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## OLD SCHOOL, NEW SCHOOL

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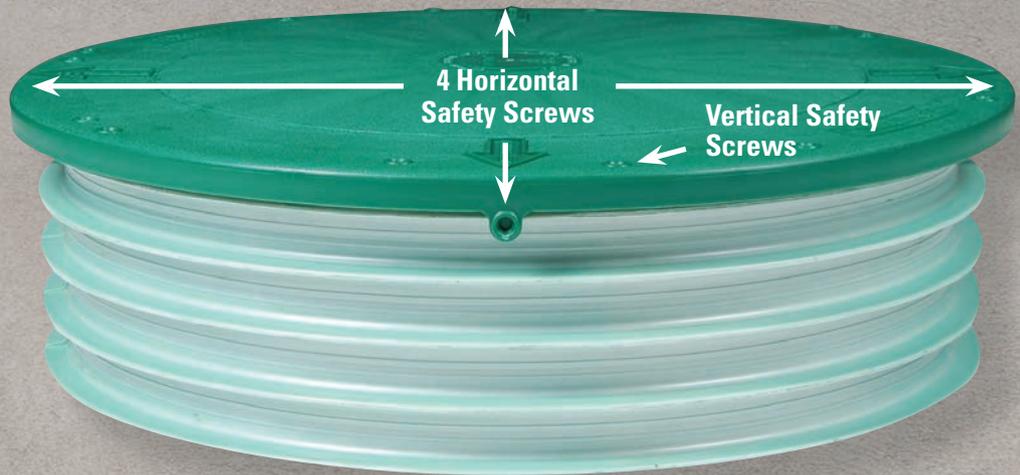
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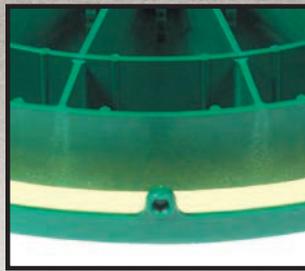
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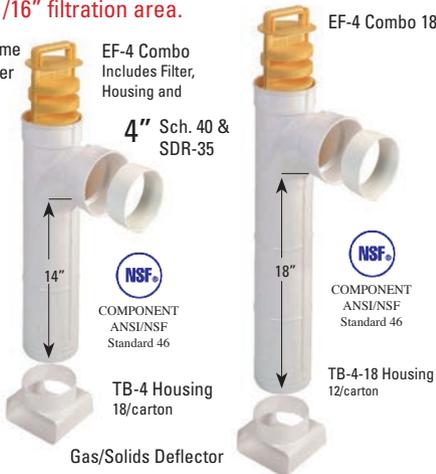


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**Old School, New School**  
 By Ted J. Rulseh

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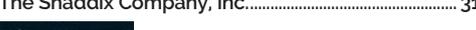
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**Jim Kneiszel**



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

# Innovation, Regulations and Training Will Move Installers Forward

Here's a grab bag of news and views to get important conversations started in the onsite wastewater community

It's the dawn of a new year and time to clean out the reporter's notebook. As I page through the reams of stories I didn't get to address in the last quarter of 2020, I'll choose a few topics for discussion moving forward. If you have anything to add about these quick takes, let me know at editor@onsiteinstaller.com. As always, I appreciate your commentary and insights over changes in the decentralized wastewater industry.

## TOUGHER INSPECTIONS IN WATERSHEDS

Environmental groups in South Carolina want to lobby state health officials for a say in revised septic system regulations. And their requested changes will help onsite installers down the road. According to a Live TV-5 News report out of Charleston, South Carolina, three groups are teaming up to advocate for tougher regulations to protect sensitive watershed areas.

"What we'd like to see is a robust inspection, maintenance and reporting program for septic tanks. We would also like to see DHEC (state Department of Health and Environmental Control) focusing its resources in the areas

and inspection requirements leads to failing systems and an unfounded feeling among the general public that decentralized wastewater treatment is somehow inferior to municipal sewer systems.

This is far from accurate. The effectiveness of any wastewater treatment choice, either septic systems or a municipal plant, depends on routine performance monitoring and maintenance when necessary. Municipal sewer systems have these important maintenance protocols in place. It's long past the time when septic systems face the same rigorous performance standards.

When sewer systems and septic systems are on a level playing field, they prove to be equally effective tools for wastewater treatment. In any situation, one or the other form of wastewater treatment will present the best choice.

