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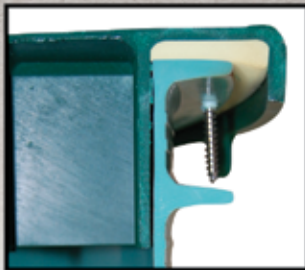
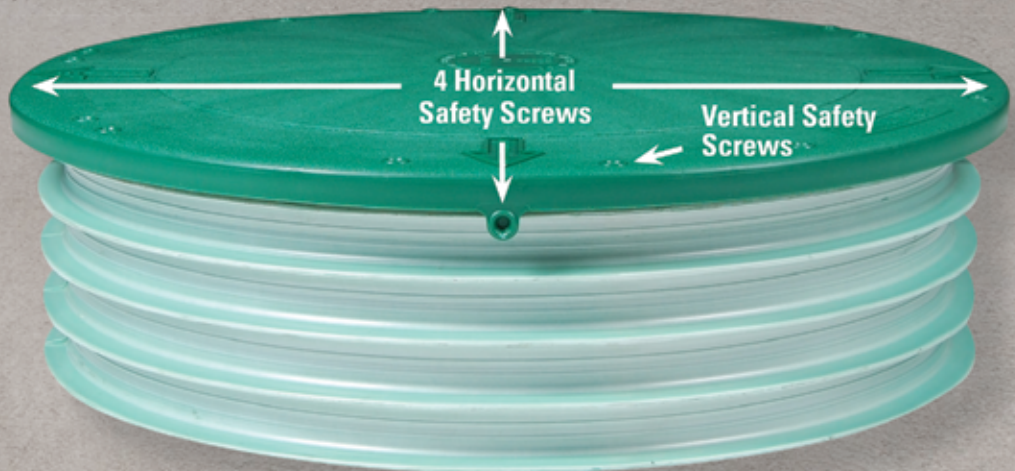
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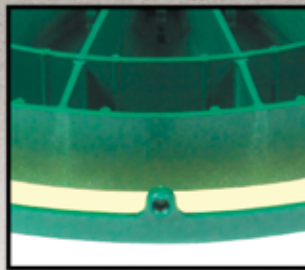
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INSTALLER PROFILE:

Ingenious Islanders

By Ted J. Rulseh

ON THE COVER:

Whidbey Septic owners and brothers Seth Miller, left and Ben Miller are shown at a residential install job in Oak Harbor, Washington. (Photo by Stephen Brashear)

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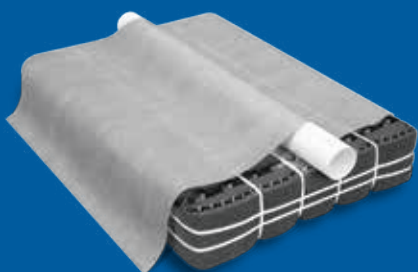
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DEEP FREEZE Tips for Cold-Weather Maintenance

If you work in a cold climate, you face interesting challenges beyond the typical installation or system troubleshooting issues. Some of your work slows down when you can't install systems in the frozen ground; but other emergency work like frozen lines and backed-up septic systems can spike this time of year. This article provides a roundup of information and reminders on how to handle the effects of freezing temperatures. onsiteinstaller.com/featured



THE BIGGEST KEY Disregarding This Puts Your Business at Risk



In this exclusive online article, columnist Todd Stair shares what he believes to be the most important factor in the success of your onsite business. You do a lot of things for your business to be successful — expensive equipment, hard work, lots of hours. But if you're not focused on one key element, you're taking a huge risk. onsiteinstaller.com/featured

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Class is in Session for Your Customers

NOWRA and partners introduce new training tools aimed at educating septic system users

Sometimes onsite installers get so caught up in obtaining continuing education credits for their crews and efforts to learn new treatment technologies that they can forget another important role they play in wastewater training: schooling septic system users.

After all, unless the homeowners in charge of their own private decentralized wastewater systems understand how they work and realize the importance of routine maintenance, wastewater professionals will have a tough time providing essential services. While installers have voiced their frustrations to me over having to cover Wastewater 101 for every fresh and new customer, that's really quite an important aspect of their job.

Sure, you might thrive on excavating for and placing septic tanks, laying out piping and drainfields, and employing all of the latest advanced components to complete an effective treatment system. But before delivering equipment and materials to the work site, you need to sit down with your customers at the dining room table and declare that class is in session.

But one challenge is how to best cover highly technical subject matter that has taken you many years to master yourself. I have heard from installers who sometimes struggle with customer education because A) they aren't educators by trade, B) they have no idea of the learning abilities and backgrounds of their customers, and C) they got into this business because they liked to be down in the trenches and that's where they want to spend their time.

Before delivering equipment and materials to the work site, you need to sit down with your customers at the dining room table and declare that class is in session.

One challenge is how to best cover highly technical subject matter that has taken you many years to master yourself.

But the lesson quickly learned is that regular communication with customers goes with the territory. And National Onsite Wastewater Recycling Association leaders clearly know that. This is apparent because NOWRA — in partnership with the U.S. Environmental Protection Agency and the Rural Community Assistance Program — recently launched a comprehensive homeowner training program installers can share with their onsite system users.

DOWNLOAD MATERIALS

The free course, including the informative *Onsite Wastewater Treatment System User Guide*, is available now at nowra.org. The training covers everything from flush to final treatment using terminology, simple graphics, detailed photos, videos and charts that are easy for the layman to understand.



⚡ This aerial photo showing the installation of an EZFlow system installation is included in homeowner training materials at the NOWRA website. (Photos and graphics courtesy of the National Onsite Wastewater Recycling Association)

⚡ This photo illustrating an outlet filter in need of cleaning is available in the NOWRA homeowner training materials.



◀ Homeowners would benefit from seeing this rock trench under construction. The photo is among materials available through NOWRA.

The materials are designed for onsite professionals to share in seminars with homeowner groups, health officials, Realtors or any interested parties who would like to learn how a private onsite wastewater treatment system functions. The training sessions are broken down into four modules: overview of sewage treatment and typical OWTS,

overview of management, home management tips and troubleshooting.

The materials include slides with speaker notes and recommended activities to get attendees involved with the coursework. An online version of the training program and a Spanish translation are in the works for 2024, according to information provided by NOWRA.

Or installers can simply share the user guide document (nowra.org/customer-content/www/cms/files/owts_final_septic_system_users_guide.pdf) whenever and with whomever they wish.

The user guide covers a lot of ground in its 12 chapters spread over 31 pages:

- 1: Importance of Sewage Treatment
- 2: Overview of Household Wastewater Treatment
- 3: Typical OWTS Features
- 4: Final Treatment and Dispersal
- 5: Management
- 6: Wastewater Strength
- 7: Safety
- 8: Landscaping and Land Use Near Your OWTS
- 9: Maintenance
- 10: Troubleshooting
- 11: Common Problems
- 12: OWTS Troubleshooting Guide for Homeowners

Here are a few lessons to give you an idea of the depth of information covered:

Knowing four primary components

This section explains plumbing/collection, pretreatment, advanced pretreatment and final treatment and dispersal. Homeowners will learn the sources of all types of wastewater entering the onsite system. Then they will follow the treatment train, learning how sewage is separated into liquid and

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EDITOR'S NOTEBOOK

» Quality graphics like this make it easier to explain more complex treatment systems.

» Showing a contoured drainfield layout under construction can help homeowners understand what septic system components look like before they are covered.



solids in the septic tank; then how marginal soils can require further pre-treatment; and then follow the effluent to the soil treatment area where it is filtered and returned to the groundwater or becomes water vapor through evapotranspiration through plants.

