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**EDITOR'S
NOTEBOOK:**
Be a Safety
Snitch p. 10

ONSITE INSIGHTS:
Parallel or serial
distribution? p. 20

STAYIN' ALIVE

Diversity of services and stellar customer care help three-generation North Carolina company thrive in good and bad times p. 12

SYSTEM PROFILE
Big Flows in
Florida p. 26



PRODUCT FOCUS
Pumps p. 30

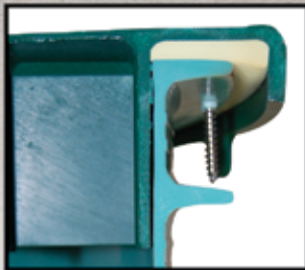
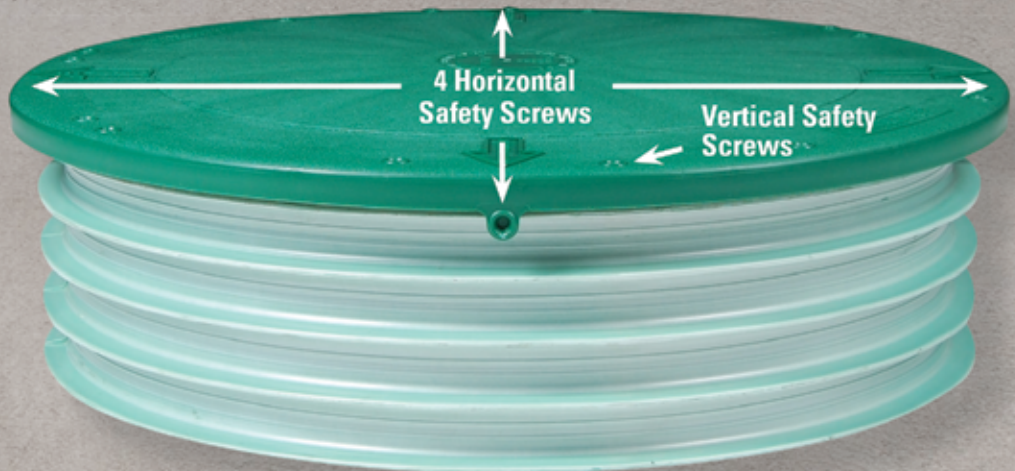


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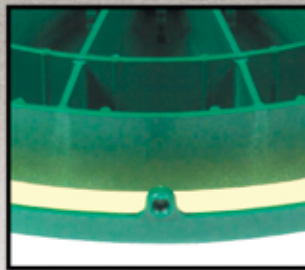
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INSTALLER PROFILE:

Stayin' Alive

By Ken Wysocky

ON THE COVER:

Stacy, left, and Hunter Creech, of third-generation company Creech's Plumbing in Wilson, North Carolina, are shown in the field with a Caterpillar excavator and skid-steer. (Photo by Gray Whitley)

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10 Editor's Notebook: Sorry, I'm a Safety Snitch

When I see an OSHA violation, I might take action. It's because I care about workers and don't want to see them hurt on the job.

By Jim Kneiszel

20 Onsite Insights: Dropbox or Distribution Box - Which One Should I Use?

Your choice between serial and parallel distribution should be based on site conditions and system management oversight.

By Sara Heger

24 Pumps Directory

26 System Profile: Supersized Onsite Solution Chosen Over Lengthy Sewer Run

Dual split treatment trains with big tanks and drainfields handle a heavy flow for a new Florida convenience store.

By Scottie Dayton

30 Product Focus: Pumps

By Craig Mandli

34 The Utility Expo Product Preview: Dig These New Products at The Utility Expo 2023

By Craig Mandli

38 Snapshot: "It's Not Your Grandparents' Septic System"

Iowa installer and pumper Rick Miene counts customer education as a critical part of his daily routine

40 Associations List

42 Rules and Regs: Nevadans Balk at Forced Municipal Sewer Hookups

By David Steinkraus

45 Product News Product Spotlight: System designed to handle variable flows

By Tim Dobbins

46 Industry News

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Coming Next Month

ISSUE FOCUS: Systems Repair/Drainfield Rejuvenation

Snapshot: Nova Scotia needs regulations

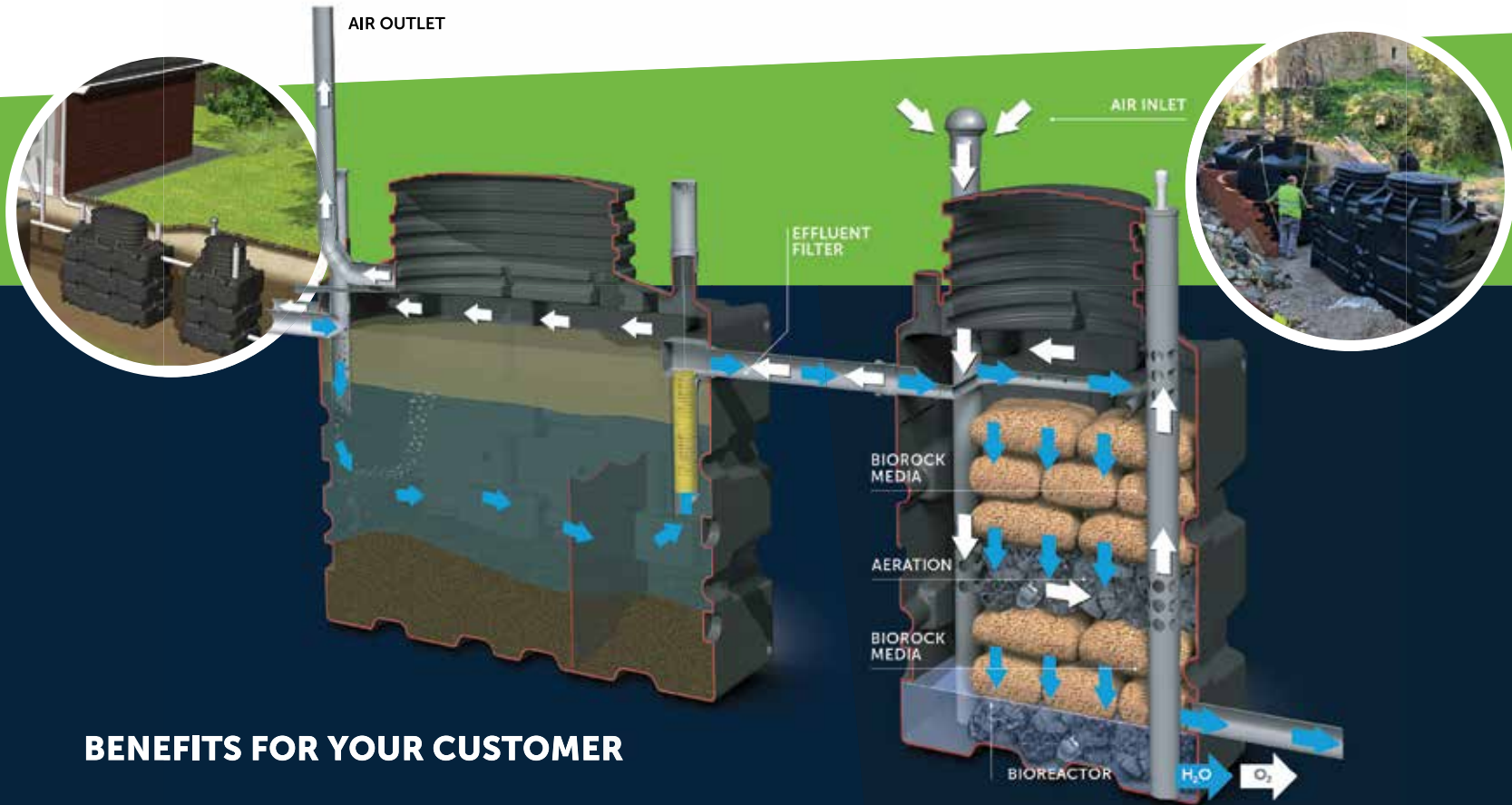
Contractor Profile: New Mexico installer update

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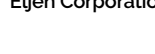

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ADVERTISER INDEX

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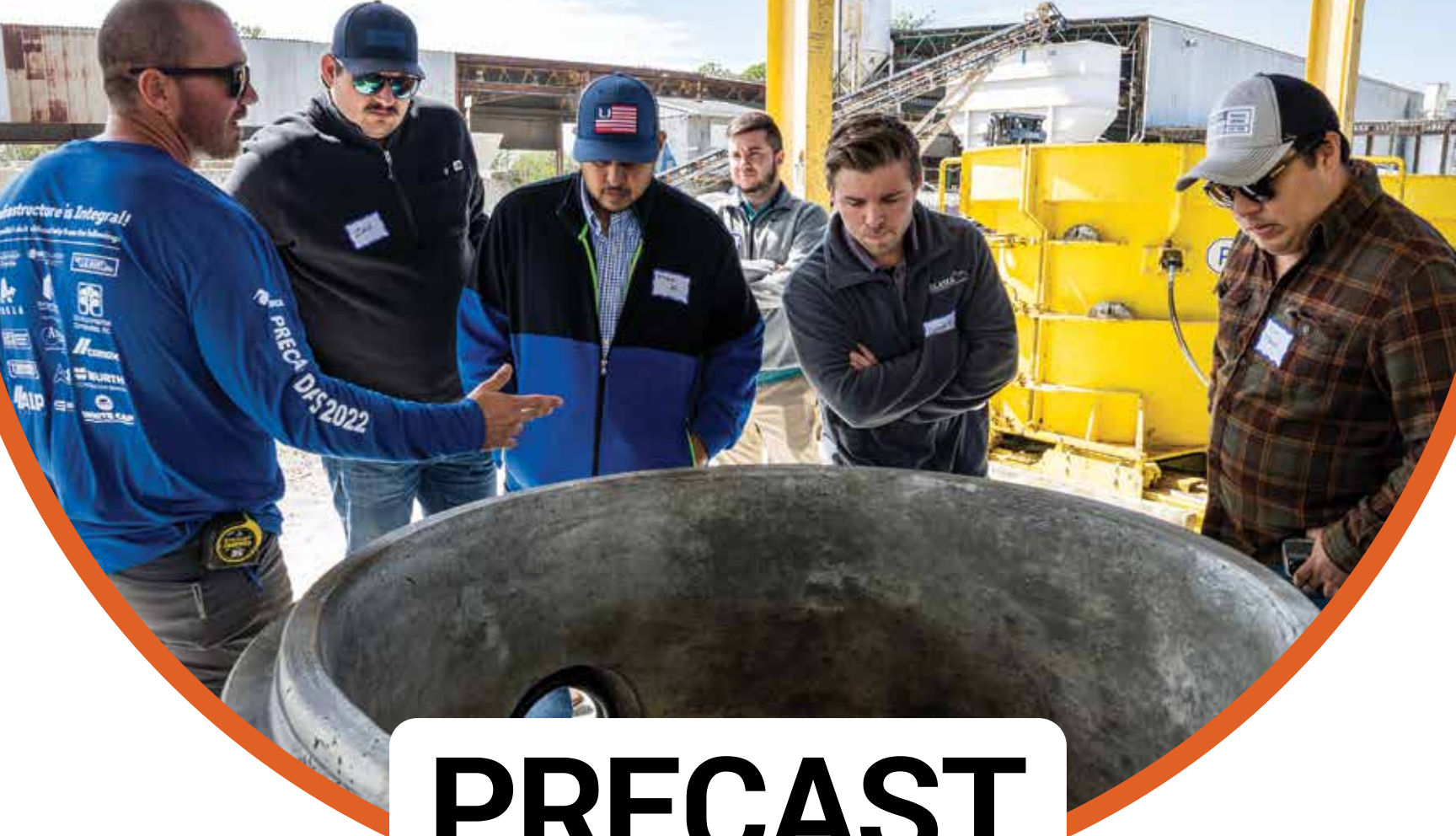
	Alita Industries, Inc.....	22
	Ashland Pump.....	8
	BioMicrobics, Inc.....	22
	BIOROCK.....	5
	BrenLin Company, Inc.....	41
	Crane Pumps & Systems.....	9
	Crest Precast, Inc.....	17
	Delta Capital Group.....	11
	Delta Treatment Systems, LLC.....	6
	E-Z Treat Corp.....	29
	Eljen Corporation.....	15

