November 2021

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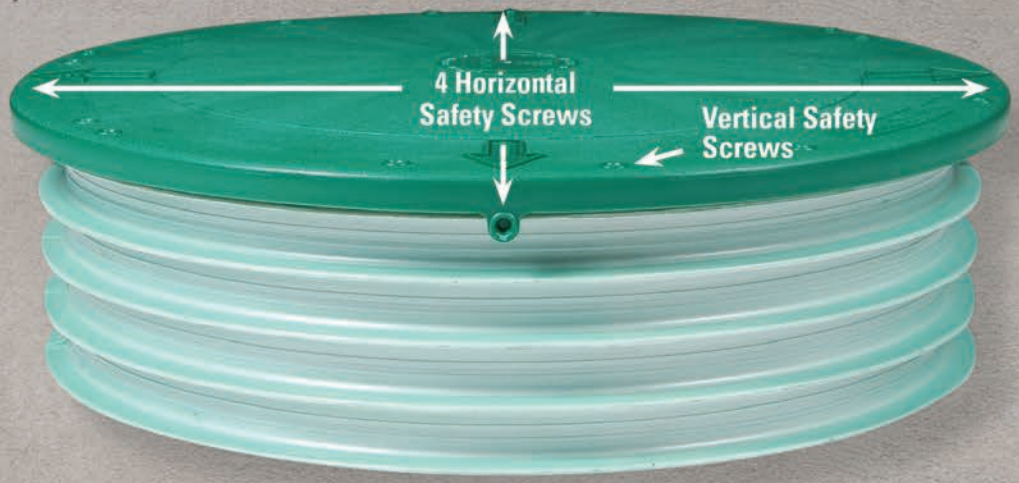

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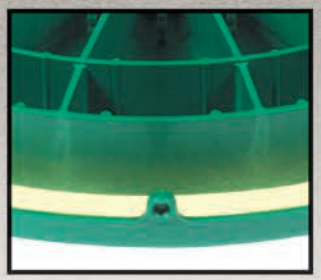

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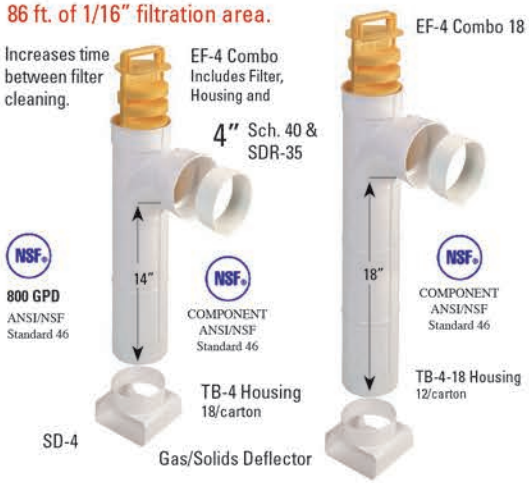

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I Like to Work
By Ken Wysocky

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Camarota Sanitation & Excavation in Gilford, Connecticut, is a thriving one-man excavation and septic installation operation. Owner Mike Camarota is shown on a job site with a Kobelco SK70 excavator. (Photo by John Marinelli)

Coming Next Month

ISSUE FOCUS: Special Section: 2 for 1
Contractor Profile: On the barge in Canada
Snapshot: Visit Ontario, Canada

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ADVERTISER INDEX

November 2021

Enjoy this issue!

Established in 2004, *Onsite Installer*™ fosters higher professionalism and profitability for those who design and install septic systems and other onsite wastewater treatment systems.

Jim Kneiszel

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

The Public Doesn't Understand the Life of Small-Business Contractors

Your job presents constant challenges to overcome and ever-present dangers most of your customers can't relate to. Thank you for your hard work!

Bill the tree guy showed up at my house just like he promised — first thing in the morning and along with his whole crew ready to take down a huge maple and do other trimming. He was moving a little gingerly as he jumped out of his truck cab to greet me, and he admitted straight away that he was in a world of hurt.

I'd hired Bill in the past to trim and take down trees. He's a no-nonsense contractor I respect for his good customer communication, his friendly, hardworking team, and fair pricing for the immensely dangerous work the guys perform. He reminds me a lot of the septic system installers I work with while putting together this magazine.

Bill explained he had a mishap while putting equipment away after the previous day's work. Driving a wheeled loader toward a transport trailer, he ran over a misplaced chainsaw, which acted as a ramp and flipped the equipment on its side, tossing him to the ground. Luckily no part of the caged loader pinned Bill, but he suffered deep bruises and was feeling great pain.

"I'm not gonna be climbing or go in the bucket today," he said, assigning the rest of the crew to do the heavy work at my place. I asked him if he was taking pain medications like ibuprofen, to which he replied he's never taken pills in the past and he's not about to start now. I told Bill he could put off my job for another day if that would help him take time to heal.

DOING IT EVERY DAY

But then Bill said something that reminded me of a constant challenge for all small-business contractors. And it made me think specifically of the onsite installers I have met over the years who overcome many issues to get the job done. And my respect for Bill grew as he gave me an answer that day.

"I can't take a day off," Bill said as he winced while stretching his injured shoulder. "These guys all have families to feed, so we have to work. If I don't work, they can't work. And if they can't work, none of us will get paid. I haven't taken a day off in 15 years and that's just the way it is."

When the public sees contractors scurrying around — whether it's replacing a roof, landscaping a yard or installing a septic system — they don't always stop to think that these well-organized teams are also like a family. They care for one another. They face hardships together. When it comes down to it, they probably spend more hours together than they do with their spouses and children.

Homeowners — or customers, as it were — never know what's going through contractors' minds when they show up at your place for work. In this case, it was a somber moment when Bill arrived, and it wasn't just because of his injuries. You see, another tree professional was killed on the job in front of my next-door neighbor's house just a month previous. Bill knew all about the incident, a morning that I also can't shake from my memory.

A TERRIBLE TOLL

It was just after daybreak one morning when I heard a piece of machinery fire up outside my bedroom

<< The tree crew reported for work despite an injury to Bill, the company owner, who is seen operating a compact loader the day after it overturned in an accident. (Photos by Jim Kneiszel)

A member of the tree crew cuts a limb at editor Jim Kneiszel's house. A city worker died in a fall while trimming a tree where the stump is seen in the background.

When the public sees contractors scurrying around — whether it's replacing a roof, landscaping a yard or installing a septic system — **they don't always stop to think that these well-organized teams are also like a family.**

window. The city arborist crew had been cutting down dead ash trees across the street the previous afternoon and I figured a worker was in the bucket truck starting to cut down some more limbs. I rolled out of bed and parted the curtains from my second-story window and was unprepared for what I saw next.