Every picture tells a story

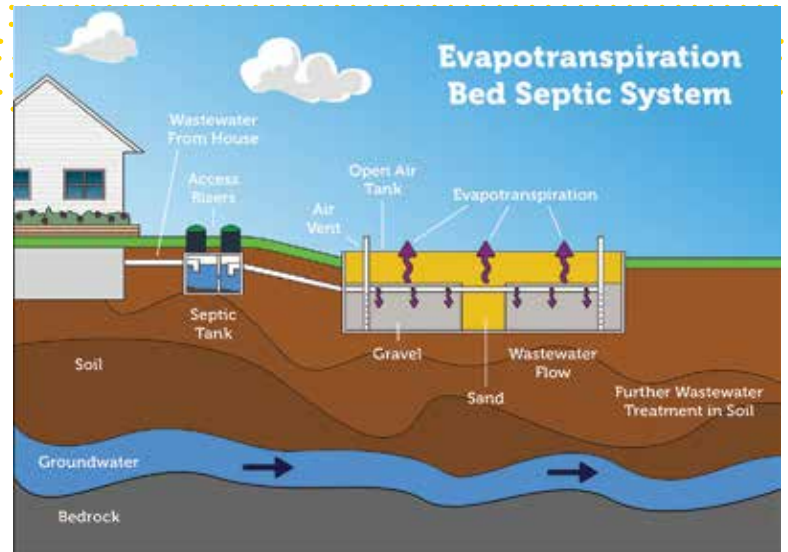
Detailed graphics back up the written explanations of system performance, including cross sections showing the different layers of settling waste in the septic tank, the pump tank, controls and alarms, aerobic and advanced treatment systems. A variety of drainfields are illustrated showing soil profiles and many types of dispersal lines, including conventional, low-pressure pipe, mounds, evapotranspiration septic systems and lagoon systems.

Reducing water usage

Installers frequently reinforce the message that users should limit water flows so septic systems are not overtaxed. Room by room, the user guide makes good, solid — and hopefully familiar — recommendations for those who maybe have never previously lived in a household utilizing an onsite system.

In the bathroom — Install low-flow shower heads and faucets, water-saving or dual-flush toilets. Replace tub baths with shorter showers (There are 5 gallons or more per inch in a filled bathtub). Consider a tankless water heater to curtail flow, and shut off the faucet while shaving and brushing teeth to save 2 gallons of water per minute. Ensure only human waste and toilet paper are flushed — never flush wipes, facial tissue, paper towels, cigarette butts, condoms, personal hygiene products or unused medications. Avoid every-use toilet bowl disinfectant products. Do not use drain cleaners to remove clogs.

In the kitchen — Hand-wash dishes in a basin to reduce running water. Keep a pitcher of drinking water in the refrigerator rather than running the tap for cool water. Wash only full loads in the dishwasher. Avoid using a garbage disposal or drain cleaners, and do not allow vegetables, meat, fat, oil or coffee grounds down the drain.



In the laundry room — Select only front-loading or efficient top-loading washing machines and use a water/suds-saver feature. Wash only full loads or set the machine for load sizes. Spread clothes washing loads throughout the week to avoid overloading the system. Install a filter on the washer to remove lint and avoid detergents containing phosphates.

Around the house — Use a water meter to track usage and ask the maintenance provider if the system monitors water flow through the system. Address issues involving use of water softeners, iron filters or reverse osmosis systems with your service provider to protect your OWTS system from potential damage. Reduce use of cleansers in general, and be sure cleaning products do not contain phosphorus. Use minimal soaps. When allowed by regulation, consider rerouting water softener recharge water outside the OWTS.

SAFETY FIRST

And for instances where homeowners take part in system maintenance, a section on septic safety is valuable and warrants serious explanation. The training stresses never entering a septic tank because of lack of oxygen and presence of dangerous gases including hydrogen sulfide and methane.

It warns septic users to avoid working with electric lights or tools around open septic tanks, or to smoke in those areas, for risk of electrical shock or explosion. It also advises to avoid running vehicles or heavy equipment over septic tanks and to keep children away from tanks during maintenance. And of course, tank lid security is stressed as tragedy strikes every year when small children fall into unsecured septic tanks.

TAKE ACTION

I was happy to see that NOWRA and other entities released these valuable education materials. They will be an invaluable aid to installers and wastewater service providers in general moving into the future. We see that many septic systems are aging and need maintenance or replacement, that more homes are being developed utilizing onsite systems, and that many people are moving away from homes served by municipal sewer and are living with septic systems for the first time.

All of these factors make it even more critical that we, as members of the onsite community, are keying in on educating consumers. It's time well spent, both for the health of these systems and the environment in general. And every time we fully inform a homeowner about how to care for septic systems, we're gaining the respect of the general public and proving decentralized wastewater treatment is a valid alternative to municipal sewer expansion. □



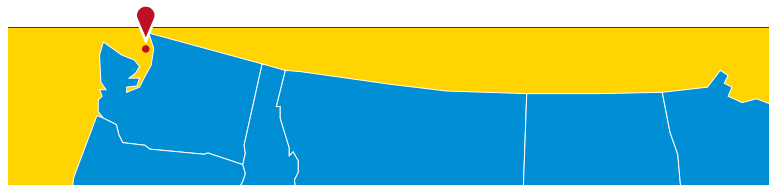
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INGENIOUS ISLANDERS

Ben and Seth Miller apply innovative treatment technologies and alternative drainfields to deal with challenging soils and compact sites on Whidbey Island

By Ted J. Rulseh





Whidbey Septic Oak Harbor, Washington



Owners: Seth Miller, Ben Miller

Founded: 2020

Employees: 2

Service area: Whidbey Island

Services: Onsite system installation, operations, maintenance, inspection

Affiliations: Washington Onsite Sewage Association

Website: whidbeysepticllc.business.site

Ben Miller gives an interesting description of the soils on Whidbey Island, located north of Seattle in the Puget Sound, where he and his brother Seth operate their onsite installation business.

“I like to refer to it as Neapolitan ice cream,” says Ben. “You dig a hole in one spot and it’s nice sand. You go five feet to the left and it’s hard-packed clay right at the surface.”

Variable soils are just one of the challenges that often confront the brothers, who own Whidbey Septic based in Oak Harbor, Washington. Systems for beachfront sites need special care to avoid polluting sensitive surrounding waters. Slopes can be steep. In some areas development is dense, lots are tiny, and access for machinery and tanks is difficult.

Despite it all, the brothers so far have made a success of their business, which they have owned for four years. They thrive with a mix of system installations and repairs, system inspections for property transfers and maintenance on aerobic treatment units. On the installation side they need to be adaptable in their choice of machinery and the types of solutions they deploy, from conventional systems to aerobic treatment units and innovative drainfields.

VETERAN OWNED

The brothers came to the business after serving in the military, both in the infantry, Ben in the Army for six years including deployments to Iraq in 2009 and Afghanistan in 2013; Seth in the Marines for four years with deployment to Afghanistan in 2011 and 2013.

Both grew up on Whidbey Island and returned after military service. Ben went to college but left after a semester and worked on various jobs. His father, a real estate agent, referred him to Reed Tacia, an excavation, site development and septic system contractor who was working alone, nearing retirement and looking for help.

Ben recalls, “In 2016 I got a job working for him on Fridays for the first couple of months. I discovered that it was pretty interesting and started working for him full time.” Meanwhile Seth left the Marines, married Rebecca and earned an online degree in business communication from DeVry University. In 2017 he joined Ben on the onsite business.

◀◀ Seth Miller connects PVC piping to a new concrete septic tank during a residential installation job. (Photos by Stephen Brashear)

▶▶ Seth Miller, left and Ben Miller stand on a new concrete septic tank with openings covered by TUF-TITE, Inc. lids.





◀◀ Ben Miller excavates a hole for a new septic tank on a residential job in Oak Harbor, Washington.

SOMETHING BORROWED

Whidbey Septic tackles a variety of installations on diverse sites with variable soils. Owners Ben and Seth Miller do it without owning any excavating or earth-moving equipment.

Still at an early stage of their company's development, they prefer to rent equipment to suit the specific needs of each project. "A local company here rents excavating equipment," says Seth. "We look at each property first and see what we need to get the job done."

"We might need a large excavator, or a really tiny excavator that can squeeze through a gate. The rental company has a lot of options, and that keeps it easy for us."

Ben adds, "Eventually we want to get a small excavator that we can tow around so we can have access to it immediately, such as for emergency calls. For now, it's more convenient for us to rent equipment. We usually can get whatever size we need within a week."

Tacia taught the brothers how to operate equipment and the basics of installing onsite systems. "Eventually we got our installer's licenses so that if our boss decided to go to Alaska for two weeks he could leave us behind without having to worry," Ben says. Tacia retired in early 2020 and the Millers took over the onsite portion of the business.