## ADDRESSING CONCRETE CORROSION

A research university with campuses in Australia, Vietnam and Spain recently announced the development of a new concrete formulation that will eliminate the corrosion that impacts some sewer pipes and septic tanks. Researchers at RMIT University say it is an eco-friendly and zero-cement formulation. The news is interesting in light of many reports from pumpers and installers of corrosion in septic tanks thought to be caused by long-term exposure to hydrogen sulfide gas.

"The world's concrete sewage pipes have suffered durability issues for too long," said Rajeev Roychand, who leads the research team. "Until now, there was a large research gap in developing eco-friendly material to protect sewers from corrosion and fatbergs (buildups of fat, oils and grease). But we've created concrete that's protective, strong and environmental — the perfect trio."

Byproducts of the manufacturing industry are used in the cement-free concrete, including a composite of nano-silica, fly ash, slag and hydrated lime. Missing from the formula is the common Portland cement, said Roychand.

Roychand reported the new concrete will reduce corrosion in sewage applications by 96%. The research team is currently looking for manufacturers and governments to work with to produce the product. We'll stay tuned for future developments.

**The effectiveness of any wastewater treatment choice, either septic systems or a municipal plant, depends on regular performance monitoring and maintenance when necessary.**

where folks are most infected by bacteria pollution and that's in waterways that have documented problems with bacteria," said Andrew Wunderley, the Charleston Waterkeeper.

Wunderley said he, along with the Coastal Conservation League and the South Carolina Environmental Law Project, have concerns about poorly maintained septic systems in the state. They are circulating a petition concerning revised regulations.

In my regular talks with onsite installers, I see an industry-wide frustration over substandard system regulations. The pervasive lack of maintenance

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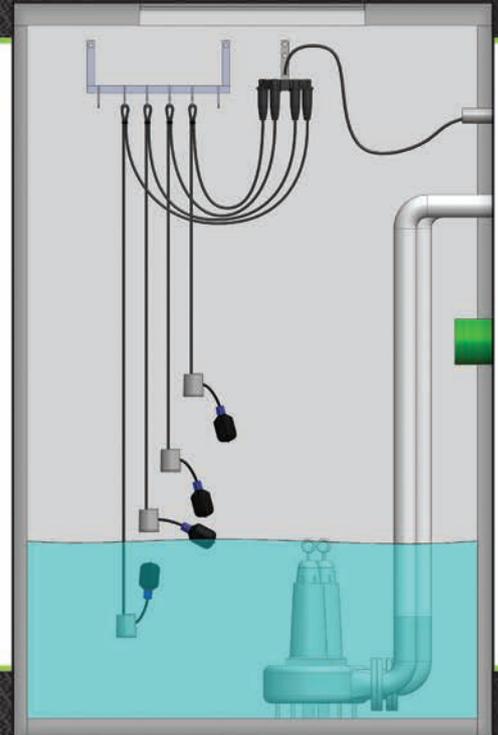
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## INDUSTRY PAY NUMBERS

A recent analysis of data from the American Community Survey on the growth in construction-related occupations came to an interesting conclusion: Driving wages up in a trade sector such as onsite installing requires more training and certifications to go to work. The website [buildzoom.com](http://buildzoom.com) reflected on construction specialties and worker pay and concluded that raising industry standards will raise wages.

“There appears to be a relationship between an occupation’s pay grade and the level of skill or technical expertise it requires. The highest-paying occupations often require specialized training, licenses or certifications to demonstrate an understanding of the trade and command a premium in the market,” [buildzoom](http://buildzoom.com) reported. It said occupations with lower barrier to entry, such as floor and drywall installers, painters and roofers, suffer with lower pay.

A two-year-old survey of employment and wages by the U.S. Bureau of Labor Statistics appeared to lump installer-related workers into the construction laborer category. It stated the mean hourly wage for workers who help with excavations and site preparation was \$19.40 per hour or \$40,350 per year. That number varied widely by state, with Illinois workers making a high average of \$28.83 per hour (\$59,960), while the same workers in Texas earned, on average, \$15.60 per hour (\$32,630).

The bottom line is installing companies looking to boost the proficiency of their crews through training and certification will also pay a premium to keep them on the job. In the long run you can assume better-trained workers will be more efficient, do a better job and improve on your reputation for quality workmanship.