	FujiClean USA.....	31
	Infiltrator Water Technologies, LLC.....	3
	Jet Inc.....	43
	Kistner Concrete Products, Inc.....	41
	National Precast Concrete Association.....	7
	Norweco, Inc.....	19
	Orenco Systems, Inc.....	23
	Polylok, Inc.....	48
	Roth North America.....	33
	Saniflo SFA Inc.....	37
	Sim/Tech Filter Inc.....	29

	Simple Solutions Distributing LLC.....	46
	SJE Rhombus®.....	37
	SPI, Inc.....	29
	T&T Tools, Inc.....	33
	The Shaddix Company, Inc.....	46
	TUF-TITE, Inc.....	2
	Wholesale Septic Supply.....	21
	Wieser Concrete.....	36
	WWETT Show.....	47
	Classifieds.....	46

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A NEW APPROACH Rightsizing vs. Downsizing

During seasons of economic uncertainty, business owners must sometimes make difficult decisions about their workforce. Many team building experts now advocate for an approach known as rightsizing, which may be a viable alternative to downsizing. If downsizing focuses on reducing workforce and human resources, rightsizing is all about maintaining the correct number of human resources. This article outlines the benefits of rightsizing and how to do it. onsiteinstaller.com/featured

Overheard Online

“You want to create a culture where people enjoy doing business with you and employees enjoy being part of the company. You want to find ways every day to act out the valuing of people.”

– 3 Keys to Building Stronger Supervisor-Employee Relationships
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ENSURE PUMP FUNCTION Choosing the Right Float Switch

There was a day when you ordered a pump and you said, “and a float switch.” How times have changed. Now you have to be a float switch expert, as the selection of the float switch is extremely important to the system working and a pump

functioning or not. This article from columnist Todd Stair walks you through the process. onsiteinstaller.com/featured

PROPER PUMP SIZE

The Importance of a Pump Curve

Never install a pump in an onsite system without consulting a pump curve. To properly size a pump so that it lasts as long as possible for the paying customer, the installer must know two things: gallons per minute and total dynamic head. Read more to ensure the proper function and longevity of the pumps you install. onsiteinstaller.com/featured

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Send your comments, questions or opinions to Jim Kneiszel at editor@onsiteinstaller.com

Sorry, I'm a Safety Snitch

When I see an OSHA violation, I will take action. It's because I care about workers and don't want to see them hurt on the job.

There's a road construction project in progress in my neighborhood, with a crew replacing some storm sewer collection lines and resurfacing the street. Dump trucks, excavators and other equipment are being shuttled up and down my block as I write this column.

Yesterday, I heard and felt an excavator operator slamming on some concrete and got up to look out the front window. The worker at the controls was repeatedly dropping curb and gutter debris on the roadway trying to bust it into more manageable chunks to drop into a waiting dump truck. As the work progressed, he was swinging the bucket from the debris pile to the dump truck, quickly weighing down the dump body.

I surveyed the workers on the scene, one was standing right under the bucket as it turned to dump a load. You read that right, the worker was standing under the bucket ... and neither he nor other workers in the vicinity were wearing hard hats. In this business I am trained to look for OSHA violations, and a minimum of two of them were staring me right in the face.

DO YOU REPORT?

I don't like to be a snitch, but even more, I don't like to see construction workers at risk of being hurt, or even killed, on the job for someone disregarding safety regulations. Unfortunately, I have personal experience in witnessing a terrible worker accident, but more on that later. Just like you see on TV cop shows when officers are making a public arrest, I as a bystander pulled out my phone and took a picture of the unsafe practices — and then emailed it to the city engineer overseeing these construction projects, who I know from serving as a city alderman in the past. I don't want to get anyone in trouble. But I couldn't sit by and do nothing, knowing these workers' lives were being put at risk.

It wasn't five minutes later and the city staff pulled up and let the private contracting company know someone had reported an OSHA violation. I peeked out the window a few minutes later and all workers were attired in their hard hats and reflective vests. The engineer called me when he returned to his office.

"They went right to their trucks and pulled out the hard hats," he told me.

As is often the case when I hear about OSHA violations in the onsite industry, the appropriate safety equipment was readily at hand — but the workers chose not to use it and the foreman didn't bother to check the workers and enforce the rules. There is no excuse for inaction on the part of the



▲ This unidentified worker is at the bottom of an estimated 15-foot-deep septic tank excavation with no shoring, a clear OSHA violation. This photo was submitted to *Onsite Installer*. We wouldn't normally run it in the magazine, but do so here to stress the importance of following safety rules. We alerted the installer contractor about the violation on the job site.

worker or the supervisor in those cases. Either they forgot to review the safety checklist for the day, they were too lazy or inconvenienced to wear hard hats or they purposely disregarded the rules in place to keep them safe.

PRIOR FATALITY

These workers might feel differently had they known what happened on that very spot in front of my house two years previous. I wrote about the earlier incident in my *Installer* column at the time. It shook me then and it's probably what prompted me to contact the city engineer yesterday.

It was daybreak and I woke up to the sounds of a city arborist crew who were taking down dead ash trees up and down my block that week. They had just started raising the arm on the bucket truck when I peered out the window, unprepared for what I would see. The bucket was tangled in the limbs of a tree and a worker was lying face up on the pavement, his arms and legs outstretched, motionless. A coworker was pacing back and forth in the street, talking on a cellphone.

Soon city vehicles, police cars, EMTs and fire trucks responded. Later that day I learned the worker had fallen from the bucket and died. It was a terrible tragedy that should have been preventable. In the blink of an eye, it left a family without a father and husband, and had a devastating impact on the street department and the community.

I guess I was fearing the same thing could happen yesterday if I didn't take action. That's why I can no longer stand back and ignore what I know is a violation of OSHA rules and regulations. I am willing to accept the potential wrath of a contractor who doesn't think his safety practices are any of my business if my complaint keeps a worker out of harm's way. And I hope you feel the same way.

And I also feel strongly about safety because, unfortunately, I too often see violations in the onsite industry.

Recently, we sent a photographer to shoot a contractor profile story, and when the photos showed up on my desktop, I was disturbed by what I saw. Several photos showed workers at the bottom of an excavation, I would estimate it was 15 feet deep, with vertical walls, no shoring boxes for protection against a trench collapse, and no adequate banking of spoils around the hole. Other photos showed a lack of required personal protective equipment that could have led to injury.

One of our editors called the contractor being featured and told him of the violations. The contractor said he had no idea there were any OSHA violations at the work site.

If someone questions your safety practices, thank them and correct the issue. After all, the community of installers are one big family and we should be looking out for each other.

HIGH STAKES MISTAKES

For the most part, I know onsite professionals take safety seriously and do their level best to adhere to OSHA rules and regulations. But like any profession, we all make an occasional mistake or misstep. For me, that might be spelling a name wrong or making a grammatical error; both unacceptable. But the stakes are higher for installers and their hardworking crews. One mistake can lead to serious injury or loss of life. And that's why the OSHA rules exist, to ensure that you and your crew make it home safely to your families every night.

So please understand if I point out a violation in a photo we take on one of your jobs. I have to hold you to a high standard of safety and I hope you all check each other the same way. If you see another crew violating a safety rule, please speak up. And if someone questions your safety practices, thank them and correct the issue. After all, the community of installers are one big family and we should be looking out for each other.

Stay safe. And I mean that. □

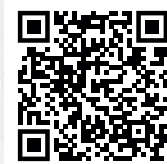


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INSTALLER PROFILE



◀ Hunter Creech is at the controls of a Caterpillar 306 excavator and Stacy Creech looks on. The machine is equipped with a 3D GPS system from Topcon Positioning Systems. (Photos by Gray Whitley)

STAYIN' ALIVE

Diversity of services and stellar customer care help three-generation North Carolina company thrive in good and bad times

By Ken Wysocky

A bad economic downturn rarely is good news for business owners.

But for entrepreneur Stacy Creech, the owner of Creech's Plumbing in Wilson, North Carolina, the deep recession of 2009-10 provided an epiphany of sorts that forced him to rethink his one-dimensional business model.

The result? A gradual business makeover that changed the company from a plumbing outfit to a multifaceted, fully diversified business that inspects and installs septic systems, revitalizes septic drainfields, pumps septic tanks, cleans drains, performs trenchless pipe-rehab work and rents and services portable restrooms.

"After the recession, I wanted to diversify — add more services and keep work flowing," says Creech, age 48, who co-owns the company with his wife, Sheryl. "Too many people put plumbing work on the back burner during the recession, so I decided I needed more services so that when one struggled, others are doing good."

"Plus plumbing is a highly competitive field and as I get older, it's harder to, say, crawl under a house to work," he adds. "Now I can sit on a machine or stand up at work. I do things I enjoy and it's a lot easier on my body."

Today, septic-related work — installations, inspections, pumping, and so forth — generates about 63% of the company's revenue, plumbing kicks in another 23% and portable restrooms contribute the remainder.

"Diversifying the business made us a one-stop shop for customers," he says. "When you get meat at a grocery store, you also want to get your bread and other things at the same place. It's that kind of thing."

In 2022, the company installed about 40 septic systems, most of them higher-priced, complex jobs for residential customers.

"Our niche is commercial jobs and more complex residential projects," Creech says. "We don't focus on new-construction installs due to the demand of projects with challenging lots and solutions."

TAKING CUES FROM CUSTOMERS

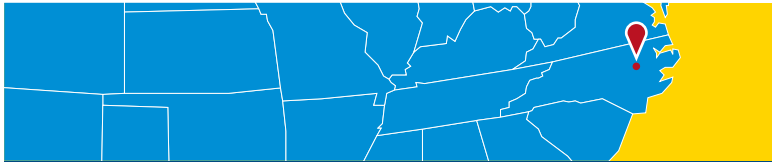
Creech grew up in the plumbing and septic world. His grandfather, Carney Roberson Sr., founded Roberson Septic in the early 1960s in Kenly, North Carolina.

When Roberson retired, his daughter, Myrtle (Creech's mother), established Creech's Plumbing, a plumbing and septic service company, with her husband, Donnie Creech, in Lucama, North Carolina.

In the early 2000s, Creech bought the plumbing side of the company from his parents.

"When I took over the plumbing side of the business in my early 20s, all I had was one helper, an excavator, a service van and a water jetter," he says.

In 2005, he moved to nearby Wilson and several years later, after the recession ended, he proceeded full-bore into other services. It all started



Creech's Plumbing Inc.