ISLAND CHALLENGES

Whidbey Island, comprising nearly 170 square miles, is home to some 70,000 residents. Cities including Oak Harbor are sewered, but most of the island is rural land served by septic. "We're on mainly glacial till," says Seth. "It's a lot of gravels and sands. There are also areas of hardpan, bedrock, and unpermeable clay."

Protecting water resources is critical. The northern half of the island has water piped in from the mainland, "But everybody else relies on groundwater, so if we start polluting it with our septic systems, we're in trouble," Seth observes. Ben notes that pollution from failing septic systems at beachfront homes has caused shutdowns of shellfishing in some areas.

The brothers have installed about eight onsite systems per year but expect that to increase. They inspect about 30 systems per month, getting leads from their father and two brothers who are real estate agents, and from other area Realtors. "We hope to connect with

"I like to refer to it as Neapolitan ice cream. You dig a hole in one spot and it's nice sand. You go five feet to the left and it's hard-packed clay right at the surface."

Ben Miller

all of the Realtors on the island," says Seth. "We're already in with most of them, building good relationships."

On the maintenance side, they service a variety of ATUs and a few larger community systems, such as mobile home parks.

Installations are trending away from conventional systems. Sites with favorable soils are becoming scarcer, and sites that a few decades ago were considered unbuildable on septic now can be developed using alternative technologies including ATUs. For drainfield media Whidbey Septic prefers chambers (Infiltrator Water Technologies).

The company buys precast concrete tanks from Berg Vault and uses plastic tanks (Infiltrator) for hard-to-access sites. Tank replacements are common as concrete tanks installed in the 1950s and 1960s break down and inspections reveal their condition. Inspections also find some interesting homemade innovations.

About a year ago they found a "tank" that someone had built out of cinder blocks. "You

continued >>

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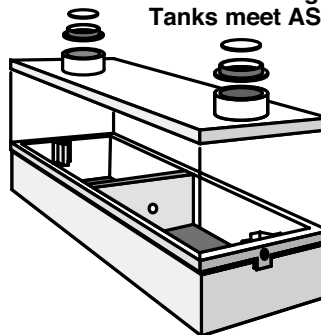
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◀◀ Seth Miller tightens a fitting on a clean-out being installed ahead of a line from the house to the septic tank for a new-construction system.

✔ Ben Miller operates a Yanmar excavator while his brother, Seth, looks on.



“The county health department is building relationships with all the onsite contractors. They’re making it really easy.”

Ben Miller

can imagine how well that worked,” says Ben. “It was just leaking out the sides.” Seth recalls, “My favorite was a pipe coming out of an old farmhouse going straight into an old fiberglass boat that was filled with gravel. That was their drainfield.”

FITTING THE SITE

When called on to install complete systems, Ben and Seth work with a number of local designers who perform perc tests, take soil borings and prescribe the type of treatment. “The county health department is building relationships with all the onsite contractors,” says Ben. “They’ll come out to the site and work with the designer. They’re making it really easy.”

For advanced treatment the brothers rely mainly on NuWater ATUs (Enviro-Flo). “I like that everything including the air pump is contained in one tank,” says Ben. “The NuWater system has a separate little chamber that the air pump sits in. The whole unit is a bit smaller than the septic tanks we use. That makes it easy to set it alongside a septic tank and a pump chamber, all in a small footprint.”

OSCAR systems (Lowridge Onsite Technologies) are becoming popular on the island as alternative drainfields. They are flexible and can readily fit on space-constrained sites. The basic system consists of a 6” of sand placed on the ground surface with coils of drip irrigation tubing

(Netafim) placed on top. That is covered by another six inches to a foot of sand.

Systems can be irregular in shape. An absorption area of about 400 square feet can serve a typical three-bedroom home. Typically, OSCAR systems receive pretreated effluent from an ATU, which can be an XO2 system from Lowridge.

Tiny lots are a frequent challenge. “Probably our biggest problem for repairs and doing maintenance on things that are broken is working in already developed areas,” Ben says. “You’ll have a house, and 20 feet to your right is another house. Trying to get machinery and equipment in and having enough working room is a real issue.”

Small lots also tend to rule out systems like large conventional drainfields, sand filters or mounds: “We have to try to shrink everything down, install an ATU and an OSCAR, and try to fit everything in without taking up the entire property.”

COMPREHENSIVE SERVICE

On the installation side, the brothers pride themselves on doing a
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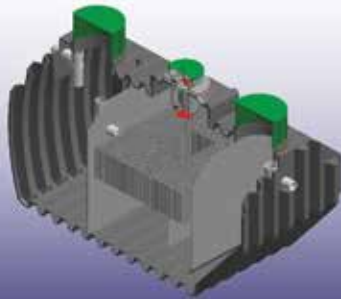
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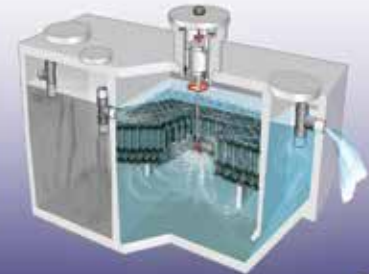
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thorough and turnkey job. “We like to get everything in correctly so it’s working the first time and we don’t have to come back when something fails within the week,” says Ben.

“When everything is said and done and the system gets installed, we’ll clean up the whole area nice and pretty, so the owner doesn’t have to hire someone else to level out the yard where the drainfield is. We don’t sod, but we do seed, or we’ll add a thin layer of topsoil and then seed it.”



▲ At the site of a new system installation, Ben Miller uses a Yanmar excavator to backfill a new concrete septic tank.

While septic tank pumping business on the island is fairly competitive, fewer companies offer inspections. Seth observes, “We get a lot of customers saying we’re the only ones that answer the phone.”

Since starting the business, some established installers have moved out of state or retired. “A few new people have started up, but we do notice a lack of younger people coming into the business,” says Ben. “So there is definitely going to be a gap at some point. That’s an opportunity for us.”

One of their goals is to establish regular maintenance contracts for conventional systems and ATUs and hire a team to service them. “We would like to get a service going where we can have annual and tri-annual contracts to go out and inspect all these houses,” Seth says.

One obstacle to that is the high turnover of properties on the north end of the island where Naval Air Station Whidbey Island is located. Service members are reassigned frequently and many are unwilling to sign contracts.

“We like to get everything in correctly so it’s working the first time and we don’t have to come back when something fails within the week.”

Ben Miller

ENGAGING CAREER

Looking back, both brothers are well satisfied with the career choice they made. “I like how complex it can get,” Ben says. “It’s not a monotonous job where you just go and switch out a pipe. It requires some thinking, puzzling; a troubleshooting kind of feel. It keeps me engaged.”

Seth adds, “I never thought I would work in the septic industry, but after seeing most other construction jobs, and knowing I liked to work outside and work with my hands, I’d rather operate a machine or install a new system than be roofing a house. Like my brother, I couldn’t work inside an office. I’d go crazy.”

Ben and Seth would advise younger people to consider careers in construction, even if not in the onsite business. Says Ben, “I think many don’t want to get their hands dirty. They don’t want to be out in the sun or the rain. But they want to make a lot of money.”

“I would tell them, if that’s what they want, that it’s easy to work your way up in the construction field, or to start something yourself,” he says. Of that, the owners of Whidbey Septic are living proof. □