## NAZI MESSAGES ON A SEPTIC TANK

A Florida installer company recently endured a nightmare public relations scenario for its business. A WINK-TV news report said a septic system inspector found Nazi swastika symbols painted on the side of septic tanks that had just gone in the ground in southwest Florida. The inspector reported recently finding three of the racist symbols painted on septic tanks, two of them traced to the same Naples, Florida, installing company.

A Jewish rabbi was outraged. “This is not a minor act. The swastika is a symbol of intense hate that connects with the Holocaust and the extermination of 6 million Jews and 5 million other individuals at the hands of the Nazis,” Rabbi Adam Miller said in the news report.

How could an installer company anticipate having to deal with this kind of a story and the backlash to follow? It’s inconceivable that an onsite worker would do something like this. The owner of the company said the employee who painted the swastikas was terminated immediately. □

## 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](mailto:editor@onsiteinstaller.com).

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## TOP 10

### Most Popular Articles

If you missed them, here's a chance to check out our most-read online articles from 2020. We covered everything from reasons for effluent filter plugging and septic maintenance tips to proper backfill and the effects of coffee and soda on a commercial system. Enjoy this look back at 2020.

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## STAY ALERT

### Electrical Hazards to Watch For

At any given time on a job site, installers may be in close proximity to dangerous voltage levels, so proper training and safety practices are required. Written procedures for dealing with electrical hazards must be part of a company's safety plan. This online article offers a review of electrical hazards during onsite work, and safety practices to review with your team.

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## Overheard Online

"When a company revolves around a handful of heroes, it can be demoralizing for the people who are not one of those heroes."

— *Why Good Employees Leave and What to Do About It*

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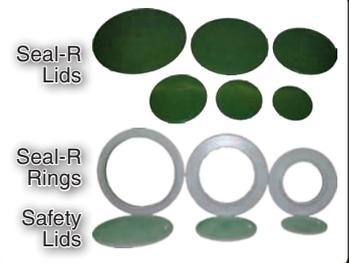
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# OLD SCHOOL, NEW SCHOOL



«Megan and Jake Careless prepare to place a Zoeller pump into a tank. (Photos by Tracy Singer)

Progressive regulations and training are changing the onsite business in Alberta. A new generation at Triple C Backhoe is embracing the trend.

By Ted J. Rulseh

**M**egan Careless can remember years ago when her father and grandfather used straw for septic system drainfield media.

She recalls when open discharges without drainfields were more common than trench-and-pipe systems. And when earning an installer license meant just three days of schooling.

The onsite world is different now, and Megan, her brother Jake Careless, and their father Clay Careless are on board with the changes. The three operate Triple C Backhoe Services in Leduc, Alberta, about 20 minutes south of Edmonton.

They specialize in onsite system installation, repair and inspection, but also do trenching for utilities in subdivisions, snow removal, grave digging and some landscaping. They're carrying on a family business started in 1988 by Megan and Jake's late grandfather (Jack), and later joined by their uncle Robert Careless and their dad.

## CYCLES TO SEPTICS

Jack Careless started in business in the early 1970s with a Honda motorcycle dealership. He started doing backhoe work on the side with a local contractor. "He ended up enjoying it," says Megan. In 1976, the Honda shop burned down. He rebuilt it in a new location, but the business never recovered, so he turned to backhoe work. That became the focus of the family enterprise, and work in the onsite sector began in earnest in the early 1990s.

"Jake started working with the company shortly after high school," says Megan, 29. "I worked a little bit when I was younger, and then I moved away." She went to school, became a journeyman

» Jake Careless guides Clay Careless, operating the Case backhoe, while excavating an old tank. (Photos by Tracy Singer)

» Megan and Clay Careless make repairs to the bucket of a Cat backhoe.



motorcycle mechanic, and worked for several years in shops in northern Alberta. When her grandfather died in 2019, she moved back home to join Triple C.

Megan took charge of replacing her grandfather as the company's license holder for system design and installation. To do so, she had to complete an intensive course required by the provincial Ministry of Municipal Affairs and presented by the Alberta Onsite Wastewater Management Association.

"When my grandpa took it, it was a three-day course and here's your ticket," she says. "That changed in 2018. Now it's a lot more in-depth. It's eight days, plus one field day. It's a soil sample day where they take you out and dig a couple of test pits and give you a rundown. You actually do a test on those pits."

