in the underdrain over time.

“If any sediment gets into the bottom of the block, it is washed out the bottom orifices through normal backwash sequences,” Schomaker says.

914-323-5700;
www.xylem.com/en-us/brands/leopold



Leopold Type 360 underdrain system from Leopold - a Xylem Brand



Grundfos Pumps TPE3 in-line pump

Grundfos Pumps' TPE3 in-line pump features a permanent magnet motor, hydraulic efficiencies, a series of advanced control modes, multi-pump functionality, and easy install, monitoring and commissioning that boost system efficiency and deliver

overall greater heating and cooling performance. Grundfos' Flow Limiting Function eliminates the need for a pump balancing valve, reducing pressure loss. It also features a built-in heat energy meter that can monitor heat energy distribution and consumption, preventing excessive energy bills caused by system imbalances. Wireless technology enables the TPE3 to connect with up to four single TPE3 pumps. They can be controlled jointly in either cascade mode, alternating mode or duty/standby without the need for any other pump controller unit.

630-236-5500;
us.grundfos.com



Plast-O-Matic Valves Z-Cut ball valves

Linear flow-rate control balls from Plast-O-Matic Valves have metering or electronic positioning to provide precise process control. The Z-Cut ball design can be customized to provide virtually any required flow performance. Sizes are

product spotlight

wastewater

Creating drier solids

By Ted J. Rulseh

Biosolids dewatering can offer enormous potential savings for operators of sewage treatment plants. Depending on system capacity, 1 percent more dry substance can lead to cost-savings in the five- to six-digit range. With that potential savings in mind, **Flottweg Separation Technology** has introduced the **Xelleter decanter centrifuge**, which uses innovative technology to improve dewatering performance, reduce polymer consumption, save energy and maximize capacity.

The key to the device's dewatering performance is a deeper liquid pool inside the centrifuge, translating to greater volume and higher throughput. The deeper pool enables production of solids that are drier on average by 2 percentage points (for example, 27 percent versus 25 percent for conventional technology).

"The big advantage is that the capacity and the performance of the centrifuge in general are increased, while the external diameter of the centrifuge remains the same," says Christopher Margilas, Flottweg Separation Technology sales engineer. "Another positive point is that the deeper pool moves the solids discharge closer to the axis of rotation, reducing the energy consumption by up to 25 percent, whereas the capacity is up to 15 percent higher than traditional centrifuges on the market."

To enable the deeper pool, the scroll that removes the settled solids from the centrifuge uses a tubular space frame design instead of the traditional solid scroll body. This significantly reduces the shear force applied to the flocculated feed, reducing breakage of the floc and enabling an average 20 percent reduction in polymer consumption. In addition, due to the narrow weir diameter, the distance between feed pipe and the pool surface becomes shorter.



Xelleter decanter centrifuge from Flottweg Separation Technology

So, the feed has to overcome a shorter distance and hits the pool surface at a lower circumferential speed. As a result, the friction between incoming product from the feed pipe and the rotating liquid in the bowl is reduced, which results in lower shear forces and polymer demand. The liquid is discharged over a smaller area, which means less energy has to be supplied by the drive motor.

This is in addition to a feature of the company's basic design that reduces energy consumption by directing the liquid discharge to help rotate the bowl. That yields an additional 25 percent savings, for an overall up to 50 percent reduction in energy consumed. Centrifuges are offered in three models with a total throughput range of 50 to 525 gpm. 859-448-2331; www.flottweg.com

available from 3/8- to 4-inch and come in PVC, CPVC, natural polypropylene and PVDF. The modulating digital positioner offers auto-calibrating and self-resetting functions.

973-256-3000; www.plastomatic.com



Reelcraft's Series LG cord reels

Reelcraft's lightweight and compact Series LG cord reels are constructed from a durable, impact-resistant composite material. Three new models have been added to the

medium-duty line of cord reels with two new cord endings. The new power cord reel option features circuit breaker-protected, quad-grounded NEMA5-15 outlets with an LED power on indicator light. The quad outlet reel is available with 65 feet of 12/3 cord or 75 feet of 14/3 cord. The new light cord reel option features a 1300 Lumen LED light with bright COB illumination, a grounded 12-amp outlet and an on/off switch on the handle. The LED reel model is supplied with 50 feet of 14/3 cord. All three new Series LG models are ETL listed.

800-444-3134;
www.reelcraft.com tpo

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Wastewater department employee **Douglas Hartsaugh** retired after more than 31 years as a public utilities worker in Circleville, Ohio.

Kayla Stephens was hired as director of the Union (Missouri) Public Works Department. She replaced **Harold Lampkin**, who retired after 45 years with the city.

Kody Miller was promoted to wastewater plant maintenance worker for Conway Corp., which provide wastewater and water services to Conway, Arkansas.