There, lying on his back, arms and legs outstretched in the middle of the street, was the city worker. Not moving. His fellow worker was pacing in the street, talking on his cell phone. My eyes moved to the bucket truck. The lift was still extended high in the air, the basket intertwined with the limbs of a tree. The realization hit that the worker hadn't just collapsed. He fell from the bucket.

For several hours, firefighters, EMTs, police, city officials and tree crew members came to survey the scene. I learned later that they worker had died. The police came to my door looking for surveillance cameras that might explain what happened. All that morning I had difficulty working, thinking about the trades workers we serve through *Onsite Installer*, how dangerous their jobs can be, and the critical role safety training plays in their lives.

I often promote the importance of following OSHA regulations in the editorial content of this magazine, but what I witnessed that day really brought home why I need to constantly repeat that safety emphasis. There is really no margin for error when following best safety practices in the world of trimming trees from a bucket or excavating a hole for a new septic tank. One misstep can have catastrophic results.

Bill knew all about the worker's death — as it had sent shockwaves through the local tree industry. The same would happen in the installing community if a worker was hurt or killed in a trench collapse, for example. Like installers might be reminded in a morning toolbox safety talk, one of Bill's crew told me why it's so important to follow all safety guidelines.

MAKE IT HOME

"The most important thing is we have to make it home to our families every night," the worker said before snapping his harness to the bucket and heading up into the trees. "I have my OSHA [Occupational Safety and Health Administration] certifications, I use all the safety equipment. It's so important."

The average person doesn't really appreciate the tremendous efforts made by our blue collar workforce. They don't understand the lifetime of skills developed, how the physical labor can take a toll on a body or the inherent risks of working with heavy equipment or in excavated areas. The customer just wants the job done properly, on time and within budget. Spare them the details.

However, having worked with excavators and wastewater professionals for nearly 20 years, I realize the training required and sacrifices made by these often unsung workers. They deserve our gratitude for doing a job the rest of us are incapable and unwilling to do. And now when I see a crew at work, whether I'm just driving past or taking photos for the magazine, I think of the many dangerous, necessary jobs being performed every day.

So when the last bit of brush had gone through the chipper that day, you can bet I gave Bill and his crew a big tip and a thank-you for a job well done.

DROP US A LINE

Have a comment about an article you've seen in *Onsite Installer*? An experience from a job that you'd like to share? *Onsite Installer* would love to hear from you. Email comments and photos to editor@onsiteinstaller.com.

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SLOW SEASON
Snow Removal Pros and Cons
If you're an installer in a northern climate, you probably face some months of downtime during winter. Some might enjoy a break; others need to find a way to stay busy, keep everyone employed, and make some money. One way to do that is snow plowing. Several installers featured on OnsiteInstaller.com over the years have made the case for adding snow removal work during those slow months. And others have been strongly against it. Here we rounded up some pros and the cons to help you decide if it's worth it. onsiteinstaller.com/featured

FINDING GOOD HELP
Improve Your Hiring Process
Hiring is one of the biggest pain points for onsite companies. How do you find someone who takes the job as seriously as you do? Should you hire for experience or culture fit and attitude? Aren't the type of employees you really want more likely to start their own businesses than work for someone else? The headache of reviewing applications and conducting interviews may make you nostalgic for the days of being a solo operation, but hiring is necessary for growth. There's no one formula to make the hiring process foolproof or take the headache out of it, but here are a few tips that will make things just a bit easier. onsiteinstaller.com/featured

Overheard Online
"Engage the employee in a warm, friendly conversation about their future plans. Avoid burning bridges; you never know when you and the employee may cross paths again."

– How to Handle an Employee Resignation You Didn't See Coming
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WHEELS VS. TRACKS
Selecting Your Next Excavator
Skid-steer or compact track loader? The answer depends on several factors — not the least of which is cost — but at the end of the day, there's room for both workhorses in any stable. This article compares the two versions of this machine through three lenses: areas in which CTLs excel, areas in which skid-steers have an advantage, and what's on the horizon for these machines. onsiteinstaller.com/featured

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I LIKE TO WORK

A Connecticut contractor has been running his own businesses since age 12 and has settled into a successful one-man wastewater enterprise

By Ken Wysocky

Mike Camarota uses a Spectra Precision LL500 laser level to determine the grade for a distribution box installation. (Photos by John Marinelli)

It wouldn't be an exaggeration to say that Mike Camarota Jr. has been preparing for his career as a businessman and septic system installer since he was 12 years old.

That's when the 24-year-old owner of Camarota Sanitation & Excavation started a lawn-mowing and landscaping business that taught him the basics of business — things such as paying bills, managing customers' expectations, building client relationships and developing accurate job estimates.

"It's true that I laid the groundwork for business early," says Camarota. "My dad has a strong work ethic and I guess it rubbed off on me. I just like to work, I guess."

Camarota, of Gilford, Connecticut, began his classic small-business journey with a 1963 Simplicity riding mower. By the time he graduated from high school, he had amassed more than 100 customers, employed four friends and owned several lawnmowers. And his services included mowing lawns, mulching flower beds, top-soiling yards and building retaining walls.

The young entrepreneur also worked for his father, Mike Camarota Sr., who owned an excavating business with his father; the company's services included septic system installations, Camarota says.

But Camarota eventually got bored with landscaping work, so he instead set his sights on the septic industry. "I got aggravated because landscaping became mindless work — the same thing every week," he recalls. "So my dad suggested that I buy a pump truck and start pumping out septic tanks.

"I found a 2000 International 4900 and bought it for $25,000," he continues. "My customers were upset that I got out of landscaping, but they understood where I was coming from. And as it turned out, I was able to serve them in a different way because many of them needed excavation work or septic tanks pumped."

Mike Camarota works the controls of a Kobelco SK70 excavator while digging drainfield trenches for a new onsite system.

DIVERSE SERVICES

Today, Camarota installs systems, pumps tanks, inspects and designs septic systems and does pipeline inspections and locating. Pumping out tanks generates about 10 to 15% of his company's revenue, and he still uses the same service truck with a 2,500-gallon steel tank and a Jurop vacuum pump.

"It's the perfect size for what I do," he notes, which is pump out three or four tanks a week. "It's hard to compete with other guys around here that have giant customer bases and multiple trucks. They can offer cheaper prices and have been in business forever. But they don't do repair work, which helps out."

Camarota generally installs two to three systems a month, many conventional gravity systems. He employs Mantis leaching systems from Eljen Corp. and designed for sites with limited space, and the Geomat leachfield product, from Geomatrix Systems.

The soil in Connecticut poses challenges for installers, ranging from gravel-laden dirt to clay — and everything in between. "We have just

Camarota Sanitation & Excavation LLC

Gilford, Connecticut

Owner:	Mike Camarota
Founded:	2018
Employees:	1
Service area:	30-miles radius around Gilford
Specialties:	Septic system installs, excavation, septic pumping
Website:	www.camarotasanitation.com

Camarota installs an outlet baffle in a concrete septic tank.

about every kind of soil you can imagine," Camarota says. "Lots of boulders, too.