Megan mostly runs the office but also helps with the fieldwork. Jake, 24, hauls the equipment and drives the company's 1990 Mack hauling truck and 1981 Mack gravel truck. Clay is the primary equipment operator. Miles Hammerschmidt lends a hand part time in the field. The earth-moving equipment inventory includes a 1999 Case 580 Super L rubber-tired backhoe, a 2010 Case 580 Super N Series 3 rubber-tired backhoe, 1989 Case 760 trencher and 1999 Case 1845C skid-steer.

## GOING WITH GROWTH

The greater Edmonton area is growing with abundant well-paid jobs in the oil industry. In Triple C's territory of Leduc County, large acreages are being subdivided into parcels of five acres and smaller. The company installs 15 to 20 new systems each summer, and there is ample work in inspecting, repairing and replacing tanks and systems, many installed by Jack Careless years ago.

"Usually, if an owner wants to subdivide a property they'll have to do an inspection for the county," Megan says. Inspections include checking system setbacks, checking the tank's condition, ensuring that the tank size is adequate for the home, and making sure the tank has a secure lid. Pumps, floats, high-water alarms and other components are also examined.



## Triple C Backhoe Services Leduc, Alberta, Canada

- Owner:** Elsie Careless
- Years in business:** 33
- Employees:** 4
- Service area:** Leduc County (one-hour radius)
- Services:** Onsite system installation, repair, inspection
- Affiliations:** Alberta Onsite Wastewater Management Association
- Facebook page:** [www.facebook.com/triplecbackhoe/](http://www.facebook.com/triplecbackhoe/)

Drainfield inspection is difficult in the absence of inspection ports, which are a relatively new development locally: "With the field, if there's not a lot of standing water, it should be OK."

Many existing systems are open discharge, and Triple C still installs them on lots of at least 10 acres, subject to substantial setback requirements. "Effluent drains from the house into a tank," says Megan. "Then it gets pumped to a discharge that comes out of the ground; the effluent falls onto the ground and dissipates into the soil."

"Before you can even choose to do an open discharge you have to do at least one test pit and take soil samples." Then the discharge has to be at least 50 meters (165 feet) from any private well, 100 meters (328 feet)

▼ Jake, Megan and Clay Careless disconnect the knuckle boom from a tank after guiding it in place.

►► Megan and Jake Careless spread bedding material for a concrete tank placement. The photos show proper use of benching and sloping to create a safe excavation for workers.



from a municipal well, 90 meters (295 feet) from a lake, stream or property line, and 45 meters (148 feet) from any building. Septic tanks have their own set of setbacks.

## MAKING IT MODERN

Today, Triple C's work increasingly includes conventional trench-and-pipe systems and the occasional mound. Soils in the service territory are generally high in sand and favorable for systems. In the past three years, heavy rain has tended to slow down progress on installations.

The permitting process is straightforward. Mounds and conventional drainfields require two test pits. Triple C team members use Munsell soil color charts to identify soil types, perform manual texturing and ribbon tests, and send spoil samples to the Element Materials Canada laboratory. After the soil-loading rate is determined, Megan creates the system design and submits it to the county health department for approval. A county staff member inspects the installation before backfilling.

For conventional systems, Triple C uses precast concrete septic tanks, typically 1,200 to 1,400 imperial gallons (1,440 to 1,680 U.S. gallons).

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“When my grandpa took (the licensing course), it was a three-day course and here's your ticket. That changed in 2018. Now it's a lot more in depth. It's eight days, plus one field day.”

**Megan Careless**

“You have to take into consideration the size of the home by bedrooms, and whether they have a garbage disposal or a big Jacuzzi tub,” says Megan. “There are a lot of variables when sizing a tank.”

Quick4 chambers (Infiltrator Water Technologies) are the drainfield media of choice. Triple C systems involve pumps from a variety of manufacturers; the conventional systems use pressure distribution.

Repairs and replacements account for roughly half of the company's business. Calls are commonly triggered by backups and pump failures. “Over time, the tank starts breaking down,” Megan says. “A chunk of concrete falls and then the pump sucks it up. That's usually the first sign — the pump is shot. Then we look down into the tank, and it's deteriorating or leaking. The retaining wall between the liquid side and the solid side of the tank is usually the first to go.

“When we do a pump replacement, sometimes we find little things that aren't correct that we change,” Megan says. “If they don't have a high-water alarm, that's a huge thing. It's a \$400 touch, but it's insurance that their tank isn't going to back up into your basement. A high-water alarm on a separate circuit with the pump is a provincial requirement, as is an effluent filter and a secure lid.”