Wilson, North Carolina

Owners: Stacy and Sheryl Creech

Founded: 1975

Employees: 12

Service area: Up to 100-mile radius around Wilson

Services: Septic system installations, repairs, inspections, pumping, portable sanitation

Website: www.creechsplumbing.com

» Hunter Creech uses a Crust Busters tank agitator during a residential pumping call.

when clients kept asking if he pumped septic tanks, so he finally decided to do so.

Then customers started asking if he rented portable restrooms because there was a need for a provider who could offer clean restrooms and good customer service. Creech decided he was that guy and bought 200 units from Satellite Industries.

"It was an easy decision," he notes. "When you run the numbers, it's a good investment. ... At the end of the day, it's additional revenue."

The company's restrooms are bright red, which matches its pump trucks, thus reinforcing brand recognition. The red restrooms also differentiate the business from competitors. "They're all over the place and act as mini-billboards," he says.

Then Creech noticed more and more customers' septic systems were failing, so around 2016, he started installing septic systems, a skill his father taught him years ago. "Installations just went hand-in-hand with pumping septic tanks," he says. "It was a very logical extension of our services and truly made us a one-stop shop."

ADDING EQUIPMENT

As the company grew, so did its fleet of machinery and equipment. For septic pumping, the business relies on two vacuum trucks: a 2023 Kenworth quad-axle T880 chassis equipped with a 4,500-gallon waste/250-gallon freshwater steel tank from Integrity Tank, a National Vacuum Equipment 4310 blower and an onboard jetter/washdown system from Pumptec; and a 2017 Kenworth T880 tandem-axle chassis equipped with a 4,000-gallon steel tank from Integrity, a 100-gallon freshwater saddle tank and an NVE 4307 blower.

To clean restrooms, the company invested in a 2017 Ram 5500 outfitted with an 800-gallon waste/400-gallon freshwater aluminum tank from Integrity and a Masport pump and a 2023 Ram 5500 with an 800-gallon waste/400-gallon freshwater aluminum tank and an NVE B250 blower.

For installing septic systems, the company owns a 2021 Kenworth T880 dump truck with a dump body made by Godwin Manufacturing Co.; a 2020 Caterpillar 306 excavator equipped with a 3D GPS system



▲ Hunter and Stacy Creech use their EarthBuster drainfield rejuvenation equipment from K&P Enterprises. The attachment is mounted to a Cat skid-steer in the field.

from Topcon Positioning Systems; a 2020 Caterpillar mini-excavator; and a 2021 Caterpillar track loader.

All vehicles are equipped with GPS systems and dashboard cameras from Samsara.

The company also owns a 2015 Warrior water jetter (4,000 psi at up to 18 gpm) from Spartan Tool, used for cleaning sewer or drainfield lines; a Roddie R-8 pipe-bursting system; a pipe brush-coating system from Picote Solutions; and pipeline-inspection cameras from RIDGID and Hathorn.

In addition, the business relies on an EarthBuster drainfield-renovation machines from K&P Enterprises and uses SludgeHammer technology to clean and oxygenate drainfields.

“We do a lot drainfield rejuvenation jobs because a lot of our customers always are interested in solutions that cost less or require less government intervention,” Creech says.

KEYS TO SUCCESS

Keeping a third-generation family business alive and thriving is a big motivator for Creech.

“I want to succeed because I feel that failure isn’t an option for family businesses,” he explains. “It might sound odd to some people, but I feel like I owe it to people who came before me, like my granddaddy and mom and dad, to keep things going.”

One factor in the company’s success is continual investments in good equipment, as well as adopting new technology before competitors do.

“There were times we almost lost it all. But you have to be prepared for economic downturns and uncertain markets, either by saving money or being really creative and diverse.”

Stacy Creech

“I always like a challenge of finding the next big idea coming down the pipeline and being the first one to go and get it,” he says. “Take pipe lining, for instance, which we’re considering getting into. If you’re the first one and you’re good at doing it, you can ride that wave the longest before it gets too competitive and less profitable.”

Creech also points to pipe-bursting technology, which he invested in around 2020. The company is booking a lot of pipe-bursting jobs this year, largely from referrals from area plumbers. As a bonus, technologies like pipe-bursting make jobs significantly less labor-intensive, which in turn makes finding new employees easier, Creech notes.

“I always want to make my guys’ jobs easier,” he says. “And kids these days love technology like pipe-bursting and inspection cameras. They’re great for attracting this younger generation because when it comes to equipment, they want to work with the best of the best, not junk.”

ALWAYS CHANGING

Another success factor is the ability to keep evolving, he says.

“Someone once told me you’re either moving forward or falling
(continued)

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◀ Hunter Creech checks the voltage at a SJE Rhombus NEX Series pump control panel as Stacy Creech and crew service and clean a home septic system.

▼ From left, Stacy, Sheryl and Hunter Creech are shown with their vacuum truck built out by Integrity Tank with a National Vacuum Equipment 4310 blower and an onboard jetter/washdown system from Pumptec.

“Someone once told me you’re either moving forward or falling behind, that there’s no such thing as staying in place. ... You can’t just sit there and always do things the way you used to.”

Stacy Creech

behind, that there’s no such thing as staying in place,” he says. “You have to keep track of trends and adapt to situations. You can’t just sit there and always do things the way you used to.”

Creech also points out that it’s important for business owners to prepare for economic downturns.

“My business has not always been successful,” he says. “In fact, there were times we almost lost it all. But you have to be prepared for economic downturns and uncertain markets, either by saving money or being really creative and diverse.”

Providing comprehensive job training and coaching also has helped Creech grow the business. He says he makes a point of being in the field as much as possible to coach employees and ensure quality work.

VARIETY OF SYSTEMS

Creech says his company typically installs a mix of conventional gravity or pump-and-gravity systems. He prefers Infiltrator chambers or prefabricated permeable block-panel systems from T&J Panel Systems.

(continued)



WE LOVE THE BIG JOBS

The most difficult installing project ever tackled by Creech's Plumbing almost didn't happen, says company owner Stacy Creech.

It started with a persistent general contractor.

"This guy kept calling us and I kept saying I wasn't interested," Creech says. "But he kept calling because no other contractors were interested in doing it, so I finally told him if \$150,000 to do the job didn't scare him, I'd consider doing it."

In the end, Creech decided to take on the job, which ended up costing around \$180,000. Furthermore, he now looks forward to such projects.

The job started in September 2019 at Raven Rock State Park. It required installing a 3,640-square-foot conventional gravity septic system to handle around 50 RV hookups at nine campsites.

Capable of handling 2,655 gpd, the system features a 6,000-gallon, dual-compartment concrete tank by Shoaf Precast and equipped with a 6-inch effluent filter from Polylok; an 8,000-gallon dose tank from Shoaf with dual dedicated 2 hp sewage pumps (110 gpm) from Pentair; 840 Quick4 Plus Standard chambers from Infiltrator Water Technologies; and a control panel from SJE Rhombus.

Wastewater from RV hookups travels 693 feet downhill through a 6-inch-diameter PVC pipe to the septic tank, while wastewater from a bathhouse travels 799 feet through a 4-inch PVC pipe to the tank. Two drainfields, located 100 yards apart,

each featured 14 roughly 120-foot-long trenches.

Aside from the sheer size of the project, it also was challenging because the park was nearly two hours away from the Creech shop. Furthermore, crews started working right at the start of the state's rain and hurricane season, he says.

"We were on site for a total of about 14 days spread out over three months because of bad weather," Creech explains. "The day we finished, a tropical depression came through and it rained for two weeks straight," he adds. "Had we not pushed hard to get it done, there might've been a five-month delay before the site would've dried out."

Even though he initially resisted, Creech is glad he took the job because he discovered he liked the logistical challenges posed by large projects.

"It's not so much the challenges on the installation end," he says. "It's doing the research to make sure the numbers we submitted for the bid were good. It could have been devastating financially if I would've messed up."

"There's a lot at stake when you put yourself out there with that much risk and it goes bad," Creech adds, noting the company had to buy \$100,000 worth of materials on credit ahead of time. "It was daunting at times, but it went well enough that we felt confident about taking on a similar job about a year later. Now it seems like we do a few big park installations every other year."

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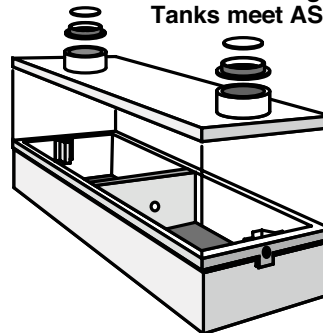
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▲ Hunter Creech washes down a septic tank during a service call. The company's vacuum truck is equipped with an onboard jetter/washdown system from Pumptec.

"T&J systems require half the footprint of a conventional gravity system," Creech says. "They're not the predominant kind of system that we install, but they're growing in prevalence because they're good for smaller lots where you're trying to squeeze in an installation or for higher-value lots where people want enough room for pools and other things."

The company often installs anaerobic systems from American Manufacturing or pretreated drip systems from FujiClean USA because they can be installed much shallower.

"There's a lot of wet soil in our area of eastern North Carolina, with a lot of flat topography and high water tables," he explains.

"The day we finished, a tropical depression came through and it rained for two weeks straight. Had we not pushed hard to get it done, there might've been a five-month delay."

Stacy Creech

One thing is certain: Installers — and regulators, for that matter — must keep adapting to new kinds of septic system technologies and changing real estate conditions. For example, years ago, large 5-acre lots were prevalent. But now half-acre lots are more the norm, he explains.

"So we've had to adapt to accommodating smaller lots," he says. "But I respect the challenge."

OPTIMISTIC OUTLOOK

Looking ahead, Creech says he's doing everything he can to ensure he hands off a thriving company to his son, Hunter, 22, if he decides to stay in the industry.

"I always ask him if this is something he wants to do for the rest of his life," Creech says. "If not, I'm going to sell it and invest the proceeds — I've already had offers to buy it. But I'd love to pass it on like others before me did."

Creech says he's in an "onward and upward" mode. He's encouraged by the fact that there's plenty of work and the company has built a good reputation and respect from local contractors that can be leveraged for further growth.

"The service industry will always be here and needed," he says. "There'll always be a need for boots on the ground in this industry — robots or apps aren't going to do the work. So I'm cautiously optimistic looking forward. In the long term, there's a bright future ahead." □

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Dropbox or Distribution Box – Which One Should I Use?

Your choice between serial and parallel distribution should be based on site conditions and system management oversight

By Sara Heger

As I discussed last month — most gravity distribution techniques have inherent flaws when it comes to how evenly they distribute effluent to the soil treatment area. As I travel across the country, I often get questions about the use of distribution boxes versus dropboxes as some regulations favor one over the other or do not allow one to be used versus another. My typical answer is that is a better conversation shared over an adult beverage as it is more opinion rather than fact. There are no studies that compare the treatment or longevity of distribution versus dropboxes.

It is important to note that most of our regulations for conventional systems are based on research that assumes uniform distribution to the soil treatment interface. Before we get into the differences and advantages/disadvantages, I want to remind you that with septic tank effluent neither device provides uniform distribution to the soil until a biomat exists across the entire soil infiltrative surface. And even then, it is likely not 100% even due to soil variability.

Our goal with soil treatment systems is as even of distribution as possible to promote both treatment and acceptance of the effluent. This is critical from both a treatment and longevity standpoint.

With gravity distribution, a control structure of some type is very beneficial as it allows for active management of the system. They provide a means of locating the lines, making flow adjustments, monitoring the system and potentially adding onto the system.