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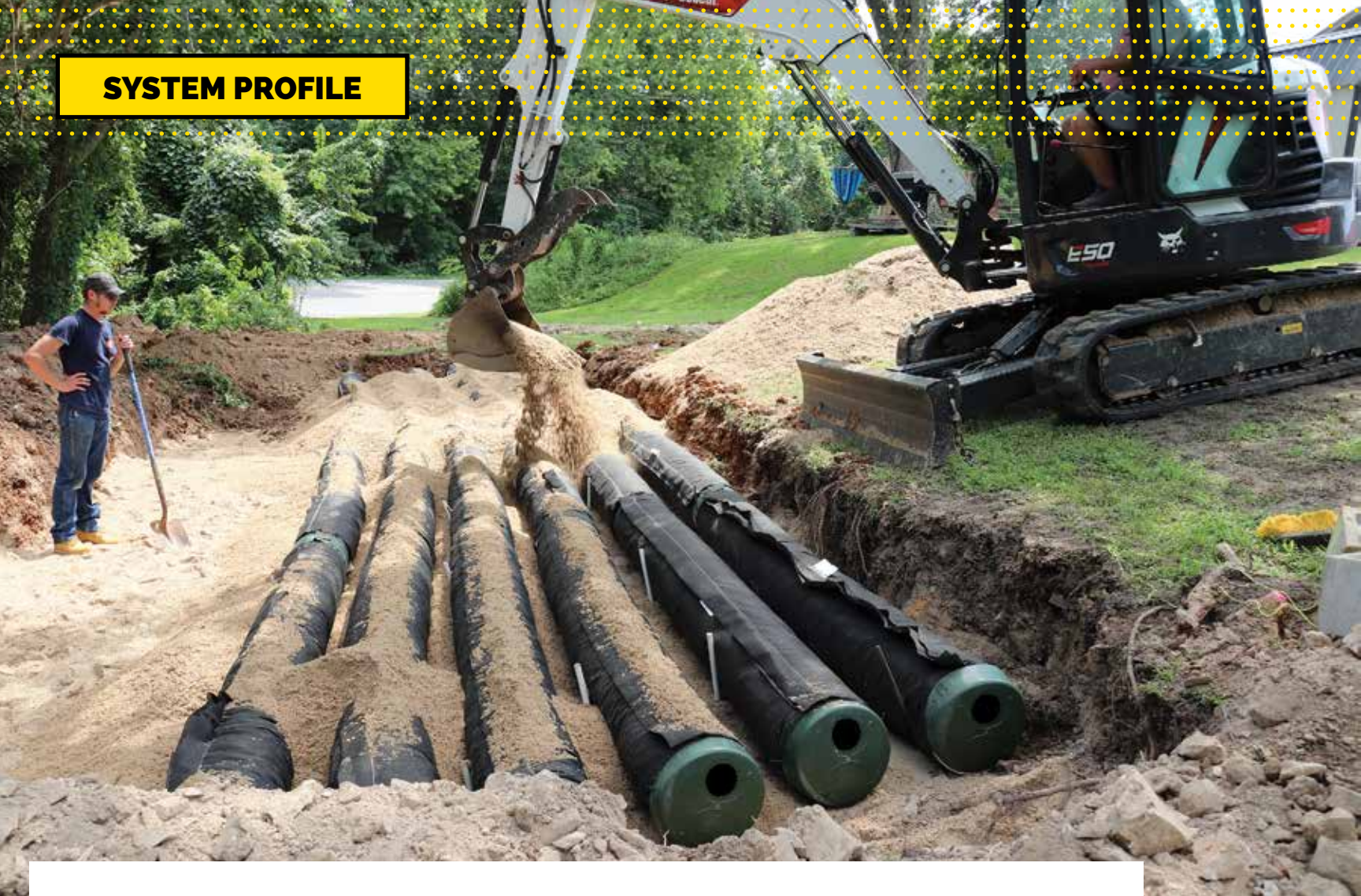
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SYSTEM PROFILE



Day Care Expansion Relies on New Treatment Technology

An Arkansas child care facility spins its wheels to handle its wastewater load; installers and industry manufacturers gain approval for a solution not yet approved by the state

By David Steinkraus

▲ Kevin Phipps, left, stands ready to distribute sand among the AES pipes while Brook Cannedy, in the mini-excavator, adds more sand for the dispersal bed at a day care center in Garfield, Arkansas. (Photos courtesy of BBB Septic and Portable Toilets)

When the day care center in Garfield, Arkansas, ran out of onsite options, it was actually a good thing. Piper Satterfield, septic system design specialist at BBB Septic and Portable Toilets in Bentonville, Arkansas, summarized the backstory:

The day care owner, licensed by the state for 10 children, wanted to expand and had a grant to increase capacity to 16 children. An onsite system upgrade was required as part of the grant, and the owner contacted BBB for help. But when she looked at the site, Satterfield found fill dirt, parking space, buildings, a steep slope and little usable land. There was nothing she could do, and it looked like the expansion would fail.

A few months later, neighbors reported the day care for violating local rules; effluent was pooling near their door. Again the owner called, Satterfield says, but this time she had more options because the job would

be a repair. She prepared a design, and a neighbor gave verbal approval for a new drainfield to be installed on her property. Everything looked good, but just after the design was approved, the neighbor rescinded her consent, and the expansion was off.

Finally, an answer

A solution came in a phone call from Coy Clark, a representative for Infiltrator Water Technologies, Satterfield says. Except where it installs drip irrigation, she says, BBB uses Infiltrator chambers exclusively as a dispersal system. Clark was looking for pilot projects for the company's Advanced Enviro-Septic technology, and asked if Satterfield had a potential site. "I'm like, 'Yes, I have the perfect place.'"

Developed by Presby Environmental in New Hampshire, AES (certified



◀◀ The crew from BBB Septic and Portable Toilets, of Bentonville, Arkansas, builds the sloped sand bed for the day care center. Brook Cannedy runs the mini-excavator, while Kevin Phipps, right, waits to check depth, and Isaiah Muldoon, second from right, watches the progress. Kyle Krievans of the Arkansas Department of Health, left, observes while Erica Long, second from left and also from the state health department, talks to Curtis Cluckey of Infiltrator Water Technologies, third from left.

▼ Isaiah Muldoon, left, and Kevin Phipps, right, of BBB Septic in Bentonville, Arkansas, join two sections of AES pipe during the installation.

System Profile

Location:	Garfield, Arkansas
Facility served:	Day care center
Designer:	Infiltrator Water Technologies and BBB Septic and Portable Toilets
Installer:	BBB Septic and Portable Toilets, Bentonville, Arkansas
Type of system:	Septic tank with aerobic generator and Infiltrator Advanced Enviro-Septic
Site conditions:	Silty loam with stone-sized rocks
Hydraulic capacity:	500 gpd

NSF-40 Class I) is based on 12-inch-diameter perforated plastic pipes wrapped with a plastic fiber mat, drawing air through a vent pipe, and resting on a sand bed. The idea is to combine treatment and dispersal in the same place.

“It’s kind of its own category that Arkansas doesn’t recognize yet,” Satterfield says. Under current Arkansas rules, AES is treated like a sand filter. You can use it, but only if there’s a liner beneath the sand bed, which defeats the capabilities of the technology, she says.

Working from her information, she says, Infiltrator designed an AES component that she merged with a tank and other components.

Steep slope

Because of high-strength cooking wastewater, the influent flow from the building was split into two parts through 4-inch Schedule 40 pipe.



Wastewater from the kitchen sink flows about 20 feet from the wall of the house into an existing single-chamber 750-gallon concrete tank converted to a grease trap. The rest of the building wastewater joins the flow from the grease tank and enters a single-chamber, 1,500-gallon concrete tank from River Valley Precast of Ozark, Arkansas. Inside this tank is an Aquaworx Remediator aerobic bacteria generator.

From the 1,500-gallon tank, wastewater flows about 80 feet through a 4-inch-diameter PVC pipe to the Presby drainfield. On the way, the pipe passes under a gravel driveway where it is sleeved in a 6-inch-diameter Schedule 40 pipe to protect it from traffic.

SYSTEM PROFILE



▲ One new tank was used for the day care system in Garfield, Arkansas, and here Brook Cannedy, second from right, and Isaiah Muldoon, right, work on putting it in place. An existing tank was retained as a grease trap for the high-strength kitchen wastewater.

The drainfield was made with six, 40-foot rows of Advanced Enviro-Septic pipe spaced 1.5 feet on center. Pipes are set on a 6-inch bed of sand. Between pipes is more sand, and there is 3 inches of sand on top. Bed edges are 12 inches of sand, but because the bed is constructed on a slope, the downhill end of the bed is extended 2.5 feet and tapers from the top of the pipes to 6 inches.

The BBB crew used a Bobcat E50 mini-excavator and a Bobcat T190 tracked skid-loader to do the job.

With some product donated by Infiltrator Water Technologies, the project fit within the day care's budget, Satterfield says. To make the state health department more comfortable

"I think it's a very good system for an area where you don't have the square footage for a conventional lateral field."

Brook Cannedy

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Dawn Rohrs
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with an uncertified technology, the day care owner agreed that if the system fails to perform, her food service permit will be revoked, and she will reduce the number of children she serves.