"And the worse the soil is, the more expensive it is to install systems and the harder they are to install," he adds. "More often than not, we bring in material like septic sand to make the soil more suitable or to build up a site, rather than excavating it."

A FAST LEARNER

How did Camarota transition to installing systems? For starters, he already had a solid customer base from his prior business, which underscores the importance of developing long-term relationships with clients. In addition, Camarota had helped his father install septic systems for years when he was younger.

Camarota earned a state-issued installer's license, which also covers repairing systems and pumping tanks. In addition, he took a short course

FINDING A STEEP-SLOPE SOLUTION

Mike Camarota doesn't hesitate when asked about the most difficult septic system installation he's faced: A conventional gravity system set into the steeply sloped backyard of a mountainside home near Middlefield, in south central Connecticut.

The job was further complicated by the fact that most of the yard, which abuts a lake, had only a 2-foot layer of topsoil with a rock ledge below it, explains the owner of Camarota Sanitation & Excavation.

"It was a very challenging system to install," says Camarota. "The receiving soil was poor and the slope from the lake to home was pretty steep — about a 12% grade."

Camarota installed a Mantis 536-8 system made by Eljen Corp. and a 1,250-gallon plastic tank made by Infiltrator Water Technologies, designed for shallow installations.

The Mantis system's compact footprint eased some of the challenges imposed by the steep slope. Each Mantis filtering unit is covered with a geotextile fabric and measures 5 feet long, 3 feet wide and 18 inches tall. Camarota used 16 units to create an 80-foot-long leachfield; they're connected by 4-inch-diameter PVC pipes.

To install the system, Camarota chose to increase the height of the surrounding terrain instead of excavate it. For example, to install the tank — which was set by a crane near the home — he removed the layer of topsoil, then used clean fill to build up the area around the tank high enough to cover it, he says.

Camarota used the same technique for the leachfield, but it actually was trickier because of the sloping terrain, which required more fill the further it extended toward the lake, to keep the Mantis units level, he explains.

"We just picked the best contour we could find and worked with it," he says. "We stripped the topsoil off the rock ledge, then brought in septic sand to build it up four feet above the rock ledge.

"At the far end of the leachfield, we had to build up about 10 feet of septic sand to keep it level."

The Mantis system requires a 6-inch layer of sand below the filtering units and 2 inches above them. In all, Camarota estimates the job required about 256 cubic yards of sand.

At the end of the leachfield, Camarota had to build a gradual, roughly 25-foot-long slope, down toward the lake, then put topsoil on it and plant grass.

"It took about a week to complete the job," Camarota says. "It was pretty scary-looking before we finished. I'm really glad it didn't rain."

offered by the Connecticut Onsite Wastewater Recycling Association that covered pumping tanks and system installations, he says.

While he was confident he could handle installations, he says his first job still was a little nerve-racking. "I called my dad five times," he says. "Things got real really fast.

"But I had experience running machines my whole life and loved working with them," he continues. "In fact, when my mom would sign me up for summer camps, I'd go, then pretend to be sick so I could stay home and work with my dad. I wouldn't last a half hour at those camps."

> "If you price a job too cheaply, then you're aggravated while you're doing it. **At that point, you're better off going hunting or fishing."**
>
> Mike Camarota

EQUIPPED FOR SUCCESS

The company owns a full range of excavating equipment. The fleet includes a 2005 Kobelco SK70 midsize excavator, a 1999 Bobcat 873 skid-steer loader; a 2002 EX27 mini-excavator built by Airman Hokuetsu Industries; a SE210LC full-size Samsung excavator; and a John Deere excavator.

Vehicles include a 2002 Ford F-350 pickup truck with a Reading Truck Body utility body; a 2006 Ford F-350 that carries a 9-foot Rugby Manufacturing dump bed; and a 1998 GMC C7500 dump truck with a 9-foot Galion-Godwin Truck Body bed.

Camarota broke into the wastewater business with a 2000 International 4900 with a 2,500-gallon steel tank and Jurop pump that still serves his installing business.

» Camarota places a distribution box during an installation.

» This drone photo shows a system Camarota installed before final cover of the tank and pipes leading around the house to the drainfield area.

> "I like being able to oversee an entire job from start to finish — control the quality and make sure it turns out right. And customers seem to appreciate it when the same person that bids the job also does the work."
>
> **Mike Camarota**

Camarota also relies on a 1000S pipeline-inspection camera from Kyrie Sewer Cameras; a Mustang cart-mounted water jetter (2,00 psi at 2 gpm); a Stihl concrete saw; and a Spectra Precision LL500 laser level from Trimble.

One key to the company's success is continual investments in equipment that helps him work more productively and boost profit margins. Another success factor stems from lessons learned early on in his landscaping career: Don't reduce prices in order to woo cost-conscious customers, he says.

"You shouldn't sell yourself short for customers just to get their business," he explains. "If you price a job too cheaply, then you're aggravated while you're doing it. At that point, you're better off going hunting or fishing.

"I'm glad I learned that lesson when I was young, rather than now, when the financial stakes are a lot higher."

PILOT PROJECT

One of the more interesting jobs Camarota has tackled recently was a passive nitrogen-reduction system he installed as a test project at a municipal office building in the town of Westbrook, which has no public sanitary sewer system. The building already had a septic system, but it needs to be replaced.

That gave town officials an opportunity to see if this emerging technology could help address an ongoing concern: Nitrogen that seeps from septic system drainfields and into groundwater that drains into Long Island Sound, which runs along the state's coastline. If successful, such systems could be used as a low-cost option for reducing nitrogen, which causes algae blooms.

The low-dose system consists of an 18-inch-deep layer of sand installed below the leach field. Under the sand rests another 18-inch-thick layer that consists of septic sand mixed with sawdust. When treated effluent mixes with the sawdust, a natural chemical reaction occurs that converts nitrogen into a gas. The gas then rises and escapes through the ground, keeping nitrogen out of the water table.

To test the treated effluent for nitrogen content, Camarota also installed four devices called pan lysimeters, which essentially are small, roughly 3-by-3-foot drainpans set at the bottom of the sand-and-sawdust layer. Effluent that reaches the pan lysimeters drains through a 4-inch-

diameter PVC pipe and into a small sump. From there, the liquid is vacuumed out through a standpipe and tested for nitrogen content, Camarota explains.

PLAYING SMALL BALL

While many business owners set their sights on high growth, Camarota is content to grow his company incrementally, while he slowly upgrades to newer equipment and maintains control over the quality of customer service and satisfaction. The bigger the company gets, the more likely it is that he'd need employees — a prospect he doesn't relish.