Brandon Strelow was hired as Public Works director in Kewaunee, Wisconsin.

Matt Murphy was hired as Public Works director in Algoma, Wisconsin.

The **Fremont (Nebraska) Wastewater Treatment Plant** received a Silver Safety Award and a Scott Wilber Outstanding Facility Award from the Nebraska Water Environment Association.

The **Columbus (Nebraska) Wastewater Treatment Facility** received a Gold Safety Award and a Scott Wilber Outstanding Facility Award (including Best in Class for Medium Category) from the Nebraska Water Environment Association.

The Northwest District of the Arkansas Water Works & Water Environment Association named these award recipients:

- Wastewater Operator (5,000-plus population), **John Eoff**, Springdale Utilities
- Wastewater Manager of the Year, **Nancy Busen**, Bentonville Wastewater
- Wastewater Small System Award, **Mike Neil**, Northwest Arkansas Conservation Authority.

Richard Klopp of Homer received the Wastewater Operator of the Year award from the Alaska Rural Water Association.

New Jersey American Water received a Governor's Environmental Excellence Award from the New Jersey Department of Environmental Protection.

Grant Ward retired after 44 years as the water plant operator in Hartwick, New York.

Steve Moore, water systems manager for American Canyon, California, retired after 37 years of service.

The **DeKalb County (Georgia) Department of Watershed Management** received the 2018 Gold Collection Systems Award from the Georgia Association of Water Professionals for excellence in preventive maintenance, system evaluation, rehabilitation and training. The department also received a Water Fluoridation Quality Award from the Centers for Disease Control and Prevention.

The **Henry County (Georgia) Water Authority** received a Collection System of Excellence Platinum Award and a Water Distribution System Gold Award from the Georgia Association of Water Professionals. The authority's **Mandy Gatewood** received a Customer Service Award.

events

April 1-2

American Water Works Association-North Carolina Section Spring Symposium, Holiday Inn Resort, Wrightsville Beach. Visit www.ncsafewater.org.

April 2-4

AWWA Rate-Setting Essentials Seminar – Connecting Financial Planning, Cost of Service and Rate Design, Loews Ventana Canyon Resort, Tucson, Arizona. Visit www.awwa.org.

April 2-5

Water Environment Association of Texas, Texas Water 2019 Conference, George R. Brown Convention Center, Houston. Visit www.txwater.org.

April 9-12

California Water Environment Association Annual Conference, Palm Springs Convention Center. Visit www.cwea.org.

April 10-12

Design-Build for Water/Wastewater Conference, presented by WEF, AWWA and Water Design-Build Council, Duke Energy Convention Center, Cincinnati. Visit www.wef.org.

April 11-12

AWWA Customer Service Seminar, Utility Supply Co., Indianapolis. Visit www.awwa.org.

April 14-16

Water Environment Association of Ontario Technical Symposium and Exhibition, Metro Toronto Convention Centre. Visit www.weao.org.

April 14-17

Florida Water Resources Conference, presented by the Florida Water Environment Association, Florida Section AWWA, and Florida Water and Pollution Control Operators Association, Tampa Convention Center. Visit www.fwrc.org.

April 14-18

Kentucky Water and Wastewater Operators Association Annual Conference, Northern Kentucky Convention Center, Covington, Kentucky. Visit www.kwwoa.org.

April 23-25

Montana Water Environment Association and Montana Section of AWWA Joint Conference, Billings Hotel and Convention Center. Visit www.montanawater.org.

April 29-30

AWWA Waterborne Pathogens Symposium, Tampa Marriott Westshore, Florida. Visit www.awwa.org.

The **Clayton County (Georgia) Water Authority** staff earned Georgia Association of Water Professionals awards. The Northeast Water Reclamation Facility in Rex earned the Water Environment Federation's George W. Burke Jr. Safety Award; the conveyance maintenance staff brought home a fourth Collection System Platinum Award; the distribution maintenance staff received a fourth Distribution System Gold Award; and the W.B. Casey Water Resource Recovery Facility earned the Laboratory Quality Assurance at a Municipal Wastewater Laboratory Award in the greater than 20 mgd category.

industry news

Snyder appointed Blue-White Industries sales manager

Blue-White Industries announced the appointment of Andrew Snyder to the position of sales manager. After earning a Bachelor of Science degree in mechanical engineering from the University of California, Irvine in 2014, Snyder joined Blue-White Industries as a sales engineer. During his employment with the company, he has taken an active role in assisting customers with technical questions and concerns, calling on customers personally and visiting installation sites.



Andrew Snyder

Seq adds to lead analytics engineering team

Seq announced the addition of Dr. Lisa Graham, a registered professional engineer with more than 20 years' experience in data analytics for pharmaceutical and chemical industries. Graham will manage the analytics engineering team, which works with customers on training, use cases and operationalizing analytics strategies.