Dropboxes

When a dropbox is used the distribution is serial, meaning at system startup, only one trench is used until the effluent loads the dropbox up to the point that some of the effluent is diverted to the second trench. In the dropbox there is an outlet near the bottom of the dropbox, often connected to the distribution pipe of the trench. Another outlet near the top of the dropbox either leads to another section of the trench going in the opposite direction or to the dropbox of the lower trench.

The effluent only goes to the second trench when the first trench is accepting effluent at its long-term acceptance rate (not in a state of malfunction) and fully ponded if installed correctly. If the elevation of the bottom of the supply pipe is equal to the top of the distribution media in the trench, this will achieve a liquid level that will maximize the trench sidewall, develop the maximum hydraulic head on the bottom of the trench and maximize the potential for evapotranspiration during the growing season.



▲ A gravity distribution box is being installed. (Photo courtesy of Sara Heger)

With a dropbox, only the portion of the soil treatment unit required to treat the effluent is used.

Serial distribution encourages biomat formation and unsaturated flow to form as quickly as possible in the first trench as all the septic tank effluent with its organic material, solids and nutrients is directed into one line of the trench. In faster percolating soils (think any soil texture ending in sand) this “quicker” development of a biomat assists with the treatment process. Aside from the order in which effluent reaches them, the trenches function independently, each receiving effluent at the rate it is accepted in that trench. If one is draining more slowly than the others — perhaps because it is in less permeable soil — it will accept less effluent. If one tends to drain quickly — perhaps because it receives more sunlight on the surface and more water is lost through evaporation in the warmer months — it will receive more effluent.

Since the trenches are not directly connected, there is no hydraulic head from trench to trench — effluent does not move more quickly into or through the second or third trenches because they are downhill from the first one.

The dropbox distribution system allows for flexibility. ... Each trench can be any length to accommodate structures and trees if the total trench length is adequate for the wastewater source and site conditions.

Due to the “drop” in dropboxes, they are most suitable for sloping sites but can be used on level sites by positioning the downstream boxes two inches lower than the up-slope unit (if soil conditions allow this). The first inch is for the elevation difference between the inlet pipe and the supply pipe to the next dropbox, and the second inch is for the slope of the supply pipe to the next dropbox.

The dropbox distribution system allows for flexibility. If additional soil treatment system capacity becomes necessary, additional trenches can be added. This system can also be constructed on steeper slopes than other distribution methods. Each trench can be any length to accommodate structures and trees if the total trench length is adequate for the wastewater source and site conditions.

Distribution Boxes

Distribution boxes utilize parallel distribution of the septic tank effluent by gravity to equally load all sections of the soil treatment and dispersal system. Parallel distribution directs effluent flow into all trenches in the soil treatment unit simultaneously. Trenches are constructed to be of equal length and depth and to be suited for the same type of soil so treatment occurs at the same rate in each trench. In theory, this allows for equal use of all parts of the system. However, in practice, this rarely happens as trenches are not identical to each other.

All the outlets of the distribution box must be at the same elevation when installed, after the system has been backfilled, and years after use. Typically, a proprietary weir is placed on each outlet to adjust and equalize flow.

When you have limited appropriate soil prior to a restriction such as redoximorphic features or bedrock, a distribution box may be needed to avoid loss in elevation between trenches needed with dropboxes.

Installation Keys

As was described, evaluations and levelness of components are critical with both distribution and dropboxes. They must be properly bedded to remain stable over time. The proper bedding could be a layer of washed rock or pea gravel placed on a level foundation of undisturbed or properly



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compacted native soil. Alternatively, they can be placed directly on smooth, level undisturbed native soil.

Pipes exiting the device must be securely installed and properly bedded or they will settle over time resulting in uneven distribution, infiltration or both. Bedding pipes connected to the boxes must be done carefully to avoid damaging the box or causing wall deflection. This work should be performed by hand because machine traffic can potentially crush components.

An inspection port on the end of the trench is also beneficial for measuring ponding of each line. With a dropbox system, this can help confirm how many trenches are in operation and at what capacity, and with a distribution box you can assess the evenness of the distribution. Both types of boxes should be installed with access to grade for management.

Management

Serial distribution systems with dropboxes can be rested. After a year or more of use, you can cap the outlet pipe from the first box. The first trench will rest, fully drying out with the natural decomposition of residual organic matter.

With distribution boxes, maintenance and adjustment is critical to assure equalization of flow to the trenches due to the settling of the distribution box and piping. If solids or other debris reach the box, it must be cleaned or flow to the trenches will be impacted. If debris, solids or FOG builds up in the box, it should be cleaned or the distribution may be impacted.

Summary

Although many regulations, installers and designers have a preference on serial versus parallel distribution, a study has never been conducted comparing the longevity of the two systems. The choice between them should be based on site conditions and system management oversight.

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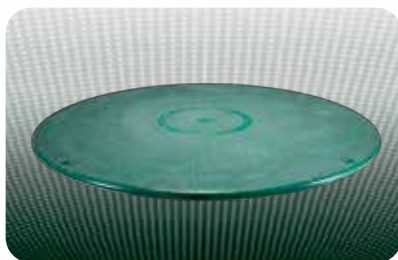
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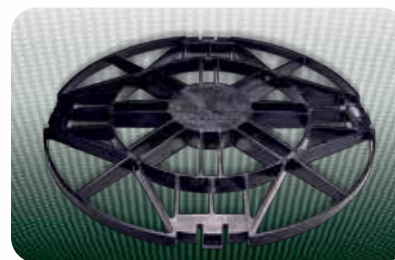
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SYSTEM PROFILE



▲ Two 1,050-gallon H-20 traffic-rated concrete grease interceptor tanks set in series with TUF-TITE risers and lids. (Photos Courtesy of Greg Mayfield)

Supersized Onsite Solution Chosen Over Lengthy Sewer Run

Dual split treatment trains with big tanks and drainfields handle a heavy flow for a new Florida convenience store

By **Scottie Dayton**

A corporation wanted to add another convenience store and service station to its chain of facilities, but the distance to the municipal sewer was greater than 1,000 feet. Opting for an onsite system, executives hired John Katsantonis, a professional environmental scientist and owner of JK Environmental Services in Minneola, Florida, to design it.

Hydraulic flow at the Okeechobee location totaled 7,000 gpd, triggering a required variance in the Innovative System Permit application. However, Katsantonis could avoid the variance if he kept system flow below 5,000 gpd, and a split low-pressure dosing system did just that.

Because this high profile job was Katsantonis' first with the company, he consulted with Greg Mayfield, president of Southern Water and Soil in Dade City, Florida. Based on the soils, Mayfield recommended the GeoMat Leaching System from Geomatrix Systems to optimize space. He also had installed seven such systems with Tyler Chancey, owner of Tampa Septic in Dade City.

"Our code states that every linear foot equals 4.56 square feet," says Mayfield. "A 39-inch-wide roll of GeoMat has a 3.25-foot-wide treatment core, but we get credit for 4.56 square feet."

System Profile

- Location:** Okeechobee, Florida
- Facility served:** Convenience store and service station
- Designer:** Greg Mayfield, Southern Water and Soil, Dade City, Florida
- Installer:** Tyler Chancey, Tampa Septic, Dade City, Florida
- Type of system:** Low-pressure dosing with drip irrigation
- Site conditions:** Muck and wet sand, loading rate of 0.60 gpd per square foot, seasonal high water table 44 inches below grade
- Hydraulic capacity:** 7,000 gpd



Even with the credit, the two drainfields totaled 6,000 square feet. The system took a month to install and went online as scheduled in May 2022.

Site conditions

Soils are muck and wet sand with a loading rate of 0.60 gpd per square foot. Depth to limiting factor on the flat 4.80-acre lot is 44 inches.

System components

Katsantonis designed System 1 to treat 3,720 gpd; System 2 handles 3,360 gpd. Tanks, risers and lids (TUF-TITE) are H-20 traffic rated. Major components include the following:

- Two 1,050-gallon concrete grease interceptor tanks set in series from Sebring Precast Products
- Two 5,000-gallon, dual chamber concrete septic tanks with PL-525 effluent filter (Polylok). Tanks from Florida Septic.
- Two 3,000-gallon concrete dose tanks
- Four 1 hp FL102M-2 effluent pumps (Liberty Pumps)
- 2,904 feet GeoMat 3900 Flat Leaching System (Geomatrix Systems)
- 1,620-cubic-yards septic and system sand
- Four RF9858 1.5 hp SoilAir blowers with microprocessor controller (Geomatrix)
- Two control panels CP-2BL2P2F (Geomatrix Systems)

System operation

Piping is PVC Schedule 40.

The 4-inch pipe in System 1 carries wastewater 122 feet to the septic tank. For System 2, wastewater flows 169 feet to another septic tank. Liquid from the grease interceptors drains into the first system. Effluent from the septic tanks gravity flows to the dose tanks in which each alternating pump run eight times per day. Each of four drainfields in two systems are 1,495 square feet and measure 64.5 by 23 feet.

System 1 sends 232.5 gallons per dose through a 2-inch force main 97 feet to the first drainfield and 102 feet to the second drainfield. The low-profile drainfield leaching system has a 1-inch-thick nylon core of fused, entangled filaments covered by a hygroscopic geotextile fabric bonded to one side of the core and containing the distribution pipe.

▲ A worker shovels system sand against the 2-inch manifold. Each 64.50-by-23-foot-wide zone has a 1.5 hp SoilAir blower to aerate the GeoMat core. Spoils are stockpiled in the background.

▼ Two 1.5 hp SoilAir blowers with housings removed for plumbing to the 2-inch aeration lines.



SYSTEM PROFILE



System 2 sends 210 gallons per dose 49 feet to the first drainfield and 92 feet to the second drainfield. Each zone has an 18-foot-long, 2-inch manifold feeding six 1.25-inch distribution laterals 62.5-feet long on 4-inch spacing. The pipes have 13 3/16-inch perforations. These holes and those in the aeration laterals are spaced 5 feet apart at the 5 and 7 o'clock positions. Pipe holes and orifice shields face down so the water hits the shields and disperses uniformly.

Adjacent to every distribution pipe is a 2-inch aeration lateral with 1/2-inch holes. Each zone has an air bleed valve (Schrader) and a blower pushing 7 to 8 psi inside the membrane. "If there isn't enough cover on the fabric, it will raise up from the air," says Mayfield.

Installation

General contractor Darry Dykstra of Dykstra Construction hired Tampa Septic, Mayfield's sister company, to install the system. Chancey was the foreman and Mayfield the septic inspector.

Because the building plumbing was 4.5-feet deep, code specified H-20 traffic-rated tanks. Sebring Precast delivered and set the grease traps, but the 14-foot-deep excavations for the septic and dose tanks filled with abundant groundwater. Chancey hired Able Dewatering to drill dry points around the area and dewater. The pump ran for a week, discharging to a retention pond.

With the groundwater at bay, Florida Septic delivered the four main tanks, but didn't have a heavy enough crane to set them. Chancey hired Beyel Brothers Crane & Rigging and they did the job in four days.

The drainfield locations had remnants of asphalt parking overlaying 16 inches of limestone road base on bad soil, requiring excavations 40 to 70 inches deep. Chancey rented a Doosan DX140LC excavator-crawler from Synergy Equipment (DEVELON) and used his Bobcat T64 compact track skid-steer and E85 tracked compact excavator to stockpile the suitable material for backfill. They shot elevations with a LL400 Laser Level (Spectra Precision/Trimble).