Old pipes

The old drainfield was abandoned, says Brook Cannedy, the BBB installer who oversaw the project. “And by drainfield we’re talking about one lateral line that was about 40 feet long,” he says. That pipe was probably 50 years old, and no one knew it crossed onto the neighboring property because those two parcels had been a single piece of land until about 30 years ago, he says.

The project went very smoothly, Cannedy says. “Digging the bed was something new for me.” Typically BBB technicians use Infiltrator chambers in trenches. For this project, the crew used a laser to verify their measurements. And because the site of the bed was sloped, the bottom of the bed was sloped to match that grade, he says.

“I think it’s a very good system for an area where you don’t have the square footage for a conventional lateral field,” Cannedy says. This installation used every square foot of available land, he adds.

Satterfield says an inspection port is part of the design, and she plans to keep an eye on the system to make sure it’s not holding water. Another company was hired under a maintenance contract with the owner to monitor the aerobic bacterial generator, she says.

To her knowledge, she says, this is the only AES project working in Arkansas. ▣



◀◀ Isaiah Muldoon, of BBB Septic and Portable Toilets, sets up the vent pipe that will move air through the Infiltrator AES pipes.

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Tighter Regulations Are Only a Matter of Time

Advanced treatment will become commonplace in every corner of the country, so wastewater professionals need to get on board with new technologies, says a NAWT board member

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 National Association of Wastewater Technicians.

Association involvement:

I've been a member of the National Association of Wastewater Technicians for about five months and sit on the board of directors as the state representative for Michigan. I also sit on the board of directors for the Michigan Septic Tank Association.

Benefits of belonging to the association:

In areas where there is fragmented oversight of the industry, such as Michigan, where we have disagreements between counties, and some counties have no oversight at all, a national organization gives you the ability to standardize a set of protocols and routines so everyone is speaking the same language and is on the same level of understanding. And it makes it so you can communicate among professionals and with homeowners without sounding like a bunch of idiots arguing with each other.

Biggest issue facing your association right now:

An issue that faces the industry as a whole is trying to consolidate organizations. We have a lot of different organizations at regional, national and state levels that are all putting a lot of energy and effort into basically the same thing and not communicating. And one of the biggest challenges for NAWT and the industry is open communications between organizations — local health departments, state regulators, nonprofits with educational missions in the septic world. They're all pulling the industry forward but in slightly different directions.

Our crew includes:

My co-owner, Matt Gustafson, does our site work and most of our estimating. His son, Ethan Gustafson, is our service tech and does technical troubleshooting. Matt's father, Roger Gustafson, is 72 and will not stop



Casey Fiedler
co-owner with Matt Gustafson

Business: Michigan Septic LLC, Mason, Michigan

Age: 33

Services we offer: Everything septic — design and installation of conventional, advanced and alternative systems, maintenance, repairs, pumping. We do inspections for real estate transactions, operations and maintenance, and advanced and alternative systems. We don't do design work in-house but we work with outside engineers for that.

Years in the industry: I grew up in the business. My father, Terry Fiedler, bought Jerry Shunk's septic service in 1990 and sold it in 2018. I ran that business its last three years then started my own company.

working. He works circles around everybody else. Cole Sworden works with Matt doing site work and putting systems in the ground. Trae Smith is our main pump truck driver.

Typical day on the job:

We get together at the shop about 7:15 a.m. and do a quick team huddle. I brief everybody on anything coming up that might be something to watch out for. Guys are usually on the job site by 8 or 8:30. I do all our inspections, usually in the mornings. I drive water samples to the lab, which is not nearby so I grab some lunch on the road. Then I'm back in the office by early afternoon and get to all the phone calls and emails and follow-up inspection paperwork.

The job I'll never forget:

When you do inspections you have to walk into people's houses and you never know what you're going to find. I showed up to a job and a piece of paper taped to the door said, "I'm on a Zoom call, let yourself in." I opened the door and the house smelled terrible. I went into the kitchen to get the water running so I could get a water sample and there were used, open needles everywhere. Everything was dirty and there was standing water all over. It was the nastiest site visit I've ever done.

>> The Michigan Septic team includes, from left, Roger Gustafson, Trae Smith, Cole Sworden, Matt Gustafson, Ethan Gustafson and Casey Fiedler. Behind them is a 2022 Mack MD6 with a 2,500-gallon aluminum tank and National Vacuum Equipment blower. (Photos courtesy of Casey Fiedler)



My favorite piece of equipment:

I live and die by my slide hammer probe from T&T Tools and my AMS hand auger. I can do 90% of my inspection work with only those two tools.

Most challenging site I've worked on:

We are currently working on a site where the existing drainfield has what was called an under-drain in the 1960s. You'd have your distribution pipes, then your gravel, then under that were other pipes that picked up the wastewater as it came down. In the 1960s they permitted those under-drain pipes to then take it over to the stormwater sewer — which, of course, is no longer allowed. So the county mandated a replacement. The lot we're working on is postage stamp-sized with a landscaping pond, five mature trees and a well that has a 50-foot encroachment on one side. So we have a small space in which to build the new system. We're just starting to sink our teeth into that project but it will be some type of non-linear pressure distribution system.

Oops, I wish I could take this one back:

Most of my frustrations come from inspections that are under a tight deadline. People call up last-minute with, "Nobody else can get to me and I'm closing on my dream house and I've got 10 days to do all my inspections." Those always come back to bite me. The seller wants it to be good, the buyer wants it to be bad, the Realtor wants the deal to close yesterday, and you get trapped in the middle of it. The idea that you can pull off a well and septic inspection in 10 days is laughable between getting records, scheduling, dropping off water samples, waiting for results. And there's no state-level standardized protocol so I have to compete with people who are not doing any of that. They dig a little hole and say, "Yep, you're good."

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

Michigan is the only state without a well and septic program at the state level so every county makes up their own rules. A license is required only for pumpers — not installers or inspectors. So it's maybe not well thought out where they're putting the emphasis on education and training. I would love to see a lot more thoughtful approach to unifying the industry and helping educate everyone.

Best piece of small business advice I've heard:

Don't cut corners. Don't try to be a nice guy and overlook something because you're trying to save the homeowner a big headache. Do it the right way every time because as soon as you give an inch that's the one you're going to get a phone call about.

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

I have a degree in outdoor education and leadership. I was a full-time backpacking guide and alpine ski instructor in Park City, Utah for seven years. If I could, I would still be doing that. It's a huge passion of mine. But it turns out ski instructors basically sell their kneecaps in exchange for money.

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

With conservation of water and the shortages we're seeing around the country, it's only a matter of time before the wastewater industry, by necessity, is going to get tighter and more regulated. There will be more reuse and collection and tighter standards for discharges. I see the industry becoming more technical. We're starting to see chlorine, ultraviolet disinfection, drip irrigation, spray irrigation and pioneering technologies in areas that 20 years ago you'd dig a trench and put a pipe in it. Reuse and conservation practices are on the upswing. Every year we get more complicated, control panels get more buttons and switches and things to troubleshoot. If you're still just putting in concrete tanks and drainfield trenches, you might want to get ahead of the game because it's only a matter of time before the more advanced systems find their way into all corners of the country. □

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.

South Carolina's Greenville County Is Ready to Limit Onsite Development

By David Steinkraus

Greenville County, South Carolina is close to placing restrictions on development using onsite systems. County government officials are motivated by a surge of development and concern that existing infrastructure cannot accommodate such growth. From 2010 to 2022, the county's population increased 21%, according to the U.S. Census Bureau. Between April 2020 and July 2022 growth was 4.3%.

Last fall, the County Council approved the second reading of an ordinance that would limit homes with onsite systems to one home for every 1.5 acres. This would apply only to developments with 10 or more lots, according to the *Post and Courier* of Greenville. The proposed rules would also require a 100-foot buffer between a stream and large developments using onsite systems.

County planning staff say they are receiving a growing number of requests from developers who want to use onsite systems for subdivisions of more than 200 homes.

"Building 200- to 300-house subdivisions where you're using a half to three-quarters of an acre per house was not an efficient use of the limited land we have left," said councilman Ennis Fant, chair of the planning and development committee, according to the *Post and Courier*.

A large number of people commented on the proposal. Several people representing real estate companies and developers said they were concerned the rules would place too many restrictions on new projects.

The council approved an amendment that would require reauthorizing the rule after two years.

NATION

The U.S. Senate adopted an amendment that would increase funding for the Rural Decentralized Water Systems Program.