Howden strengthens commitment to the Gulf Coast oil and gas sector

Howden has completed the move to a new state-of-the-art, 35,000-square-foot service center in Houston. Howden is able to service centrifugal fans, cooling fans, air preheaters, reciprocating compressors, blowers, centrifugal compressors and screw compressors. With the increased footprint of the service center, it now contains three 20-ton overhead cranes, nine 2-ton jib cranes, balancing equipment, a component repair bay, welding bay, paint booth and ample testing space. **tpo**

King County, Washington, won a Digital Edge 50 Award for Digital Transformation from www.cio.com for using the Microsoft HoloLens mixed reality device to train operators at the West Point Wastewater Treatment Plant in Seattle.

Lee Honeywell, wastewater treatment plant superintendent in Upper Gwynedd, Pennsylvania, was honored by the town board for 40 years with the department.

The **Moulton Niguel Water District** in California received a 2018 Governor's Environmental and Economic Leadership Award.

The **Gwinnett County (Georgia) Department of Water Resources** received a 2018 WaterReuse Award for Excellence from the WaterReuse Association for research on using ozone and biological filtration to turn reclaimed water into drinking water.

Geneva tied with **Batavia** for best-tasting drinking water during the Kane County (Illinois) Water Association taste test competition.

Diana Wilson, general manager of West Des Moines (Iowa) Water Works, resigned in January to become general manager at a Florida utility.

TPO welcomes your contributions to Worth Noting. To recognize members of your team, please send notices of new hires, promotions, certifications, service milestones or achievements as well as event notices to editor@tpomag.com. **tpo**

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TV INSPECTION

Used and rebuilt camera kits in stock: RIDGID Mini Compact, Mini Color, Standard Self-Leveling, General Gen-Eye I, II and III, Aries Seeker, and SRECO kits. The Cable Center: 800-257-7209. (CBM)

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Residual Sulfite Monitor

Reduce Chemical Costs



Prevents costly chemical overfeed by controlling the amount of chemical added for process dechlorination.

FEATURES

- Gas Phase Sensing Prevents Sensor Fouling
- Automatic Control of Sample Line Cleaning
- Low Cost Operation

Dissolved Oxygen Monitor

Optical Sensor with Q-Blast



The Q-Blast D.O. System is ideal for aeration basin control, resulting in improved process performance and energy savings.

FEATURES

- Integral Air Compressor Generates Air Blast
- Optical Luminescence or Membraned Sensor
- Unique Cal-Check Ensures Sensor Cleaning

pH/ORP Monitor

Self-Cleaning pH System



The Q46P/R Monitors enhance the reliability of long-term pH or ORP measurement by providing automatic sensor cleaning.

FEATURES

- "Q-Blast" Air-Blast Sensor Cleaning System
- Differential pH and ORP Sensors
- Sealed Reference Prevents Sensor Contamination

Total Chlorine Measurement

Amperometric Measurement



The Q46H/79S provides a high accuracy measurement at low concentrations of chlorine in wastewater effluent.

FEATURES

- Unique Gas Sensor Prevents Sensor Fouling
- High Accuracy and Sensitivity Down to PPB
- EPA Compliant for Effluent Reporting

Toxic & Combustible Gas XMTR

"Smart Sensor" Technology



Model D12 Gas Transmitters provide the ultimate in application flexibility. Automatic sensor testing ensures functionality.

FEATURES

- Interchangeable "Smart Sensors"
- Internal Data-Logger
- Automatic Sensor "Bump Test"

Total Chlorine Monitor

Reagent Free Measurement



The Q46/79PR direct measuring system is ideal for controlling chlorine addition in disinfection contact chamber.

FEATURES

- Submersible or Flowcell Type Sensor
- Optional pH Measurement
- Easy Installation and Low Operating Cost

Optimize Clarifier & Thickener Performance

EchoSmart Interface Level Analyzer



Continuous sludge level measurement supports effective process control

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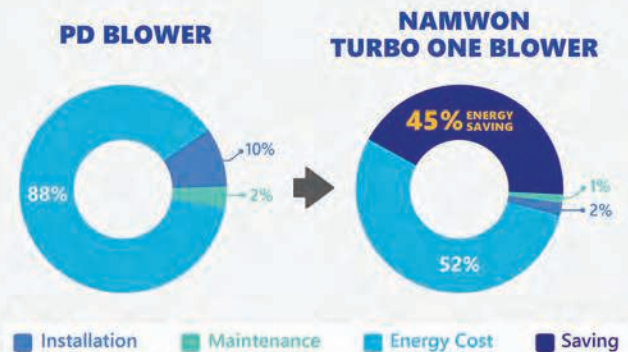
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