Dan Borkowski, Geomatrix's senior project manager, oversaw the installation and provided technical support as to wiring the blowers and piping the aeration lines.

Digging out and rebuilding each drainfield took a week because of the distance between quarry and site. Dump trucks hauled in 70 loads (1,260

"It's easy to install.
Just be sure the layer of
system sand is perfectly level."

Greg Mayfield

▲ An electrician hired by Dykstra Construction runs power to the control panel. Dustin Osbron, a Tampa Septic technician, installs conduit in a riser for lift station electrical, while technicians Nick Whittington and Ryan Near discuss hooking up the control panel wiring to the lift station components.

cubic yards) of septic sand and 20 loads (360 cubic yards) of C-33 system sand. Workers replaced the excavated area with a bed of septic sand topped with 12 inches of system sand. Installing the 100-foot rolls of GeoMat took two days per field, with each zone using 726 feet.

"It's easy to install," says Mayfield. "Just be sure the system sand layer is perfectly level. Also, overlap the membrane and staple the ends together, then seal everything around the distribution pipe to keep out sand and groundwater."

Maintenance

Tampa Septic holds the maintenance contract and Borkowski monitors the system remotely. A technician inspects the system and cleans the filters quarterly. Tanks are inspected annually and pumped as required. □

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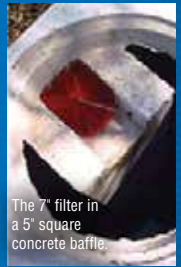
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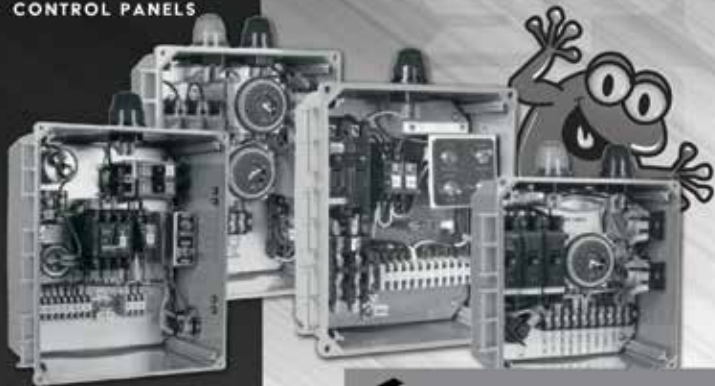
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By Craig Mandli

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The **HIBLOW XP-80** linear diaphragm air pump is equivalent in airflow to the HP-80, but utilizes a “rare earth” neodymium magnet, which allows the unit to run on less than 60 watts of power – comparable to an incandescent light bulb. The aerator has a small footprint and weighs less than 10 pounds, allowing for cost efficient shipping. It takes up less space in a service truck and in protective enclosures — allowing for more air circulation to cool the pump. The neodymium magnet helps the pump maintain a low operating temperature, assisting with optimizing pump service life. **734-944-5032; www.hiblow-usa.com**



Kasco Marine Surface Aerators

Surface Aerators from **Kasco Marine** are easily installed with mooring ropes and designed to agitate high volumes of water. With continuous mixing action, water is constantly circulated through the unit to increase the amount of water introduced to air. This increases overall water quality and raises dissolved oxygen levels to the required standard before treated water is discharged. The units are designed for residential and commercial properties with minimal operator monitoring. Models are available in power options ranging from 1/2 to 5 hp with cord lengths up to 500 feet. Units are designed with a 360-degree top intake, allowing for greater flow and electrical efficiency, all while enabling use in shallow applications. **715-262-4488; www.kascomarine.com**



CHOPPER PUMP

Gorman-Rupp SFSC Pump

The **SFSC Pump** from **Gorman-Rupp** is an SF Series product equipped with Eradicator Plus solids reduction technology. These are the most aggressive in the SF Series product lineup and are designed for applications where nonwoven flushable wipes, trash bags,



hair, industrial byproducts and agricultural wastes are present. All pumps are equipped with a heavy-duty continuous vane impeller. The pumpout vanes incorporated into the thick back shroud are designed to help prevent buildup of debris behind the impeller. The wear plate utilizes notches and grooves with an oversized lacerating tooth designed to cut and shred organic solids before they enter the pump. Pumps are available in 3-, 4- and 6-inch discharge sizes. **419-755-1011; www.grpumps.com**

EFFLUENT PUMPS

Boerger BLUEline rotary lobe pumps

Boerger BLUEline rotary lobe pumps are a self-priming, valveless, positive displacement pump used for conveying viscous and abrasive materials. They are resistant to wear and provide pulsation-free operation. Operation is fully reversible, with dry run capability and flow rates up to 7,000 gpm. They are constructed with maintenance-in-place design, allowing for all wetted parts to be easily replaced through the front cover without removing pipe or drive systems. The pump conveys biosolids (primary, waste activated sludge, return activated sludge, digested, thickened, etc.), grease, sewage, scum, lime slurry, alum sludge, permeate and polymers. **612-435-7300; www.boerger.com**



Franklin Electric Little Giant WE Series

The **Little Giant WE Series** is built with a **Franklin Electric** submersible motor, designed to provide maximum durability and years of reliable service. It consists of a high-head filtered effluent pump powered by a 1/2 hp submersible motor and includes a removable built-in check valve. The high-quality top bearing and stainless steel upthrust washer add resilience and reliability, according to the maker. **800-437-6897; www.littlegiant.com**



Webtrol VE and VS pumps

Webtrol VE and VS pumps are equipped with a continuous-duty motor that offers advantages such as reliable and uninterrupted operation. The energy-efficient motor is designed to run continuously without overheating or experiencing fatigue. It ensures durability and longevity, handling heavy-duty



applications and demanding environments, according to the maker. Minimum maintenance is required. The pumps are versatile and suitable for various applications including dosing, lift stations and dewatering. **800-769-7867; www.webtrol.com**

Wholesale Septic Supply ATER 20 Series

The **ATER 20 Series** effluent pump, distributed by Wholesale Septic Supply, passes solids up to 1/8-inch. This makes it easier to pump through the whole system. The bottom suction design allows the unit to pump longer, providing further draw-down capability and reliability. It has a removable 5-inch base that raises the pump from the tank bottom, preventing sludge from clogging the pump. The pump has a built-in check valve that keeps it pumping efficiently. It is constructed from 304 stainless steel for corrosion resistance. A heavy-duty 300-volt, 10-foot SJ00W cord is used. **936-681-7211; www.wholesalesepticssupply.com**



GRINDER PUMPS

Liberty Pumps ProVore

The **ProVore** grinder from **Liberty Pumps** is designed for use in applications where addition of a bathroom or other fixtures below sewer lines requires pumping. It has the same V-Slice cutter technology used in the Omnivore Series. Powered by a 1 hp motor, this smaller grinder is designed to operate on a standard 115- or 230-volt circuit, requiring only a 20-amp breaker. No special wiring is needed. The pump comes with a 2-inch vertical-style discharge and a standard leg pattern matching the LE Series. This allows for easy retrofit into existing systems. Compact factory-assembled systems are available in simplex and duplex versions: the ProVore 380 and ProVore 680. **800-543-2550; www.libertypumps.com**



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Zoeller Pump 72 HD Series

Zoeller Pump's 10 and 15 hp 72 HD Series is an expansion to its existing grinder product offering, now ranging from 1 to 15 hp. The units include a dual carbon ceramic shaft seal, moisture and thermal sensor, a buna-N gasket to protect the 3,450 rpm motor, and class F windings. Pumps are available in 208, 230, 460 or 575 volts using a three-phase connection. The 3- or 4-inch ANSI-flanged horizontal discharge allows for easy adaption to a variety of grinder or solids handling rail systems. Pumping performance ranges from 250 feet at shut-off and a maximum flow at 150 gpm at 50 feet TDH. Removable legs clear the bottom of the pump to allow debris to flow easier into the cutter assembly when used with a guide rail assembly. This assembly uses a 440 stainless steel with a Rockwell C hardness of 55-60 cutter and cutter plate in a scissor-like cutting motion that reduces solids down to 1/8 inch. **800-928-7867; www.zoellereengineered.com**



VERTICAL/LIFT STATION PUMP

Saniflo Sanicubic 2 VX

The Sanicubic 2 VX lift station from Saniflo provides above-floor drainage for multiple plumbing fixtures for a commercial structure, eliminating the need for costlier and less convenient pit installations. Equipped with two 1.5 hp motors, the lift station is capable of discharging effluent through either 2- or 4-inch rigid pipe and offers a shut-off head of 43 feet. It employs an internal air pressure switch to automatically cycle the unit on and off. The unit also comes equipped with a wired control panel, as well as an external audible and LED indicator alarm if a pump experiences overload or ceases to operate. With easily removable circular top panels, the IP68 enclosure permits ready access to every major component inside. **800-363-5874; www.saniflo.co**



SUMP PUMP

Ashland Pump sump pumps

Ashland Pump offers sump pumps including the PS series, B series, the SPV series and sump basin package systems. The pumps are built of corrosion-resistant anodized aluminum or rugged cast iron. All are equipped with permanent split capacitors and continuous duty-rated motors for higher efficiency. They have an upper and lower ball bearing design for longer life and smoother operation. The vortex impellers are made of thermoplastic or cast iron to better handle up to 1/2-inch solids. They have contractor-grade vertical or wide-angle piggyback float switches for quick and easy field servicing. The sump basin packages come complete with sump basin, sump pump, check valve and discharge piping. They are suitable for new or replacement installations. **855-281-6830; www.ashlandpump.com**



SUBMERSIBLE PUMP

Polylok PL-CPE4A

The Polylok PL-CPE4A is a submersible, 4/10 hp, 115-volt, single-phase effluent pump with a 2-inch NPT vertical discharge. It has a maximum head of 38 feet and a maximum flow of 56 gpm. The pump is designed with a 3,450 rpm oil-filled permanent split-capacitor motor and has an amp rating of 6.6 for 115 volts, a rugged cast iron housing and volute equipped with a cast iron vortex impeller capable of passing 3/4-inch-diameter solids. The stainless steel shaft is supported by two single-row, oil-lubricated ball bearings. The shaft seal is an inboard design with a secondary Exclusion V seal. It has a 20-foot UL/CSA-listed power cable suitable for submersible service and fitted with a three-prong plug. The unit is supplied with an integrated clip for the included piggyback mechanical float switch and used for automatic operation. **888-765-9565; www.polylok.com**



PUMP CONTROLS

Alderon Industries GO2

The GO2 control panel from Alderon Industries provides pump control with basic system configuration options including sensor error input, auto or manual alarm reset, and lag alarm disable. A multi-color LED beacon provides system status indication on the exterior of the panel while the internal circuit board LEDs provide pump run and activated sensor indication. The control panel is operated using three or four float switches for pump off, lead, lag and high level alarm. In three-float applications the lag and alarm functions are activated simultaneously. Included hand-off-auto pump selector switches allow the user to change the desired operation of the pump. It is available in single phase, 120/240-volt AC, 1-7 amps, 7-15 amps or 15-20 amps, simplex and duplex, with a Type 4X rated enclosure for indoor and outdoor applications. It can be customized with optional float switch configurations and cloud based remote monitoring. **218-483-3034; www.alderonind.com**