The program provides grants and loans to people in rural areas to install or repair onsite wastewater systems, according to a press release from the office of Sen. Cory Booker, D-N.J. Booker sponsored the amendment with Sen. Tommy Tuberville, R-Alabama.

Funding for the program would increase from \$5 million to \$20 million for fiscal year 2024. At least \$10 million would be paid to low-income households as grants for onsite systems.

The amendment became part of the three "minibus" appropriations bills passed by the chamber last fall.

Missouri

The state Department of Natural Resources awarded a \$2.6 million grant to the nonprofit H2Ozarks. It will use the money to help people repair or replace failing onsite systems in some watersheds around Lake of the Ozarks, Harry S. Truman Lake, Pomme de Terre Lake, Lake Niangua and Table Rock Lake.

All of the money is passing through the state from the U.S. Environmental Protection Agency, according to a press release from H2Ozarks.

The organization is also administering two other onsite remediation grants: in Arkansas a \$1 million grant for the Upper White and Buffalo river watersheds, funded by the natural resources division of the Arkansas Department of Agriculture; and in Missouri a \$130,000 grant funded by Greene County.

Montana

Pumpers in the Bitterroot Valley of Ravalli County are searching for locations to dump septage now that the Missoula Wastewater Treatment Plant has reduced the amount of septage it accepts.

Pumpers were told the plant would cut out-of-county loads by 60%, reported the *Bitterroot Star* of Stevensville. Although Missoula takes septage from six other nearby counties, Ravalli County sends the most. Last year pumpers there took more than 1.4 million gallons of septage to Missoula. Now outside septage is capped at 60,000 gallons per month. At least one company in the valley is hauling septage the 143 miles to Helena.

Conrad and Tonya Eckert, of Eckert's Patriot Pumpers, said they have spent years warning officials about the consequences of not planning for increased septage volume generated by a growing number of homes. "We couldn't get anyone to understand what was coming," Conrad Eckert told the *Bitterroot Star*, "but now it has hit us."

New York

People in Cattaraugus County with failing onsite systems may be eligible for part of a \$400,000 community development block grant awarded to the county Health Department.

Funding is first come, first served, and applications are made through the department's grant partner Connecting Communities in Action. To be eligible, people must have an owner-occupied single-family dwelling and meet income limits. Those range from \$45,500 for a single person in the home to \$85,750 for a home with eight people.

Massachusetts

The Falmouth Board of Health is considering a change in its onsite rules that would ban cesspools. Under the proposed rules, any cesspool found during a wastewater inspection would be automatically considered to have failed.

The proposed regulations would also increase required distance to groundwater. Advanced treatment units would not be eligible for a reduced separation distance if more than 25% of the property is within 300 feet of a marine resource. And system designs would be required to show where an

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advanced treatment unit could be located on a property if such technology is mandated in the future.

North Carolina

Homeowners in Haywood County may receive grants to help repair or replace failing onsite systems. Grants pay 75% of total repair costs, reported the *Smoky Mountain News*. Eligibility will be determined by the severity of the failure, financial need and proximity to a waterway.

The program is a partnership of the county Health Department and the Haywood Waterways Association and is paid for by the state Department of Environmental Quality and the Pigeon River Fund of the Community Foundation of Western North Carolina.

Florida

Residents of DeLeon Springs must upgrade their onsite systems and now may draw on grants to help offset the cost.

A total of \$2.2 million, distributed by Volusia County, will be divided into \$10,000 rebates for people updating their systems, reported the *West Volusia Beacon*. Money is payable to a licensed onsite contractor and is available only in the priority focus area of DeLeon Springs.

Virginia

Homeowners in parts of Orange, Madison, Rappahannoc and Culpeper counties are eligible for grants to reimburse 50% to 80% of the cost of pumping, inspecting, repairing or replacing onsite systems.

How much people may receive depends on what a system needs and on income, reported the *Culpeper Star-Exponent*. Grants are available in sections of the watersheds of the Rush, White Walnut Run, Blue Run, Robinson and Upper York rivers. ▣

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No Space for a Replacement System?

Unfortunately, most older home lots weren't developed with a second septic system in mind. That's when it's time to improvise, adapt, overcome.

By Sara Heger

When dealing with existing properties with homes, outbuildings and other improvements, it is often challenging to find a location for a replacement system. Historically, parcels were developed without setting aside sufficient room for a second septic system. This issue can arise just due to the age and usage of the system or the desire to replace or add to the existing home.

When sufficient space for a conventional full-size system does not exist, some options allow a reduced footprint or replacement of the old system. Be sure to check with your permitting authority to determine if these options are allowable under your regulations. In some cases, these solutions avoid the requirement for a holding tank, a cluster system or surface discharging of the effluent:

The owner must understand that if peak events occur, such as large family gatherings, **they may have to pump out the septic tank and flow equalization tank to avoid overloading the system.**

Advanced pretreatment

Conventional sizing of soil treatment areas is based on the quality of septic tank effluent. Septic tanks do a good job of removing about 50% of the solids in raw wastewater but do not significantly remove pathogens or nutrients. The remaining levels of organic and inorganic material are used to size the soil treatment system based on the long-term acceptance rate of the soil after a biomat develops.

Numerous technologies have been developed that reduce the levels of solids by 90% or more. These advanced technologies utilize oxygen to break down organics, convert nitrogen and reduce pathogens. Some also include a step to reduce total nitrogen concentration. With the reduction in solids, the effluent can be applied to soil at a higher rate due to the reduction in oxygen demand. Care must be taken not to load the soil too high, as even with cleaner effluent, the soil can only take so much effluent. If there is a significant reduction in pathogens, a reduction in the vertical separation to the limiting condition may also be allowed.



Small lots sometimes leave system designers or installers little choice over where to place treatment system components, such as placing a tank access close to deck stairs or use up much of the backyard for a mound. (Photos provided by Sara Heger)



These technologies can sometimes be retrofitted into the existing system or be utilized as part of a complete system replacement. The owner must understand that additional operation and maintenance will be required. This system should be regulated under an operating permit to ensure operation and maintenance are occurring and that the system is performing as designed.

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Time dosing with flow equalization

It can occur that the peak design flow for the home or business and the available area for a new system do not match. When in this situation, you can back-calculate how much wastewater the system can handle and then incorporate time dosing with flow equalization to ensure the system is not overloaded. Remember with this approach that an STA cannot be loaded at the peak design flow daily and expect it to last long term. Therefore, when setting up a time dosing system with a limited area, the system should be set up not to dose more than approximately 70% of what the system was designed for. For example:

- a. Peak design flow for the home: 600 gpd
- b. Back calculated flow the STA can handle: 450 gpd
- c. Time dosed amount to STA (70%): 315 gpd

With this option, the owner must understand that if peak events occur, such as large family gatherings, they may have to pump out the septic tank and flow equalization tank to avoid overloading the system. These systems should also be regulated under an operating permit to confirm flows and monitor ponding in the STA.

A flow equalization tank, or surge tank, is a specialized dosing tank that provides effluent storage and uses timed dosing to allow more uniform delivery to a subsequent component over several days. In flow-equalization configurations, the dosing tank capacity is determined by the minimum volume required to submerge the pump, a surge volume equal to the flow generated during the designated storage period, and the reserve volume above the alarm activation level.

In this case, the tank is typically designed to hold at least twice the average daily flow of the facility and dose it over more than one day, as specified in the design. The flow from a surge or flow equalization tank is again controlled by a timer that controls pump operation according to

fixed on (dose) and off (rest) cycles. In this case, effluent delivery may be spread out over several days.

Build the new system where the old system was located

This option is typically the least desirable due to the common requirement to remove the old system, which adds considerable cost and complexity to the installation. Not surprisingly, it is typically the last resort. The most common approach with this option is to remove the existing system and backfill the area with clean C33 sand.

In this case, the existing groundwater condition is essential because if a high-water table condition exists, the sand could create an area of low resistance and take on extra groundwater. This could also occur if surface water is not directed away from the STA. The STA should always be mounded so most of the rainfall is directed off the system. In addition, berms, drainage and other stormwater management may be needed.