"I'm not sure how I feel about that," says Camarota, who gets an assist from his wife, Anneka, who handles the administrative end of the business. "At the moment, I can handle all the work myself. And when I occasionally can't, I have family that helps out as needed.

"I like being able to oversee an entire job from start to finish — control the quality and make sure it turns out right," he continues. "And customers seem to appreciate it when the same person that bids the job also does the work.

"Staying small means less headaches, so I'm keeping things small for now," he concludes. "It's just better at the moment."

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SNAPSHOT

If You're Not Involved in a Trade Association, You're Missing Out

Camaraderie, networking are critical to success in the wastewater industry, according to Arizona's Dave Bartholomew

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 Arizona Onsite Wastewater Recycling Association.

Dave Bartholomew (foreground) with technician Ryan Peters, left, and son Nick Bartholomew pause while performing maintenance on a 14,000-gallon septic tank at Bartlett Lake Marina.

Dave Bartholomew
president

Business: Bartholomew Water Services, Inc., Phoenix, Arizona

Age: 56

Services we offer: Inspection, operation and maintenance of alternative treatment units (ATUs), wastewater collections systems and water reuse facilities. Customers range from individual homes to communities and high-rise buildings.

Years in the industry: 30

Association involvement:

I've been a member of the Arizona Onsite Wastewater Recycling Association (AzOWRA) for 18 years. In 2013 I served as president and I'm currently on the board of directors. I'm also a member of the National Onsite Wastewater Recycling Association, the National Association of Wastewater Technicians, and the Arizona Water Association. I'm chairman of the Arizona Department of Environmental Quality On-Site Wastewater Advisory Committee, and served as chairman of the subdivision stakeholder task force of the Maricopa County Environmental Services Division.

Benefits of belonging to the association:

AzOWRA provides camaraderie; statewide connections within the industry; access to educational events, training and general good times; and it's great to have colleagues whose expertise, knowledge and positions run the entire spectrum of the water and wastewater world. If you're not active with your state's professional groups, you are really missing out on vital opportunities.

Biggest issue facing your association right now:

There's a lack of participation by people who really need the benefits of an association — too many people that are "too busy" or "too strapped." Others feel it's a waste of time and money. Nothing could be further from the truth. Sometimes you need to participate in a meaningful and financially beneficial group of like-minded individuals. The power of association is a real game-changer. I find myself leaning heavily on mentors, colleagues, associates and friends. Without comrades, you're alone — and that's no fun.

Our crew includes:

I must first mention our founder, my dad Richard F. Bartholomew, without whom I would never have gotten into this noble calling. Half my knowledge and training came from his mentorship, the other half from Hard Knocks. Our business model was if he designed it, I would operate it. Second is my son and foreman, Nick Bartholomew. Nick bounced around after the Marine Corps, then got into utility trench work for one of the area's major installers, and finally agreed to work for me as an apprentice technician. He eventually gained enough experience to take over much of the field work that was consuming all my time. Third, our new addition is Ryan Peters, a hard worker with a good sense of humor, humble, a straight shooter, with a good head on his shoulders.

continued >>

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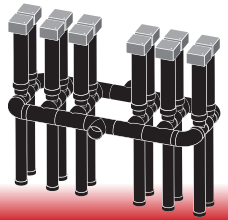

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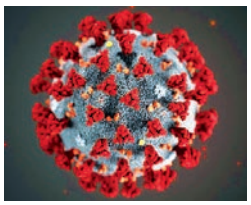

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Typical day on the job:

Hopefully the day goes: get up, coffee and eggs, get to the job, repair goes perfectly, get home in time for dinner — but that's never how it goes. Each day has challenges. Like the Marines, you need to adapt and overcome. And that's precisely what it takes — the ability to remain calm, come up with good solutions and make repairs the right way. You may need to keep someone on site running things manually until a part can be obtained, you may have to be there overnight. Don't leave the site until things are under control and running correctly. You sleep better when you're sure your repair will hold.

The job I'll never forget:

We had a service contract with a youth camp in the pines of northern Arizona. They were required by the state to hire a certified wastewater treatment operator to run the ATU — but the camp ranger insisted he knew best. He would crawl into the manholes, make equipment modifications, mess with pump control settings and turn the system off at night "to conserve power." Despite multiple complaints to the organization's head council, the problem continued. At one point the ranger and one of the adult volunteers pulled the control panel off and replaced it with one they had "custom engineered." They were playing with the float controls and pump wiring when we showed up. By doing that, any factory support was voided as well as the "do not tamper" clause in my contract. The ranger also tampered with the drinking water system and was eventually fired.

My favorite piece of equipment:

When I was still working for my father as chief operator at the Phoenix-Goodyear Airport South superfund site, one day on the drive home I saw a shiny object by the side of the road. I stopped and found a custom fabricated manhole hook just lying there in the dirt. I threw it in the back of the truck, not knowing that hook was about to mark a new direction in my water treatment career. It's still on my truck and has the nickname Excalibur.

Most challenging site I've worked on:

One summer, while working for my dad, I had a job to perform a site soils evaluation on a 982-acre piece of desert. It was 230 lots, most covered in thick patches of caliche. The job entailed the typical three-pit excavations (6 feet, 6 feet, 12 feet) per lot. It was three months working in the hot Arizona sun. I went through countless backhoe repairs, bucket teeth, truck tires, sunscreen, water, and bug spray.

Oops, I wish I could take this one back:

You have to be careful who you trust and pay attention to what's going on in your office. An office manager can misallocate a lot of money over time or neglect to send invoices or collect payments. If you just trust people to run the store without checking on them, they might succumb to greed. I was not responsible for hiring such an individual, but I did have to clean up the mess once. It's also important to get all agreements with customers, suppliers, subcontractors and employees in writing. Verbals, handshakes and trust don't hold up in court.

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

"The buzzer kept going off so I pulled the wire off it, but the red light kept coming on until a week ago. It finally stopped coming on but now I have horrible sewage smells in the house and blackwater comes up in the shower. It goes away overnight. Is there something I should be doing, like adding enzymes to the septic tank?" We get two or three of these a year.

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

If you own a grease trap, oil/water separator, sump system, septic tank, ATU, privately owned gravity sewer, lift station, force main or other appurtenance that treats or moves wastewater, then it should be mandated that you prove it is being operated on a regular schedule by a competent individual with training. Neglect of these systems and facilities can kill your system, harm people's health or poison the environment. Some people need to be educated, others need to be dragged kicking and screaming into compliance. It's sad that some folks need to be persuaded not to gamble with filthy conditions, and that some regulators don't enforce the rules.