Jet Inc. Model 196 Control Panel

The Model 196 Control Panel from Jet Inc. is pre-wired and designed to control and monitor operation of Jet system aerators, as well as the function of one or two 120/1/60 or 240/1/60 pumps for flow equalization and various pressured distribution system applications such as time-dose, demand-dose and night-spray. The panel allows for optional cycle timer, cycle counter, remote telemetry and auxiliary alarms. All controls, audible and visual alarms are housed in a NEMA 4 control enclosure. **800-321-6960; www.jetincorp.com**



Orenco Systems 4-in-1 Controller

The **4-in-1 Controller** from **Orenco Systems** supports numerous electrical configurations and dosing schedules within a single panel. Both simplex and duplex models are available and can be configured in the field for timed or demand dosing. While the control circuit operates on 120-volt power, the pump circuit is dual-rated for 120- or 240-volt power, meaning installers and service providers can reduce their panel inventories for new installations and repairs. It includes a programmable logic unit with multiple timing intervals for changing flow conditions and an elapsed-time meter and counter. It also displays float position and has a float error indicator. Each panel includes a reference chart to assist with troubleshooting during installation and testing as well as wiring diagrams. It is completely touch-safe. 877-257-8712; www.orenco.com



SJE Rhombus EZ Series In-Site CL

The **EZ Series In-Site CL** data logging control panel from **SJE Rhombus** offers wireless Bluetooth connection for smart devices. There is no need to open the panel for configuration, viewing status or downloading data using the EZ Connect Mobile App. The Bluetooth smart module eliminates the need for a PC to enable safe and secure access in all weather conditions. The panel utilizes the C-level sensor for continuous level monitoring and records up to 4,000 system events, including pump run times, pump cycles, alarm conditions, HOA settings, power outages and service calls. The In-Site software formulates system data for you, creating reports quickly and easily so system conditions can be identified and corrected. Single phase simplex or duplex models are available. The panel can be easily converted to demand or timed dose in the field. 888-342-5753; www.sjrhombus.com



SPI 50B019-120-240 DD

The **50B019-120-240 DD** control panel from **SPI** is a duplex timed-dosing panel for residential or commercial applications. It can be used with 120- or 240-volt power, and accommodates two dosing pumps controlled by a repeat-cycle timer. It has a durable, weather-resistant, NEMA 4X polycarbonate enclosure with SST latches; large, easy-to-access terminal block; circuit breakers for the pumps and control circuits; a rugged externally mounted, UV-resistant alarm light; audible alarm and run-mute-test switch with UV-resistant sealing boot; definite purpose motor contactors; alternating relay; and pump hand-off-auto switches. Compressor hookups are available. Wiring schematic and detailed connection diagrams are provided, as well as mounting feet for the enclosure. It is UL listed. 419-282-5933; www.septicproducts.com □



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Dig These New Products at The Utility Expo 2023

BY CRAIG MANDLI

The Utility Expo is the premier event for utility professionals and construction contractors to gain comprehensive insight into the latest technologies, innovations and trends affecting their industry. This year's

event, slated for Sept. 26-28 in Louisville, Kentucky, promises to show off some of the finest new products on the construction market. Below is a preview of some of the newest products that will be highlighted at this year's show.

BOSS Industries REVOLT

The **REVOLT** from **BOSS Industries** is a revolutionary design that takes advantage of everything a contractor likes about their vehicle and allows them to produce power in a stationary mode to perform the work or play needed. There are no batteries or engines to maintain.



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800-635-6587; www.bossrevolt.com; Booth E1318

CrewPlex DR10 All-In-One Wireless Headset

The **CrewPlex DR10 All-In-One Wireless Headset** combines the great sound quality and excellent performance of the proven DR10 system with the comfortable fit, exceptional noise isolation, and flip-up microphone muting technology of the Smart-Boom PRO headset, but without the wire. The new headset is available in single and dual-ear models with field-replaceable batteries. Compatible with DR10 beltpacks, users can use a combination of DR10 wireless all-in-one headsets and traditional DR10 beltpacks as part of the same system.



334-321-1400; www.crewcom.com; Booth S3908

Brokk 120DII

Brokk's 120DII remote-controlled demolition machine pairs with the Brokk Vacuum Excavation Kit for improved maneuverability, safety and versatility in tight vacuum excavation applications. At 31 inches wide, 80 inches long and 49 inches tall, it is ideal for tight spaces where truck-mounted excavation systems can't reach. The package includes a bracket mounted on the rear of the machine and on the three-part arm to secure the hose and transport it from the vacuum excavation truck to the excavation site. A specially designed plate attaches to the end of the arm and includes an opening to hold and stabilize the hose's nozzle. Thanks to the quick hitch, the plate can be rapidly removed and switched with another attachment. A range of electric models can also be equipped with the vacuum excavation kit.



800-621-7856; www.brokk.com; Booth N1855

Dynablast

Dynablast is a Canadian distributor for Interpump, Pratisoli water pumps and PA accessories such as valves, lances, guns and nozzles for the past 35 years. The company currently supplies ETL-certified high-pressure hot water heaters in various sizes for hydrovac trailer or truck applications. They can provide custom hot water heaters and water pump package solutions to meet hydrovac OEM requirements, as well as aftermarket support. Dynablast will be displaying the KTX series water pump, exclusively designed for the hydrovac market, along with 420,000 and 690,000 Btu water heaters.



888-881-6667; www.dynablast.ca; Booth N1624

GapVax VHX Series

The **GapVax VHX Series** hydrovac offers a 15,000-pound payload and low-profile (12 feet 2 inches) making it the ideal combination for all-around hydro-excavation projects. The vacuum system with wet/dry filtration is quiet, reliable and simple. This design includes ultra-efficient centrifugal cyclone separators and long-lasting filter bags. It offers a powerful combination of a 13 gpm, 3,000 psi water system with optional 200 cfm air compressor. The standard full tilting debris body allows for fast unloading and easy clean out. Ease of operation and maintenance keep the operator in mind.



888-442-7829; www.gapvax.com; Booth N1339

Kondex Drill Defender HDD Components

Kondex Drill Defender HDD Components provide improved product life and performance from the company's laser cladding application that outlasts hard face welding. Sonde housings, cobble and dirt bits, starter rods and collars improve wear protection characteristics while minimizing labor costs by eliminating the need for hard facing. Get better protection from the start — laser cladding adds a carbide-dense layer of protection that's metallurgically bonded to the base material that won't easily chip or wear off. Its robotic application offers gained wear protection in areas that require pinpoint accuracy to protect.



920-238-2915; www.kondexparts.com; Booth N831

HammerHead Bluelight LED System

The **Bluelight LED** CIPP lining system for laterals and small drain pipes from HammerHead is an advanced light-curing system. The innovative technology empowers CIPP lining pros by alleviating the time pressures of other CIPP systems. The specially formulated resin only cures under light in the blue wavelength, giving installers a significantly longer working time between liner wet-out and curing. Once installed, the automated curing system pulls the LED light head through the liner, curing the resin almost instantly — up to five times faster than other methods. A 50-foot sewer line could be fully cured in under 10 minutes.



800-331-6653; www.hammerheadtrenchless.com; Booth N855

Rival Hydrovac T7 and T10

The **T7** from **Rival Hydrovac** was designed as a unit that could be loaded with debris and drive within legislated road limits with most densities of debris on board. Additionally, the unit comes standard with a scale that reads weights both in the cab and on the wireless remote to confirm weights prior to travel. The Rival T10 is built with the same features and operating system, but with larger capacities and components. The T10 is popular with clients who do both utility and industrial work. It is built on three chassis layouts dependent upon weight restrictions in a given area.



403-550-7997; www.rivalhydrovac.com; Booth N1329

Hydra-Flex Ripsaw

The **Ripsaw** HD nozzle from **Hydra-Flex** has revolutionized the hydroexcavation industry with its incredible digging power and proven increased efficiency. Its 0-degree stream rotates at an 18-degree cone of coverage, which increases impingement to dig faster and uses less water. Built with a heavy-duty, nonconductive coating, stainless steel housing, and tungsten carbide wear surfaces, its long-lasting, premium components stand tall against frost, shale, and rocky soil, and provide extra safety for both users and underground utilities.



952-808-3640; www.hydrflexinc.com; Booth N1525

RODDIE DD-1 Bore Glide

The **DD-1 Bore Glide** from **RODDIE** is a user-friendly, compact pit-launched horizontal directional drill with the power of much larger machines. Its over 15,000 pounds of thrust and pullback give it a drill range of up to 400 feet and 6-inch pipe. Because of its design you can set up in a shallow pit as small as 2-by-4 or 3-by-5 feet if you are using the stackable drill containment box. It can be powered by a mini-excavator, skid-steer or stand-alone power pack.



888-406-3821; <https://roddieunderground.com>; Booth EH2337

(continued)

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800-877-3687; www.unitedrentals.com; Booth E1345

Vermeer D23x30DR S3 Navigator

The **Vermeer D23x30DR S3 Navigator** horizontal directional drill integrates dual-rod technology into a compact machine design to efficiently maneuver through rock in congested cities, busy neighborhoods or tight job sites. Featuring a narrow footprint and a weight of 16,500 pounds, it is well-suited for fiber, electrical, gas and water installation in hard rock, as well as many other challenging ground conditions. The unit's threaded outer rod has a rotational torque of 3,000 ft-lbs, while its hex inner rod delivers up to 800 ft-lbs.



888-837-6337; www.vermeer.com; Booth K225

Vivax-Metrotech vCamMX-2

The **vCamMX-2** portable all-in-one system from **Vivax-Metrotech** can inspect pipes from 1 1/2 to 4 inches in diameter. The 8-inch adjustable LCD shows the pushrod's distance out along with the current date and time. It is available with 100 or 150 feet of pushrod with a 512 Hz sonde and a choice of three user-changeable camera heads. Text and audio comments can be added to videos and pictures from the control module or the free VMC smartphone app.



800-446-3392; www.vivax-metrotech.com; Booth EH2300

VMAC 5-in-1 Multifunction Power System

VMAC's 5-in-1 Multifunction Power System, powered by a Honda iGX800 gas engine, offers five power sources in one powerful machine. It includes everything needed for heavy-duty mechanic work and is engineered for service truck bodies. This system includes a 40 cfm rotary screw air compressor, an 8 kW generator, a 250 amp welder, a 300 amp battery booster, and a 12- and 24-volt charger. It includes all the best features of traditional diesel and gas multipower systems, but with more power in a smaller, lighter package. ■







877-912-6605; www.vmacair.com; Booths S3041 & E1346

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“It’s Not Your Grandparents’ Septic System”

Iowa installer and pumper Rick Miene counts customer education as a critical part of his daily routine

Compiled by Betty Dageforde

In Snapshot, we talk to a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we visit a member of the Iowa Onsite Waste Water Association.

Rick Miene

owner

Business: Miene Septic Service, Robins, Iowa

Age: 51

Services we offer: Septic system installation, maintenance and pumping; land clearing, grading and excavating. Septic is our backbone but we also have little niches that others don't do. We're like a one-stop shop about anything that comes to dirt work.

Years in the industry: We just celebrated our 50th anniversary. My dad started the company, then I took over. So I've been in it my whole life. There are pictures of me on job sites with my Tonka Toys. But I received my first official paycheck in 1986.

a variety of things to keep people engaged. And we want to get people talking about problems because the association is there to help them. We've had some challenges working with the Iowa Department of Natural Resources (DNR) and their rule interpretations and I think the association is doing a good job in getting the government to listen to us, and keeping them from getting too powerful.