Occasionally, a new aboveground system (such as a mound) may be built over a portion of an existing in-ground system without removal. There is a risk that the existing system could create a barrier to subsurface water movement. Looking at the site, the likely direction of groundwater flow and the percentage of the new system over the old are all valid considerations. The topsoil should be carefully evaluated to determine if it needs removal or the best scarification technique to ensure an appropriate transition from the sand to the underlying soil.

These systems are also best operated under an operating permit to confirm the system's performance. □

There's Onsite Opportunity in Stretching Urban Water Supplies

Design and installation of black- and graywater reuse systems marks a new frontier for the decentralized wastewater industry

By David Steinkraus

With their big-pipe centralized water services, urban areas have historically provided limited opportunities for onsite professionals. That was then, as they say. Expanding populations and warmer temperatures driven by climate change are forcing a new emphasis on water reuse in urban areas, and onsite water recycling systems are popping up there, too.

Some urban recycling systems are extremely complicated, while others are simple, and there is a need for qualified onsite operators, says a report published by the Pacific Institute in Oakland, California. The report is titled *The Untapped Potential of California's Urban Water Supply: Water Efficiency, Water Reuse and Stormwater Capture*.

"Pacific Institute has a long history of working on urban efficiency and reuse, predominantly in California and the western U.S., although we're doing more national and global work," says Cora Snyder, one of three people who wrote the report. She is a senior researcher at the institute, holds a bachelor's degree in environmental studies and a master's degree in environmental science and management, and her job is to work with companies, governments and nonprofit organizations to advance water sustainability.

"This project really started in Silicon Valley, looking at a lot of the large tech campus developments. Several of those have these onsite systems," she says.

A few recycling systems serve tall buildings on confined city lots, she says. "I think where it makes the most sense to do this kind of onsite system is at a larger property that has outdoor landscaping that requires irrigation."

New developments

"Office campuses make a lot of sense because you have a lot of nonpotable water demand. You've got the outdoor irrigation. You've got cooling. You've got flushing. Up to 90% of a building's water demands can be met with onsite reuse," she says.

Projects cited in the report were for nonpotable use. Potable reuse was beyond the scope of the report, Snyder says.


Some startup companies are offering solutions for urban onsite recycling, Snyder says. "For the most part this is tried and true water recycling technology that has existed for decades," she says. "I do think the scaling down — how you make it cost-effective at a smaller scale than a municipal water recycling plant — is a question."

Some of the urban systems recycle blackwater, she says. A system at the Google campus in Mountain View, California, uses both natural wetland filtration and reverse osmosis to reuse graywater, she says.

The institute report didn't include a cost-benefit analysis, but the authors did look at what drives reuse investments. "I would say there are long-term financial benefits," Snyder says. "I think most of these companies are doing their own internal analyses, and they're not going to invest if it doesn't make financial sense."

Other factors push onsite recycling, she adds: corporate sustainability goals; public perception, especially in California where a long drought makes people watch how carefully businesses use water; and in Silicon Valley the culture of innovation, the willingness to try new things and curiosity to see how far technologies can be pushed.



 Cora Snyder, senior researcher at the Pacific Institute

"I think companies are looking ahead and anticipating rising water costs, but right now water is relatively cheap.

So it can be difficult to make the financial case for investment in these systems."

Cora Snyder

In the San Francisco Bay area there is also a “green premium,” she says, making real estate more valuable if it has certifications for environmental sustainability.

Multiple benefits

A number of projects are highlighted in the report. “What we were really looking for was different elements of onsite systems that we could highlight,” Snyder says.

For example, she says, one in New York City had a heat-recovery element. The Google project includes publicly accessible outdoor space. Another used a public-private partnership.

Personally, Snyder says, she liked a couple of projects. In San Francisco the Exploratorium — a science museum that emphasizes hands-on experiences to teach science concepts — wraps its onsite recycling project into its education. She likes the New York City project for two reasons. First, it’s a high-rise residential development, and reuse is less common in those.

“Then the heat-recovery element was important because these systems are energy-intensive, and that demonstrated a way to use other resources coming out of an onsite system that could help offset that energy requirement. I like that multi-benefit approach.”

The New York City project is at the Solaire, a luxury apartment building near the southern tip of Manhattan and the city’s financial district. Its onsite system treats 25,000 gpd used for flushing toilets, irrigating landscaping, and making up cooling tower water lost to evaporation, says the Pacific Institute report.

Recycling cuts the building’s potable water demand from the city water system by 50%. Heat extracted from the wastewater is used to pre-heat water heading into the building’s hot-water system. The website for the building says wastewater is filtered through seven layers of media, including activated carbon, that remove particles down to 10 microns. The website also says this onsite system was the first in the nation to be built inside a multi-family residential building.

Challenges

One current challenge to doing these projects is permitting and regulation, she says.

“Because this is just emerging, and every system is a little different, there’s not really a standardized approach yet,” Snyder says. That’s the

goal of rules now being developed by the state of California, she adds. Rules already issued by the state say permitting for recycling systems will be done by local authorities using state standards, she says.

Another challenge is finding qualified people to operate and maintain these systems, Snyder says. The National Blue Ribbon Commission for Onsite Non-Potable Water Systems (part of the U.S. Water Alliance) is doing some workforce development for this, she adds.

Another barrier is the cost of water.

“I think companies are looking ahead and anticipating rising water costs, but right now water is relatively cheap,” Snyder says, “so it can be difficult to make the financial case for investment in these systems, even though companies are looking at drought conditions, looking at increasing water scarcity conditions, and feeling like this is the right thing to do.”

Two key ideas about onsite recycling resonate with the general public, she says. One is circularity, the notion of reusing a resource many times. The other is decentralized resource use, like solar panels on house roofs.

“Folks can have resources like energy and water that they can produce at their own sites, whether it’s an office building, or a household, or a campus development,” she says.

Continuing need

California had a very wet winter that dumped many feet of snow and rain and nearly eliminated the state’s three-year drought.

“I will say every time we have a wet winter there is a little bit of collective amnesia about the water scarcity challenges we face, but I do see increasing recognition that we know one wet year is not going to solve the problem,” Snyder says.

Given the need for alternative water sources, and with climate change a particular concern in the western United States, it’s likely both onsite and large-scale water recycling will increase, Snyder says.

Increased use of onsite treatment may also affect the relationship between the onsite and municipal treatment communities, she says.

“For water utilities, these kinds of systems can present a challenge because it requires a new way of thinking. Generally speaking, for the last 100 years or so, we’ve been building, designing and operating water systems that are centralized and linear. They’re big water infrastructure systems that get water to one place, you use it once, and then you discharge it. Onsite water reuse totally disrupts that model, but it’s a model that needs disrupting given what we’re seeing with increasing water challenges.” □

Go here to read the full report, *The Untapped Potential of California’s Urban Water Supply: Water Efficiency, Water Reuse and Stormwater Capture*:

pacinst.org/publication/california-urban-water-supply-potential-2022/

Drainfield Media and Design

By Craig Mandli

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Geoflow WaterflowECO

Geoflow's WaterflowECO subsurface drip irrigation tubing for wastewater and nonpotable water applications was developed to provide a more complete line of products for the wastewater market. It has 0.67-inch tubing which incorporates Geoshield, an antimicrobial lining that stops bio slime buildup. It is purple tubing with flat emitters, which are available in flow rates of 0.4, 0.6 and 1.0 gph. **800-828-3388; www.geoflow.com**



Infiltrator Water Technologies AeroFin

AeroFin from Infiltrator Water Technologies offers passive onsite wastewater treatment for residential applications with limited space. As a combined treatment and dispersal system, it treats and disperses effluent in the same footprint, utilizing media and specified sand. The manufacturer reports the system is proven to remove up to 99% of wastewater contaminants without using electricity, replacement media or additional maintenance, and can treat domestic wastewater to Class I NSF/ANSI 40 standards. Each unit is 8 feet long and has an outside dimension of 12.75 inches. Conduits and manifolds are manufactured using recycled polyethylene and feature snap-lock couplings and PVC piping for easy system assembly. With a compact design, delivery can be made using a standard pickup truck. **800-221-4436; www.infiltratorwater.com**



Polylok 24-inch Rhino Distribution Box

The Polylok 24-inch Rhino Distribution Box has 10 potential openings to suit any drainfield application. Polylok's 24-inch stackable riser system can be used to easily bring the Rhino Box to grade. It will accept 2-, 3- and 4-inch pipe with the use of the Polylok seal and nut system. It will also accept 6-inch pipe with the use of a Polylok 6-inch grommet. It is also available as a catch basin with a Polylok heavy-duty grate. **877-765-9565; www.polylok.com**