Best piece of small business advice I've heard:

My dad said, "Don't forget that public relations is a key part of this job." This line of thought encompasses so many things: Know what you're doing, be ethical, take pride in your work as if everything you do has your name on it, remain humble and don't talk down to people, if you make a mistake fix it, you represent not only yourself but the entire industry, keep your customers smiling and glad they called you, happy customers are word of mouth advertising and worth their weight in gold, if you don't have a servant heart you're in the wrong business, and be sure your employees embrace and personify all of this.

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

Pursue fine art. I would paint, sculpt, create. That was my degree and prior calling and it still burns in me.

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

Owners: Some homeowners, developers and property management companies educate themselves and take to heart what service providers say. But many don't even know they have a privately owned wastewater treatment or collection facility, or what the permit requirements are. Or they've been told it's maintenance-free. My hope for the future is everyone would know roughly how their system works and what their legal obligations are, and that they need a well-trained operator.

Regulators: Some are not well-versed in their own rules and have trouble enforcing them as they don't want to appear overly burdensome to the public. Often these departments are short-staffed and under-funded. My hope for the future is regulators would strive to keep the rules current and easy to understand, systems and facilities would be well tracked and permits enforced.

Service Providers: Some don't have the proper training or certifications. Some have zero business ethics. Others keep throwing parts at a problem that could be easily fixed with simple maintenance on another part downstream. These operators put a bad face on the industry. In a perfect world, service providers will be required to pass an exam to become state certified operators and have ongoing training. ☐

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Photo courtesy SI Precast Concrete

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Federal Law Related to PFAS Contamination May Impact Pumpers and Installers

By David Steinkraus

PFAS, a group of manmade substances called "forever chemicals," have become an environmental issue worldwide. Now the U.S. wastewater industry is starting to face issues related to PFAS regarding municipal treatment of septic waste, land-spreading of septage and impacts on onsite systems. In late July, by a vote of 241-183, the U.S. House of Representatives passed a bill to declare some PFAS chemicals a hazard. If it becomes law, the bill would, among other actions:

1. Require the administrator of the U.S. Environmental Protection Agency to designate two PFAS chemicals (perfluorooctanoic acid and perfluorooctanesulfonic acid and their salts) as hazardous substances.
2. Require the administrator to decide, no more than five years after the bill becomes law, whether all PFAS compounds should be designated hazardous.
3. Require EPA to annually publish a list of technologies that will remove PFAS from drinking water.
4. Require EPA to order comprehensive toxicity testing of PFAS compounds.
5. Create a labeling program to tell consumers what products are safer choices because they do not involve PFAS.
6. Establish a website about home water well testing.

The bill, H.R. 2467, was introduced on April 13 by Michigan Reps. Debbie Dingell, (D-Dearborn), and Fred Upton, (R-St. Joseph). After passing the House, the bill moved to the Senate committee on Environment and Public Works.

PFAS stands for per- and polyfluoroalkyl substances. It's a family of more than 4,000 chemicals that have been made since the 1940s and are used in a wide variety of products including carpet, fabric, paper packaging and some firefighting foams. PFAS traces have turned up in wells and municipal water systems. Research so far suggests that high PFAS concentrations in humans may increase cholesterol levels, decrease response to vaccines, increase risk of thyroid disease, decrease fertility in women and increase the risk of high blood pressure or pre-eclampsia in pregnant women.

Water utilities, worried about being hit with the cost of treating for PFAS, lobbied Congress through their associations for more money and liability protection.

"We want to protect the public from PFAS, we want all that," said Mike Keegan, a regulatory analyst at the National Rural Water Association, which represents local water utilities. "But when you get into the mechanics [of the bill], what they're really doing is passing on the liability to the public."

The Association of Metropolitan Water Agencies, representing the largest publicly owned water utilities, said liability should be the responsibility of PFAS manufacturers, reported the *Louisiana Illuminator.*

Some states have already taken action on their own. New Hampshire, for example, set its own PFAS drinking water limits, first by administrative rule and then by legislative action when a court injunction threatened to delay new standards.

It was also in New Hampshire where the onsite implications of PFAS came into focus. In April 2019, the state informed Biological Recycling Company, which processed septage and land spread sludge, that it was the likely source of PFAS contamination in wells on neighboring properties.

A few months later, the company told the state it could not pay for filter systems for each affected home and would cease its septage hauling and spreading operations.

NATION

When the House of Representatives passed the INVEST Act this summer, it included $500 million over five years to help homeowners install and replace decentralized wastewater systems, reported the National Onsite Wastewater Recycling Association.

Earlier this year, the Senate passed a similar bill providing $250 million over five years. Committees from the two legislative bodies will meet to resolve differences in their respective bills, and the result may be included in a large, general infrastructure bill, NOWRA reported.

New Jersey

A company accused of making robocalls to sell its septic tank cleaning products agreed to several penalties, including dissolution, as part of a settlement agreement with the U.S. Justice Department.

Environmental Safety International was accused by the federal government of making more than 45 million illegal telemarketing calls to people nationwide between January 2018 and March 2019. The company was trying to sell people its Activator 1000 line of products. About 31 million of those calls were made to numbers on the Do Not Call list maintained by the Federal Trade Commission.

Under the settlement, ESI will pay more than $1.6 million and agreed to a permanent ban on telemarketing. The company must also cancel all balances for people who bought products but did not pay. Owners Joseph and Sean Carney agreed to apply for dissolution of the company, and they must forfeit a residential property valued at $774,000.

New York

Some landowners in Warren County would be required to have onsite systems inspected before a property is sold.

The county surrounds the southern tip of Lake George and covers much

of the lake's western shore. For a few years the lake has been plagued by algae blooms, and some municipalities have passed their own laws to address pollution from onsite systems.

The law being proposed by a county committee would require inspections by a third-party contractor if a system is within 250 feet of the mean high-water mark of seven bodies of water, reported the *Post-Star* of Glens Falls.

The water bodies are Lake George, Schroon Lake, Schroon River, Brant Lake, Loon Lake, Lake Luzerne and the Hudson River. Municipalities would be allowed to opt out of the law, and the towns of Queensbury, Bolton and Chester would be exempt because they already have inspection laws in place. Glens Falls would also be exempt because most properties are connected to municipal sewer.

Texas

Earlier this year, the Midland County Commissioners' Court agreed to pay to pump the septic tanks of people whose onsite systems were damaged by severe flooding. Commissioners set some criteria to determine whether a tank is eligible for pumping, reported the *Midland Reporter-Telegram*. The criteria are:

1. The county must be under an emergency declaration approved by commissioners.
2. A residence must be within the current flood zone.
3. A residence must be under standing water for at least 72 hours.

The cost to the county was estimated at $100 per household. Although counties are prohibited from spending public money on private residences, the county attorney said it was permissible in this case because of the public health risk.

"Rules and Regs" is a monthly feature in *Onsite Installer*™. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to editor@onsiteinstaller.com.