Our crew includes:

My mother, Faith, has been here a long time and does so much — estimating, planning, scheduling, coordinating jobs with homeowners, doing the profit and loss work, answering phones. My son Cameron worked during the summers when he was in school but has since moved on to do his own thing. My daughter Marissa is our “go-fer” person running errands and cleaning equipment, and is working towards getting her CDL. Then we have Jordan Boley, excavation equipment operator, and 2023 WWETT Show national backhoe ROE-D-HOE champion; Kyle Nickvinda, alternative systems, pumping, soil analysis and time of transfer inspections; Chris Usher, pumping and time of transfer inspections; Kurt Vandersee, certified installer; Bob Ford, grading, tree mulching, certified installer and problem-solver on difficult sites; Kolby Morris, dump truck driver and do-everything guy wherever needed; Zach Knoll, dirt work for dozer and excavator; Chris Bodicker, paperwork for time of transfers, permits and locates.

Association involvement:

We've been members of the Iowa Onsite Waste Water Association (IOWWA) since 1999 when it started. I have been on the board of directors for eight years and have served as president.

Benefits of belonging to the association:

We formed the association because we saw the importance of getting educated, meeting other people, seeing that they were struggling with the same things you were. We can bounce ideas off others who aren't in our neighborhood. We can collaborate and have a sense of community. We can network with instructors and other professionals, like precasters and suppliers. Having that network of individuals to reach out to is so important.

Biggest issue facing your association right now:

We're trying to find ways to educate people without them feeling like they're not learning anything because they've heard it before. We're looking for new ideas and hitting on topics people are not talking about and doing

Typical day on the job:

I start at 6 a.m. on the phone, checking weather, planning what needs to go where. I might be working on scheduling, directing guys, checking on job sites, meeting clients and contractors. My good days are when I can go get in a piece of equipment and just enjoy myself. The day can end anywhere from 5 to 9 p.m. — but the phone is always on.

The job I'll never forget:

Tight, difficult sites with a lot of topography are always challenging. In one case we had a narrow area between the road and a creek. Somehow we had to fit in the house, the driveway, get 100 feet away from the well, and still get a septic system on it without falling into the creek. There was a 27-foot drop from the front of the house to the back. It was a crazy build and we had to really think outside the box.

My favorite piece of equipment:

I like the skid loaders (Bobcat), the dozer (John Deere), and our mini-



◀◀ Rick Miene is shown with his 2011 Peterbilt and Link-Belt 145 excavator. (Photo courtesy of Rick Miene)

excavators (Link-Belt 145, John Deere 245, three Bobcats). It's nice to get big equipment but I enjoy the smaller ones. It's amazing what you can do with those in tight areas.

Most challenging site I've worked on:

Our challenging sites are the ones where there's an enormous amount of paperwork and contracts. For example, we worked at a nuclear power plant and that is just a whole different world. We joked that it was "nuclear time" because it would take forever to do anything. If you had an eight-day work schedule, you were going to get about two hours worth of work done after all the safety meetings and laying things out. So many things were overthought. It was problematic for getting things done in a timely manner. You learn to appreciate working for residential.

Oops, I wish I could take this one back:

The "oops" is when you get in a hurry. I remember once backing into the shop when I was in a hurry. I backed right smack dab into a new truck and just smashed the whole front end. You need to take the time to check out your surroundings before you cause thousands of dollars of damage.

The craziest question I've been asked by a customer:

Sometimes people say things like, "I've always heard that I don't have to pump my septic tank. My grandparents and my dad never had to." But after you get done talking to them you find out it was a straight pipe to the ditch. We tell them, "Your septic system is not your grandparents' septic system. You need to take care of it like you do your car." Part of our job is educating people, so we spend a lot of time telling customers what they should and should not be doing.

If I could change one industry regulation, it would be:

We're currently having an interpretation dispute with the DNR about what we feel should be done with treated effluent. There's been a rule change that we cannot put that water back into the soil. The change I'd like to see is that they get educated and listen to people who are in the know so we don't have open water becoming stagnant. Iowa is working on that and we're trying to get some extra backing from NOWRA (National Onsite Wastewater Recycling Association). I fully believe that I am a professional in this industry and I feel very passionate about clean water and being able to utilize our resources the best we can, whether it's water or wastewater. There are so many ways we can do that. Dumping septage to a wastewater treatment plant is not always the best way.

Best piece of small business advice I've heard:

This may be self-discovered, but I believe that in a small business you need four key things: a creative accountant, a wise attorney, a good banker and a good insurance agent.

If I wasn't working in the wastewater industry, I would:

I like helping people, solving problems, coming up with ideas on these jobs. So I'd probably look at consulting in the wastewater industry and find ways to join the regulatory and private people who are trying to make businesses work to solve homeowner issues.

Crystal ball time - This is my outlook for the wastewater industry:

I see a change coming. As you get out to the east and west coasts where it's very populated with tight lots, a lot of the denitrification and phosphorus removal technologies, as well as carbon footprints, are starting to become something. I think we'll see more stringent regulations. People aren't really set up for that in Iowa because we have room. But even in Cedar Rapids, we do have a lot of these cookie-cutter lots that we are having to get very creative putting septic systems in. I think we have to start paying attention to those regulations and the confinements of what we have. It almost seems like we, as contractors, might have to start getting science degrees. Even farmers are getting into the science of a lot of this with nitrates, nitrogen, ammonia and what you need to do to create sustainable soils without affecting the water table. □

Would you like to see someone in your state or provincial wastewater trade association profiled in Snapshot?

Send your suggestions to Jim Kneiszel at editor@onsiteinstaller.com.

Serving the Industry

Visit your state and provincial trade associations

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Alabama Onsite Wastewater Association;
www.aowainfo.org; 334-396-3434

ARIZONA

Arizona Onsite Wastewater Reclamation Association;
www.azowra.org; 928-443-0333

ARKANSAS

Arkansas Onsite Wastewater Association;
www.arkowa.com

CALIFORNIA

California Onsite Wastewater Association;
www.cowa.org; 530-513-6658

COLORADO

Colorado Professionals in Onsite Wastewater;
www.cpow.net; 720-626-8989

CONNECTICUT

Connecticut Onsite Wastewater Recycling Association;
www.cowra-online.org; 860-267-1057

DELAWARE

Delaware On-Site Wastewater Recycling Association;
www.dowra.org

FLORIDA

Florida Onsite Wastewater Association;
www.fowaonsite.com; 321-363-1590

GEORGIA

Georgia Onsite Wastewater Association;
www.georgiaonsitewastewater.com;
706-407-2552

GEORGIA

F.O.G. Alliance;
www.georgiafog.com

IDAHO

Onsite Wastewater Association of Idaho;
www.owaidaho.org; 208-664-2133

ILLINOIS

Onsite Wastewater Professionals of Illinois;
www.owpi.org

INDIANA

Indiana Onsite Waste Water Professionals Association;
www.iowpa.org; 317-965-1859

IOWA

Iowa Onsite Waste Water Association;
www.iowwa.com; 515-225-1051

KANSAS

Kansas Small Flows Association;
www.ksfa.org; 913-594-1472

KENTUCKY

Kentucky Onsite Wastewater Association;
www.kentuckyonsite.org; 855-818-5692

MAINE

Maine Association of Site Evaluators;
www.maine.com

Maine Association of Professional Soil Scientists;
www.mapss.org

MARYLAND

Maryland Onsite Wastewater Professionals Association;
www.mowpa.org; 443-570-2029

MICHIGAN

Michigan Onsite Wastewater Recycling Association;
www.mowra.org

Michigan Septic Tank Association;
www.msta.biz; 989-808-8648

MINNESOTA

Minnesota Onsite Wastewater Association;
www.mowra-mn.com; 888-810-4178

MISSISSIPPI

Mississippi Pumpers Association;
www.mspumpersassociation.com;
601-249-2066

MISSOURI

Missouri Smallflows Organization;
www.mosmallflows.org; 417-631-4027

NEBRASKA

Nebraska On-site Waste Water Association;
www.nowwa.org; 402-476-0162

NEW ENGLAND

Yankee Onsite Wastewater Association;
(Massachusetts, Connecticut, Maine, New Hampshire, Rhode Island and Vermont)
www.yankeeonsite.org; 781-939-5710

NEW HAMPSHIRE

New Hampshire Association of Septage Haulers;
www.nhash.com; 603-831-8670

Granite State Onsite Wastewater Association;
www.gsdia.org; 603-228-1231

NEW MEXICO

Professional Onsite Wastewater Reuse Association of New Mexico;
www.powranm.org; 505-989-7676

NEW YORK

Long Island Liquid Waste Association, Inc.;
www.lilwa.org; 631-585-0448

NORTH CAROLINA

North Carolina Septic Tank Association;
www.ncsta.net; 336-416-3564

NORTH DAKOTA

North Dakota Onsite Wastewater Recycling Association
701-650-8792

OHIO

Ohio Onsite Wastewater Association;
www.ohioonsite.org; 740-828-3000

OKLAHOMA

Oklahoma Onsite Wastewater Association,
918-727-7113

OREGON

Oregon Onsite Wastewater Association;
www.o2wa.org; 541-389-6692

PENNSYLVANIA

Pennsylvania Association of Sewage Enforcement Officers;
www.pa-seo.org; 717-761-8648

Pennsylvania Land Improvement Contractors of America;
www.pennsylvanialica.com;
724-866-1082

Pennsylvania Onsite Wastewater Recycling Association;
www.powra.org

Pennsylvania Septage Management Association;
www.pasma.net; 717-763-7762

TENNESSEE

Tennessee Onsite Wastewater Association;
www.tnonsite.org

TEXAS

Texas On-Site Wastewater Association;
www.txowa.org; 409-718-0645

Education 4 Onsite Wastewater Management;
www.e4owm.com; 713-774-6694

UTAH

Utah Onsite Wastewater Association (UOWA);
www.utahonsite.org;
385-501-9580

VIRGINIA

Virginia Onsite Wastewater Recycling Association;
www.vowra.org; 540-377-9830

WASHINGTON

Washington On-Site Sewage Association;
www.wossa.org; 253-770-6594

WISCONSIN

Wisconsin Onsite Water Recycling Association;
www.wowra.com; 888-782-6815

Wisconsin Liquid Waste Carriers Association;
www.wlwca.com; 888-782-6815

NATIONAL

Water Environment Federation;
www.wef.org; 800-666-0206

National Onsite Wastewater Recycling Association;
www.nowra.org; 978-496-1800

National Association of Wastewater Technicians;
www.nawt.org; 800-236-6298

CANADA

ALBERTA
Alberta Onsite Wastewater Management Association;
www.aowma.com; 877-489-7471

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British Columbia Onsite Wastewater Association;
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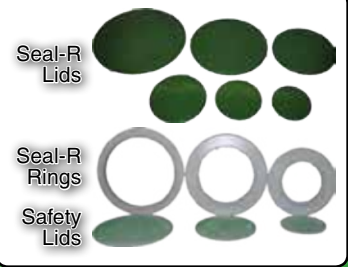
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New Brunswick Association of Onsite Wastewater Professionals;
www.nbaowp.ca; 506-455-5477

NOVA SCOTIA
Waste Water Nova Scotia;
www.wwns.ca; 902-246-2131

ONTARIO
Ontario Onsite Wastewater Association;
www.oowa.org; 855-905-6692

Ontario Association of Sewage Industry Services;
www.oasisontario.on.ca; 877-202-0082

SASKATCHEWAN
Saskatchewan Onsite Wastewater Management Association;
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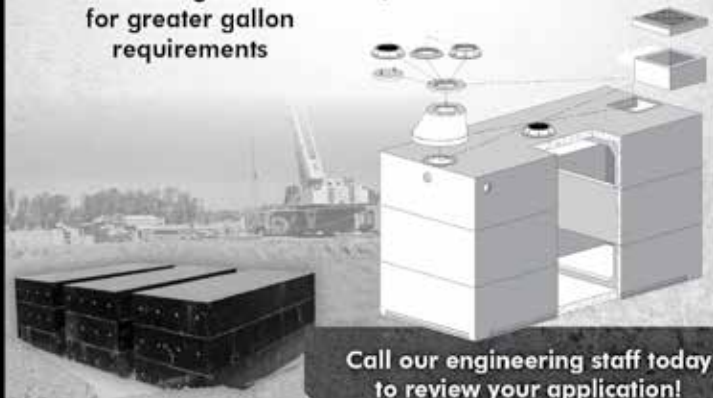
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If you would like your wastewater trade association added to this list, send contact information to editor@onsiteinstaller.com

Nevadans Balk at Forced Municipal Sewer Hookups

By David Steinkraus

Onsite system owners in Nevada's Las Vegas Valley were irked by a bill in the state legislature that would have required them to connect to a municipal treatment system. A few hundred of them showed up at a public meeting and told the local water authority of their displeasure.