TUF-TITE Distribution Box with Speed Leveler

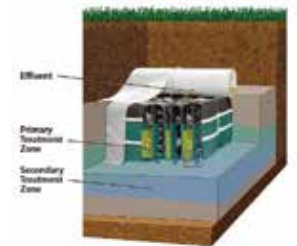
The noncorrosive TUF-TITE Distribution Box with Speed Leveler in each outlet provides a simple, stable, reliable and permanent means for dividing septic tank effluent flow, according to the maker. Distribution boxes come in four sizes: four-, six-, seven- and nine-hole. Risers are available on the four-, seven- and nine-hole boxes. All boxes come with a one-piece watertight seal that accepts 1.5-, 2-, 3- and 4-inch SDR 35 or Schedule 40 pipe, including corrugated, for easy installation. **800-382-7009; www.tuf-tite.com**



FILTER MEDIA

Eljen Geotextile Sand Filter

The GSF, or Geotextile Sand Filter system from Eljen, is designed to provide treatment and dispersal in the same footprint with easy installation and minimal maintenance. It is used for commercial and residential applications. Utilizing a two-stage pretreatment process, the geotextile modules apply filtered septic tank effluent to the soil, increasing the soil's ability to accept effluent and increase the long-term acceptance rate. Its design provides increased surface area for biological treatment that greatly exceeds the module's absorption area. Open-air channels within the module support aerobic bacterial growth on the module's geotextile fabric interface, surpassing the surface area required for traditional absorption systems. The system is tested and certified by NSF to NSF/ANSI Standard 40. **800-444-1359; www.eljen.com**



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Pleated filter units from Sim/Tech Filter provide gravity effluent filtration in septic tanks and turbine pump filtration in pump tanks. The filtration size is 3/32-inch in two dimensions. Flow channels in the pleated material increase longevity. All filter types start at over 2,000 square inches of filtration area. The 45% open area (over 900 square inches) is equivalent to 800 linear feet of 3/32-inch slots. Various configurations and larger units are available. **888-999-3290; www.simtechfilter.com**



Drainfield Media and Design


By Craig Mandli

Rural winery upgrades treatment system to host weddings



Problem: A winery and wedding venue at a turn-of-the-century farm located in Loudoun County, Virginia, needed to upgrade its wastewater treatment system to meet expansion needs and protecting the pristine surroundings.

Solution: The owners and engineers chose the EZ Treat system that consists of a primary, flow equalization, recirculation and pump tank with two EZ 2L recirculating synthetic media filters producing outstanding effluent quality over the long term. The owner of the winery landscaped around the EZ Treat 2L modules, multiple tank access points and the control panel.

Result: The average effluent BOD and TSS are typically less than 10 mg/L. The 1,000 gpd design system allows the business to be open year-round, and seats 40 inside the winery, with outside seating for more than 50 people. For weddings, the venue serves up to 200 people. The effluent is so clean the pump is clearly visible. 703-753-4770; www.eztreat.net 

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Pagoda Vent

Decorative **Pagoda Vents** come in 16-, 24- and 36-inch sizes. The original vents are bark (brown) or moss (green) color to blend into the landscape. The newest copper offering will add patina over time or can be maintained as a pristine copper landscape feature. All versions support the long life of system components by providing septic field microbes the oxygen they need to thrive, concrete tank gas release to mitigate microbial-induced corrosion, and pressure relief for pumps. An optional odor filter cartridge uses concentrated media for years of odor control, according to the maker. **888-864-1468; www.pagodavent.com**




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The **WVI Inline** activated carbon filter from **Simple Solutions Distributing** is installed in an attic or crawl space inline with the current vent to remove septic odor. The filter comes in 4- and 6-inch sizes, with the smaller unit able to be bushed down to 1.5-, 2- and 3-inch sizes. It comes with 2 pounds of Sulfursorb Plus activated carbon, which is poured into the 2-inch fill port. The unit accepts an optional screw-in saturation indicator that changes color to indicate when carbon needs to be changed. It is suitable for extreme, cold climates, as it is enclosed in an attic or crawl space. It can be installed in any climate where septic or sewer vent odor exists and the roof vent filter needs to be hidden. **973-846-7817; www.industrialodorcontrol.com**



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The Dirty Bird provides an alternative to the standard septic vent required by many municipalities for new residential and commercial construction. It is an easy-to-install septic vent shaped like a birdbath. Meeting U.S. Environmental Protection Agency septic-venting regulations, it controls odors through a replaceable charcoal filter and vents gases through holes at the bottom of the pedestal so nothing enters the septic system. Fade-resistant (UV stabilized), lightweight and recyclable, it is available in granite, sandstone and terracotta colors. It is constructed of 100% low-density polyethylene and stainless hardware. It is 32 inches high with a basin width of 23 inches and footprint of 12 1/4 inches. **866-968-9668; www.thedirtybird.com** 



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PRODUCT SPOTLIGHT

Distribution box regulates effluent dispersal

By Tim Dobbins

When areas of the septic system receive more wastewater than others, they can become overloaded and clog prematurely. Premier Tech set out to design a system that optimizes distribution to help onsite systems reach their full potential life span.

“As we were deep in the development process of our own soil absorption system, we recognized that we

needed a way to optimize distribution to maximize our system’s performance and life span,” says Kyle Dierolf, product manager. “We had three objectives: make it easy to assemble, less costly to produce, and minimize its environmental impact.”

After going through several different versions during the research and development phase, the Premier Tech team arrived at a solution that combined dosing and distribution through simple physics. “The result is the Rewatec two-in-one distribution box system that sends measured doses of wastewater without any electromechanical parts,” says Dierolf.

As effluent accumulates in the unit, a floating plate rises. Once the unit reaches capacity, the floating plate begins to lower and effluent flushes through its central aperture into the distribution chamber. The floating plate stops at a preset level and prevents further effluent from entering the chamber.

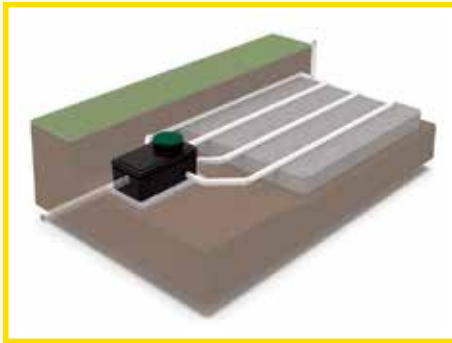
“The design allows individual doses to carry more velocity,” says Dierolf. “This pushes wastewater to reach the back of soil absorption system laterals as well as the front.”

The device is designed to be adjustable, catering to specific system parameters. The floating plate’s pre-set level is adjustable and the amount of effluent entering the distribution chamber can be dosed from 12 to 18 gallons. A single distribution box can have up to five outlets, and each outlet can be equipped with flow levelers.

Premier Tech designed the Rewatec dosing distribution box to be an alternative to boxes in which the dose and flow cannot be calibrated. It can be used in any residential or commercial system where wastewater has to be applied on a treatment surface, such as sand filters or drainfields.

“The Rewatec dosing distribution box is best used with any gravity-based septic system that benefits from optimizing distribution,” says Dierolf. “It also pairs perfectly with any combined treatment and dispersal system.”

Engineered to be light and easy to work with, its doses and the number of outlets are both adjustable, and its outlets can be equipped with flow levelers to further optimize dosing. The box measures 35 inches wide, 64 inches long and 24 inches high and is made using only plastic. 800-632-6356; www.premiertechaqua.com



Applied Heat Transfer joins SJE Rhombus as new rep

SJE Rhombus announced Applied Heat Transfer as its new manufacturers’ representative agency for metro New York and Long Island, New York. Established in 2009, Applied Heat Transfer’s sales team includes mechanical engineers with experience in the New York City HVAC market. In addition to SJE Rhombus, they represent several manufacturers, including Raypak, ThermaFlo, Sondex and Wilo.

“I like the fact that you can be diversified in the business and still be focused on the wastewater niche market. There are a lot of different things you can do and still be just septic and sewer guys.”

Kendall Unruh

Western Septic & Excavation

Buhl, Idaho



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