SYSTEM PROFILE

“Remove More Nitrogen!” Regulators Change Effluent Parameters Midstream

Massachusetts affordable housing project entails huge flows, tightening environmental restrictions to challenge the installers at J&R Sales and Service

By David Steinkraus

The Noquochoke Village affordable housing project was first proposed for Westport, Massachusetts, in about 2005. In 2018, the wastewater system was installed as homes were being built.

“The challenge was for the developer to provide a solution that met all the town’s requirements, as well as maintain an aesthetic pleasing to the residents. The town has really tried to maintain that identity of a farming, rural, quiet seaside community,” says Lauren Usilton, president and owner of J&R Sales and Service in Raynham, Massachusetts. Her company supplied the onsite system for the project.

But as the process of approving the project went on, water quality standards changed. In the end, she says, there was only one solution for the project: a membrane bioreactor.

System details

From the collection system installed by East Coast Construction, wastewater flows into a 13,000-gallon concrete tank that serves as a lift station. Inside are Orenco duplex pumps moving about 50 gallons per minute.

Wastewater is conveyed about 50 feet through 2-inch pipe to a 20,000-gallon tank for settling and flow equalization. An 8-inch pipe then takes wastewater to a 10,000-gallon settling tank. On the 8-inch outlet pipe of this tank are four SaniTEE filters (BioMicrobics), two for each of the two treatment trains in the system.

Each train starts with an 8,000-gallon three-compartment tank. The first two compartments are anoxic. Each of those compartments is 2,000 gallons and holds a Goulds pump for mixing. The last compartment is a

With the housing units under construction in the background, wastewater system construction was also underway. Blowers, suction pumps for membrane bioreactors, control panels, and filtration was centralized in a single building just visible at left. (Photos courtesy of J&R Sales and Service)

Absorption of effluent from the membrane bioreactor system at Noquochoke Village is handled by 8,192 feet of Geoflow tubing.

There are two treatment chains for Noquochoke Village. Each has eight double-stack BioBarrier units for a total of 16 membranes per treatment train.

System Profile

Location:	Westport, Massachusetts
Facility served:	Housing complex
Designer:	Allen and Major Associates, Lakeville, Massachusetts
Installer:	J&R Sales and Service, Raynham, Massachusetts
Type of system:	BioMicrobics MBR, Geoflow drip irrigation
Hydraulic capacity:	9,900 gpd

4,000-gallon aerobic chamber with 16 membrane assemblies (eight double stacks). Suction for the membranes is provided from a central pump building.

Effluent is discharged to a 3,500-gallon pump chamber. In it are a pair of 20 gpm Goulds Blaster pumps that send water back to the pump building for additional filtration.

"Honestly, in this particular case it's probably not needed because the membrane water is so clear. But it's part of the Geoflow system to set pressure going out to the field," Usilton says.

After the Geoflow filters, water is divided into a four-zone field of 16,384 square feet. In the field are 8,192 linear feet of Geoflow tubing laid at a depth of 8 to 10 inches.

Local nitrogen

J&R was brought in on the project as the local BioMicrobics representatives.

"We work with this engineer quite a bit, and we were contacted years ago," Usilton says.

At that time, there were quite a few treatment options available, she says. Standard state limits applied then: 30 mg/L of BOD and TSS, and a nitrogen limit of 25 mg/L. Originally, the best option was a MicroFAST system, she says.

"And then as the development went through the town planning board and conservation, the nitrogen number requirement went lower and lower. So it went from 25 to 10, and then ultimately to 5," she says.

When that happened, the BioBarrier was the only cost-effective option left for Noquochoke's developer, she says.

That was not a requirement of the Massachusetts Department of Environmental Protection but of the local government.

"Nitrogen has always been a concern in Massachusetts," she says. The first nitrogen management program started in the 1990s in cooperation with the U.S. Environmental Protection Agency. State standards typically are a minimum, meaning local governments can impose stricter limits.

"That's exactly what Cape Cod has done," Usilton says. "Since '95, we've been installing the FAST systems on Cape Cod for nitrogen reduction."

The town of Westport followed Cape Cod's lead and imposed its own tight nitrogen limit. "They're really looking at nitrogen and the concerns of nitrogen going into the Westport River," she says.

SYSTEM PROFILE

With tanks beneath the parking lot of the housing complex, preserving access for technicians was critical for maintenance. The solution was putting keyed hatches in the parking spaces reserved for building maintenance workers. No residents would be asked to move a car.

Kevin Usilton, of Wastewater Treatment Services, does maintenance on the Geoflow filtration system at Noquochoke Village. Wastewater from the membrane system is so clear that maintenance is minimal.

"The challenge was for the developer to provide a solution that met all the town's requirements, as well as maintain an aesthetic pleasing to the residents. **The town has really tried to maintain that identity of a farming, rural, quiet seaside community."**

Lauren Usilton

Westport is on the southern coast of Massachusetts and borders Rhode Island. Its beaches are on the shore of Buzzards Bay, an arm of the Atlantic Ocean. The Buzzards Bay Coalition, a conservation group, has done several studies on nitrogen pollution in the bay, Usilton says. Although nitrogen is still a problem, water quality is better than it has been.

Saving hatches

Installation began in late summer of 2018, and the system was started up in May 2019. In between were the construction delays typical for any large project, she says.

Wastewater Treatment Services, which Usilton also leads, has the maintenance and operations contract for the system.

"We opted to manually add alkalinity [a 50-pound bag of sodium bicarbonate] by hand rather than use the feed system because it was just one less mechanical piece we needed to run," she says. "And now that we have denitrification established, we don't need the alkalinity feed system anymore."

The system has an autodialer to warn technicians of problems, but there isn't a full SCADA system with internet connectivity, she says. "We've found that nine times out of 10, we want to go out and look at it ourselves anyway."

For the first six months, Massachusetts requires weekly inspections and monthly tests, and monthly inspection thereafter. In the beginning,

<< The finished drip field at the Noquochoke Village development in Westport, Massachusetts, is blocked off from the parking lot with a rock barrier. Tanks were placed beneath parking to save room on the property for the dripfield.

technicians tweaked system operations about every two weeks, she says. For the past year, few adjustments have been needed except for slight adjustments to the MicroC feed system, depending on the influent.

To save space, engineers wanted to put all of the tanks in the parking area. Hatches give technicians access to the tanks, but the issue was how to preserve that.

"With having so many parking spaces for the residents, that was our concern: We were going to get there, and there was going to be somebody parked on the covers," Usilton says. "Because what are you going to do, go knock on somebody's door not knowing whose car it is?"

The solution was the two parking spaces designated for the building maintenance person. J&R told engineers which two hatches technicians must access, and the maintenance parking spaces were placed on top of those. If the maintenance person's car is blocking access, it's a simple matter to ask that the car be moved, she says.