As introduced, the bill would have required property owners to switch from onsite to municipal treatment by 2054 if a property was within 400 feet of a municipal system. It also would have required a review of permits every five years to determine whether a property was within the 400-foot limit, and would have revoked the onsite system permit if the owners didn't connect.

The other quirk in the bill was that it would have applied only to a county of more than 700,000 people. In Nevada there's only one of those: Clark County, which includes Las Vegas.

All of this was intended as a way to increase the state's share of Colorado River water, reported the *Las Vegas Review-Journal*. For every gallon of water treated and returned to Lake Mead, the main water source for Las Vegas, the municipal water system receives a credit of one extra gallon. Those credits enabled Nevada to push its withdrawals beyond the state's 300,000-acre-foot allocation of river water. Water treated in onsite systems never flows to the lake.

The complaints were heard. As sent to the governor, the bill allows the Southern Nevada Health District to create a voluntary program that will pay the cost for a property owner to abandon an onsite system and connect to municipal sewer. New septic systems will be prohibited, Colby Pellegrino, deputy general manager of resources for the Southern Nevada Water Authority, told KLAS-TV News.

The bill, now signed into law, takes another step: It gives the water authority power to cap household water use at one-half acre-foot of water per year if the federal government reduces the state's Colorado River allocation below 270,000 acre-feet. The cap equals about 163,000 gallons and would affect about 115,000 homes, reported the *Review-Journal*, but the average home in the valley uses 130,000 to 132,000 gallons.

A winter snowpack at 160% of normal in the Upper Colorado Basin removed some pressure for water conservation, but it will fill Lake Mead to only 26% of capacity, KLAS reported.

Massachusetts

Officials in the town of Dartmouth are upset over being excluded from a state committee reviewing possible new onsite regulations. The Dartmouth Select Board was deeply troubled about the exclusion, reported *The New Bedford Light*.

The Department of Environmental Protection is discussing new rules for nitrogen reduction that would require many property owners along the

Atlantic shore to upgrade their onsite systems. As proposed regulations stand, people in designated nitrogen-sensitive areas would be required to upgrade to nitrogen-reducing systems within five years after regulations are finalized, and they would have to use best available technology. Another option would allow towns to apply for watershed management permits, which would extend the deadline for system upgrades to 20 years.

The state committee is comprised of engineers, environmental advocates, real estate professionals, regulators and government officials. Its job is to revise the proposed regulations in light of the hundreds of public comments received. People objected primarily to the cost that homeowners and taxpayers could face if the rules are implemented as proposed.

Communities near Dartmouth are represented on the committee, but not Dartmouth, said the newspaper. "It's a very purposeful selection of individuals, because if you select the right people you get a certain outcome," said Chris Michaud, Dartmouth's health director and a critic of the proposed regulations.

Gary Moran, DEP deputy commissioner for operations, said the agency is considering applying regulations only to areas ready to be designated as nitrogen-sensitive, which would mean only watersheds on Cape Cod. DEP may also extend the deadline for compliance, grandfather in more systems and streamline the watershed permit process.

Kansas

Commissioners in Reno County held a meeting about the county's onsite code and eventually ordered the Health Department director to come back with answers to their questions.

"We've created a system that has become so expensive that many of our consumers and our sellers, when they get ready to sell, don't have \$20,000 just to have a system [upgraded]," real estate agent Marsha McConnell told commissioners, according to *The Hutchinson News*.

Josh Barkley, of Barkley Plumbing, said the county is known as a difficult place for onsite installations. He and other people told commissioners that contractors cannot use newer technologies because they are not allowed by the county, and he said there are too many requirements for specific soil tests and documents.

Commissioners were frustrated by a lack of specific answers from representatives of the Kansas Department of Health and Environment who attended, and commissioners discussed reducing their code to the one used by the state, which is half the size of the county's code.

South Carolina

Greenville County officials are talking about how to implement a planning goal of restricting the use of onsite systems. Implementation would also

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include limiting growth in rural areas that sewer lines don't yet reach, reported *The Post and Courier of Charleston*. A number of housing developments using onsite systems have been approved in rural areas of the county.

Ennis Fant, who chairs the county council's planning and development committee, said the county wants to avoid haphazard development and encourage it in areas where sewer system growth is planned.

County staff offered some options for restricting the use of onsite systems: limiting septic use to subdivisions with six or fewer houses, banning septic systems within 100 feet of a body of water, and requiring 3-acre lots for subdivisions considering septic use.

Greenville County has a population of about 548,000 and by 2040 is expected to add 222,000 new residents.

Ohio

Stark County wants to accelerate septic tank upgrades using \$450,000 in money from the federal Coronavirus Aid, Relief, and Economic Security Act. The county Health Department receives about \$150,000 annually from the state, but with only those payments it would take about three years to complete all projects on the waiting list, reported *The Repository* of Canton, Ohio.

"Stark County has the most septic systems in the state of Ohio," said Todd Paulus, a unit manager at the Stark County Health Department. "We're estimated at around 43,000 septic systems."

Depending on the complexity of the jobs, the department estimates between 24 and 32 systems could be replaced with the money.

Oregon

Homeowners with onsite systems damaged by wildfire in Lincoln County may be eligible for financial assistance for repairs through a program run by

the county and Oregon State University Extension Service. The program had previously been available to wildfire survivors in Otis, but it will now be open to low- and middle-income homeowners across the county. A one-person household will qualify with an income less than \$38,640. A household of four cannot have a combined income of more than \$79,500. Applications for the program can be found at <https://beav.es/3K8>.

Texas

Residents of the Lampasas River watershed may receive up to \$8,000 for repair or replacement of failing septic systems. This is the second set of federal funds for dealing with ailing onsite systems in the watershed, and it will fix about 20 systems. The first set of federal funds replaced about 20 systems. The watershed includes parts of Mills, Hamilton, Lampasas, Coryell, Burnet, Bell and Williamson counties, said AgriLife Today, a publication of Texas A&M University, which is part of the Lampasas River Watershed Partnership. More information about the grant program is at <http://www.lampasasriver.org/ossf>.

Massachusetts

Dukes County commissioners voted to spend \$1.4 million so homeowners in all seven towns in the county could install nitrogen-reducing onsite systems. The money will reimburse, or help cover, the cost for properties that cannot connect to a municipal sewer system. Money will come from the American Rescue Plan Act. Each town will seek property owners interested in participating, reported the *Vineyard Gazette of Edgartown*. □

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PRODUCT SPOTLIGHT

System designed to handle variables flows

By Tim Dobbins

Originally designed in the early 1990s as a single-family home treatment unit, BioMicrobics FAST systems expanded over the years, ultimately landing with a full line of treatment units. Within the series is the MicroFAST, a system engineered to handle variable flows generated from a wide range of onsite applications with the ultimate goal of generating clean effluent to prevent biomat formation and leachfield clogging.

"They are manufactured for residential use through commercial applications," says Bob Rebori, president of BioMicrobics. The systems are commonly

used on marine vessels and offshore platforms of all types to produce high-quality effluent. Because of their versatile use, they are designed to handle extreme environments, according to the company.

All FAST treatment systems utilize an integrated fixed-film activated sludge process with BioMicrobics Sequencing Fixed Reactor. "The system uses a unique attached growth," Rebori says. "The only moving part, the blower, recirculates the water multiple times through the treatment unit while also providing oxygen to near saturation levels. The attached growth is its own secondary clarifier."

The air blower is installed aboveground and can be set up to 100 feet from the septic tank.

Running the system's blower intermittently can reduce electricity usage up to 45% and will still provide improved nitrogen performance in specific situations, the company asserts.

FAST systems can be used in new construction applications or to retrofit existing tanks and, according to the manufacturer, they are a great fit for environmentally sensitive areas or locations facing limitations due to high water tables or small dispersal field requirements.

MicroFAST systems are designed for integration into standard septic tanks and do not require additional space. They are engineered to fit most residential and commercial system applications and can easily scale up to larger capacities if required. There are currently eight size offerings ranging from 500 gpd to 9,000 gpd, serving single family residences up to buildings with more than 120 people.

Rebori says installers are pleased with the product, especially the efficiency with installs. "They like the simplicity of installation and maintenance," he says. "They are able to install multiple units in a single day."

The septic technology is also compatible with shallow drip, direct discharge, pressure distribution, spray irrigation and conventional leachfields. 800-753-3278; www.biomicrobics.com □



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INDUSTRY NEWS

Infiltrator Water Technologies announces new executive vice president

Infiltrator Water Technologies announced the retirement of Roy Moore and the appointment of Craig Taylor to the role of executive vice president. Moore joined Infiltrator in 1987 and served as CEO from 2005 until the company was acquired by Advanced Drainage Systems in 2019 and continued his leadership role at Infiltrator until his retirement. Taylor joined Infiltrator in February 2020 as vice president of finance. Before joining Infiltrator, he served in a variety of roles with Stanley Black and Decker from 2003 until 2019, most recently as vice president of finance.



Craig Taylor

SSPMA names 2023 scholarship program recipients

The Sump and Sewage Pump Manufacturers Association announced that Lauren Nickel and Caden Fickes have been selected as the recipients of the 2023 SSPMA scholarship program. Nickel and Fickes will receive \$2,500 scholarships. Nickel attends Western Kentucky University working toward a degree in computer science with a concentration in scientific/systemic application. Fickes attends Bowling Green State University working toward a degree in business administration. The scholarship program is open to students working toward an associate's, bachelor's, master's degree or appropriate certification/trade associated with wastewater management. Applicants for 2024 may apply online at www.sspma.org beginning Feb. 1, 2024.



Lauren Nickel



Caden Fickes

Bjorn Haldorsen promoted to SJE chief executive officer

Bjorn Haldorsen has been promoted to chief executive officer at SJE. He joined SJE in 2022 as president of the Engineered Division. Current CEO, Mike Suter will transition to SJE's board of directors. Prior to joining SJE, Haldorsen was president of North America at Colson Group, leading its North American business operations. He spent 18 years at Flowserve Corp. and served in various regional and global leadership roles, most recently vice president and general manager for Industrial Pump Operations. □



Bjorn Haldorsen

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