"For us the unique part of this was that 5 mg/L limit. I don't know how it is in other parts of the country, but less than 5 here is a unique number to get to. It's not even required by most towns," Usilton says. "And we've been pleasantly surprised by the operation of the system. Knowing that it was going to be a much more elaborate system, it's really been fairly easy to operate and maintain really good effluent."

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Jim Anderson, Ph.D., and Dave Gustafson, P.E., are connected with the University of Minnesota onsite wastewater treatment education program. Dave is Extension Onsite Sewage Treatment Educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor. Readers are welcome to submit questions or article suggestions to Jim and Dave. Write to ander045@umn.edu.

If You Install Up North, Lay Out Pipes to Prevent Freezing

With chilly winter on the horizon, slope and insulation are critical to avoiding those pesky customer calls about ice-dammed systems

By Jim Anderson and Dave Gustafson

As we move from fall into winter, your clients are probably beginning to worry about whether their systems will experience freezing issues. Good installations can go a long way toward avoiding problems with freezing regardless of whether the system is in a cold climate.

The first line in freezing defense is to establish a good vegetative cover over the system. Well-established vegetation, such as grasses, can help insulate the system and capture snow and hold it in place. Snow is a good insulator and if it remains over the system will provide protection. If installation has been completed late this year and a good cover has not been established, application of a mulch or straw will provide insulation and hold snow in place.

Proper installation of house sewer and supply pipes to different parts of the system is an absolute must to prevent freezing and other blockages. Municipal water and sewer lines are installed deeper than expected frost penetration. In cold climates, this requires lines be located 6-8 feet deep or more. For our gravity systems where we want the soil treatment area placed shallow to use the best soil conditions, burying lines this deep is not usually feasible.

CONTROL THE FLOW

It is key for supply piping be installed so they remain empty between water-use activities. Standing water for whatever reason in supply pipes will be subject to freezing during prolonged cold periods. Proper installation requires laying pipes at the necessary slope to conduct water and bedding the lines to avoid low dips or bellies and to remain in place during backfill. In the winter where we live, these low spots are all identified because they do freeze causing backups and numerous homeowner calls wondering why their sewer line is backed up.

The house sewer line will carry raw sewage to the septic tank. The slope on this pipe should be between 1 inch per 8 feet of distance (1% slope) and 1 inch in 4 feet or 2 inches in 8 feet (2% slope). When the slope is too flat, the liquid will slow down allowing solids to settle out in the sewer pipe. When the slope is too steep, liquid runs away from the solids and the result is the same; solids accumulate and will pond some water which allows everything to freeze.

For the outlet pipe from the septic tank to distribution or drop boxes, the slope should be 1 inch per 8 feet or greater to ensure the pipe runs free between events. This also goes for the slope on piping between drop boxes. There is no specified maximum because the pipes are carrying effluent without solids that have settled in the septic tank.

This is the reason we promote the use of drop boxes instead of a distribution box with multiple lines where water sometimes can be held in the supply lines to individual trenches. We even specify drop boxes on level sites where distribution boxes would be allowed just to avoid the freezing potential if there is any standing water in any of the piping.

Supply piping from a pump tank to either a drop box or a pressure distribution system in a mound or at-grade must also drain free between uses. When the pump shuts off, the liquid must drain back to the tank. It should not drain all the way back through the pump, so the pipe inside the tank should have a weep hole to allow this drainage. There should not be a check valve installed to hold water in the pipe between uses.

INSULATION OPTIONS

If soil cover over the pipes is less than 1-2 feet or the pipe passes through areas with compacted soil or lack snow cover, such as driveways or other hard surfaces, the trench or piping should be insulated.

There are several ways the pipe or the trench the pipe is installed in can be insulated. It is possible to purchase pre-insulated pipe which includes one pipe embedded in insulation inside a larger diameter pipe. For our purposes, it's usually either a 4-inch pipe inside a 6-inch diameter pipe for sewer lines or a 1- to 2-inch pipe inside a 4-inch pipe for effluent pumping. Of course, as an installer you can create this effect by placing one pipe inside the other and wrapping the small pipe with insulation or spraying foam insulating material to fill the spaces.

Another approach is to insulate the trench using underground rated expanded polystyrene sheets over the top of the piping and for added insurance along the sides of the excavation creating a box-like effect. For even

If installation has been completed late this year and a good cover has not been established, **application of a mulch or straw will provide insulation and hold snow in place.**

more protection depending on the application and the risk, the supply pipe can be embedded in a larger pipe as described above.

Polystyrene sheets can also be used to insulate sewage tanks and distribution or drop boxes. This can be done over the top and by cutting insulation to fit inside the access openings. Consider this option when tanks and boxes have less than 1-2 feet of cover and a lack of snow cover.

One final comment: We talk about the importance of having easy access to all parts of the system for maintenance purposes. It is important that access be provided in cold climates so parts of the system can be accessed and thawed if needed during the winter. For a happy client, you want to minimize the time spent locating, digging through the frozen soil and providing access to the frozen sections of pipe so the house is not left without service for long periods of time.

Serving the Industry

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Arkansas Onsite Wastewater Association; www.arkowa.com

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

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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.mainese.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.mowa-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

OHIO

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

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 Onsite Wastewater Recycling Association; www.powra.org

Pennsylvania Septage Management Association; www.psma.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

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

BRITISH COLUMBIA

British Columbia Onsite Wastewater Association; www.bcossa.org; 778-432-2120

WCOWMA Onsite Wastewater Management of B.C.; www.wcowma-bc.com; 877-489-7471

MANITOBA

Manitoba Onsite Wastewater Management Association; www.mowma.org; 877-489-7471

Onsite Wastewater Systems Installers of Manitoba, Inc.; www.owsim.com; 204-771-0455

NEW BRUNSWICK

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; www.sowma.ca; 877-489-7471

CANADIAN REGIONAL

Western Canada Onsite Wastewater Management Association; www.wcowma.com; 877-489-7471

Franklin Electric 1 hp grinder pump for Pit+Plus systems

Franklin Electric now offers the 16G Series 1 hp grinder pump configuration for the company's Little Giant Pit+Plus package. Each package includes a roto-molded polyethylene basin (the pit) combined with the user's choice of Little Giant pump. The addition of the 1 hp option joins the already available 4/10 hp and 1/2 hp sewage pump choices. The basin is available in two sizes: the 24 by 24 JR or 20 by 30 SR.

The cutting mechanism is modeled after the same one used in larger Franklin Electric models for proven performance. The 1 hp Class F motor provides power to prevent flushables and other debris from clogging and causing downtime. **866-271-2859; www.franklinengineered.com**

PRODUCT SPOTLIGHT

Recycled Water Technologies QuadPod MBR is sized for a variety of applications

By Tim Dobbins

Recycled Water Technologies has created a membrane bioreactor onsite treatment product designed to fit individual projects and sites. Relying on years of experience in the onsite industry, RWT CEO Ray Tebo developed the proprietary MBR system.

The RWT Model QuadPod 4.0 MBR is a fully integrated, automatic treatment process with flat sheet membrane technology, mechanical systems and electrical controls. Tebo explained the system can be used in many decentralized wastewater applications, such as travel centers, RV parks, golf courses, malls or small community systems.

"The systems provide a conservative design approach to consistently produce high-quality effluent suitable for discharge and reuse applications, while minimizing operations and maintenance and mitigating commercial downtime," Tebo asserts.

QuadPod units are constructed of PVC and stainless steel and each one includes a simplex or duplex aeration blower, effluent pump and control panel assembled in prefabricated weatherproof equipment enclosure. Camlock connectors and membrane cases are also made from stainless steel and membrane cases are built with integrated membrane aeration diffusers. Simplex or multiple static influent screens are capable of screening raw wastewater solids to less than 1/8 inch, according to Tebo.

Though RWT provides onsite system installation and support services, Tebo says installation is made to be simple. Systems are skid-mounted, pre-plumbed, and have pre-wired equipment and controls.

"Customers have commented that it has very few moving parts and is quick to install," Tebo says. "Each unit is pre-engineered and packaged with plug and play, easy to install components including blowers, pumps and controls, thus minimizing installation labor and materials. We even made our carriers so that the membranes are quick to change making it so future replacement labor is minimized."

Systems come standard with customizable controls compatible with a variety of pumps and blowers. Optional with the system is cellular or web-based remote system monitoring and system upgrades are available for extreme environmental conditions, elevations and topography. **815-401-5390; www.recycledwatertech.com**

System Maintenance, Inspection and Installation Tools

By Craig Mandli

EXCAVATION EQUIPMENT

CASE Construction 580 EV

The **580 EV** electric backhoe loader from **CASE Construction** is powered by Green Machine's 480-volt, 90-kilowatt-hour lithium-ion WhisperDrive battery pack charged by a 220-volt connection. While applications vary, each charge can support common eight-hour workdays, according to the manufacturer. The battery separately powers the drivetrain and hydraulic motors. **866-542-2736; www.casece.com**

Ditch Witch HX30G

The **HX30G** vacuum excavator from **Ditch Witch** promises high-profile power in a low-profile design to ease navigation in congested and height-restricted areas. It is powered by a 31 hp Vanguard gas engine for optimal suction power and water pressure, according to the maker. To boost efficiency, it comes with a 542 cfm blower, 3,000 psi water pressure and 4.2 gpm water flow. It is offered with a 500- or 800-gallon tank. The machine is available in multiple trailer configurations, including the VT9 trailer that, when equipped with the 500-gallon tank, does not require a commercial driver's license to transport. **800-654-6481; www.ditchwitch.com**

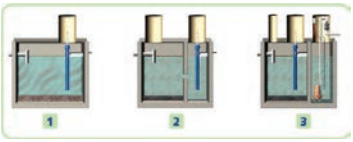
HAND TOOL

T&T Tools Mighty Probe

The **Mighty Probe** from **T&T Tools** has a 3/8-inch hex rod (approximately 20% stiffer than a round rod) or a 7/16-inch hex rod (approximately twice as stiff as the standard round rod). Stiffer hex rods bend less to make the probe easier to push into the ground, especially when probing at deeper depths. Lengths are available from 36 to 78 inches in 6-inch increments. When the probe is combined with a slide adapter, an integrated mini slide-hammer probe is created, allowing technician to pound through difficult spots. **800-521-6893; www.mightyprobe.com**

SEPTIC FILTERS

BioMicrobics SaniTEE



The **SaniTEE** from **BioMicrobics** is designed to be an efficient, nonclog effluent screen that deflects solids back into a tank, while simultaneously attenuating surge flow. It drops into a standard 4-inch septic tank (for new builds or retrofitted) outlet tee. It is easily cleaned with the clean-in-place swab handle with a Buna-N disk fastened to the shaft. To clean, move the swab handle up and down to pass the swab through the center several times to act as a reverse pump to dislodge any debris in the filter or angled slots. No removal or running water is necessary. Solids touching the vertical surface of the screen tend to slough off and fall back into the septic tank. In this way, the device is somewhat self-cleaning. In general, the 4-, 8- and 16-inch device should be for use on conventional and advanced septic systems; and is suitable for all types of commercial (high-strength) wastewater treatment systems. **800-753-3278; www.biomicrobics.com**

Polylok PL-250

The **PL-250** effluent filter from **Polylok** is designed to handle up to 3,000 gpd with 250 linear feet 1/16-inch linear filtration. It is easy to install and are designed for functionality and longevity, according to the maker. The cartridge cannot be installed incorrectly, with no direct bypass, and will fit any standard 6-inch tee. Its W design prevents solids from settling. **877-765-9565; www.polylok.com**

Sim/Tech Filter STF-100A2

The **STF-100A2** pressure filter from **Sim/Tech Filter** helps maintain proper and efficient year-round operation of mounds, sand filters and other pressurized distribution systems. The low headloss (0.21 psi) pressure filter mounts on the discharge side of an effluent pump to prevent plugged holes and reduce effluent TSS. This mounting location also extends the time between servicing. The vortex action created by the pump scrubs the screen and the backflow through the filter after the pump shuts off, washing debris out. A single 2-inch filter can handle flow rates up to 83.8 gpm. It can be designed

Little Giant celebrating 80th anniversary in 2021

Franklin Electric brand Little Giant is celebrating its 80th anniversary in 2021. The company is marking the occasion with a series of initiatives planned throughout the year, including a revitalized brand look.

Trenchless Equipment announces new team members

Trenchless Equipment, based in Turlock, California, announced four new employees. Michael Lien is managing director. Miriam Brenner is international sales specialist. David Huff is director of sales. Bill Seals works with service professionals.

to handle almost any flow rate or load, according to the maker. Larger 3- and 4-inch filters are available. The standard screen filters to 1/16 inch, and optional socks allow for additional filtration to 0.024, 0.007 or 0.004 inch. **888-999-3290; www.simtechfilter.com**

SEPTIC TANK AGITATOR

Crust Busters agitator

The handheld power agitator from **Crust Busters** has an 80-inch shaft and two- or three-blade propeller designed to mix a 1,000-gallon septic tank in five minutes. Options include 2-, 4-, 6- and 9-foot extensions and a short three-blade shaft that adapts to the two-blade unit. **763-878-2296; www.crustbusters.com**

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ROLL-OFF TRAILERS

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TOOLS

Crust Busters - Portable, lightweight machine guaranteed to mix up septic tanks and grease traps! Save time and money! **www.crustbusters.com,** 888-878-2296. (PBM)

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