## DIVERSIFICATION WINS

Triple C benefits from a good reputation built over decades and from close relationships with county regulators. The diversity of work also leads to new business. “We work with contractors who do water well

drilling,” Megan says. “Generally, if someone is building on acreage, they drill a well. We go in and trench the waterline. Usually they need a septic system as well, so we get spinoff work.”

Service and pricing help the company compete. “We are fair,” Megan says. “We’re not out to make millions. We work for a living. We care. We’re not a big company. It’s our family working for another family. We understand that people aren’t made of money.”

“We’re pretty much 24 hours. If there’s a problem with the system, you call and we’ll go out. It’s not a 9-to-5 kind of gig. There are times we’ll go out to a customer’s yard three, four or five times to double-check things, answer questions, or just have a look and make sure everything is operating correctly. We don’t charge for every time we drive out.”

Homeowner education is required under provincial regulations. At the end of the job, each customer receives a run-through about the system’s components and regular maintenance, along with a manual on the system specifications and an as-built drawing.

## SIX FEET UNDER

When Jack Careless bought his first used backhoe in 1976, the sale came with an interesting condition.

“The seller had a couple of contracts in the area to dig graves,” says Megan Careless, Jack’s granddaughter. “He said, ‘If you’re going to buy the backhoe, you’ve got to dig the graves as well.’”

Jack agreed, and grave digging has become an important part of the business now called Triple C Backhoe Services. The company is contracted with 15 cemeteries, all within about 30 miles of home base in Leduc, Alberta.

The company digs one grave per week on average, just handling the earthwork. Megan observes. “We open it up. At the funeral they’ll have a graveside service, and then about an hour or two later, we come and backfill.”

Sometimes they landscape the graves afterward; other times that is left to the cemetery caretaker. In more crowded cemeteries they often need to move headstones to make room for the new excavations and replace them afterward.

Of course grave digging knows no season; in winter they use a frost bucket on a backhoe to break the ground. Megan says, “Our winter rates go up because we’re pounding frost, and it’s harder on the equipment.”

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◀◀ From left, Jake, Megan, Elsie and Clay Careless pose with a photo of Elsie's husband, Jack, who started the business 33 years ago.

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“When we do a pump replacement, sometimes we find little things that aren't correct that we change. If they don't have a high-water alarm, that's a huge thing.”

**Megan Careless**

Until about two years ago, all of Triple C's business came by word of mouth. Now the company has a Facebook page and does some local advertising on Kijiji, an online Canadian classified ad site.

### BRANCHING OUT

Looking ahead, Megan would like to explore doing more landscaping work, since the area's new development creates demand and the company has most of the necessary equipment. “These people are a little more well off, and they all like their yards looking pretty fancy,” she says. “It's kind of neat work. You get to be creative, work with the customers and make their yards look pretty.”

She has looked into taking a college program to become certified as a landscaper for facilities such as golf courses and parks, but that would take three years and a great deal of time that right now she doesn't have. Individual landscaping courses are a more realistic option.

Meanwhile, Jake would like to venture into well drilling. “There is high demand for it in the area,” Megan says. “We're right there with the equipment for the waterline. It would be neat to get into it. The water table is shallow, and it's easy to drill wells in this area.”

Outside work hours, Megan and Jake return to their roots as motorcyclists. Each owns a dirt bike and Jake has a street bike as well — all three are Hondas. For a time, Megan was a mechanic for a couple of amateur motocross racers.

Mostly, the family business keeps them well occupied. Megan observes, “Some days are better than others. Grandma (Elsie) is still around and is still the sole owner of Triple C. Through the years, she did all the licensing, bookkeeping and taxes. She still helps quite a bit. If we need parts picked up and nobody else can go, she will.

“For her to see the company alive that my grandpa started thirty-some years ago, that's what we keep in mind. It's not about us. It's about the legacy.” ◻

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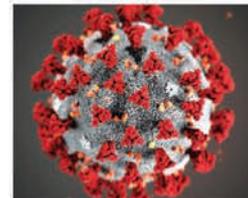


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# A Biomat Control Plan Will Give System Users Peace of Mind

From the tap and toilet to the drainfield, onsite professionals should properly manage wastewater flow to ensure system longevity

By Jim Anderson and Dave Gustafson

**W**e continually receive questions about the biomat and how to best control the formation to provide both treatment of septic tank effluent and maintain the Long-Term Acceptance Rate in systems with gravity distribution. To manage the biomat and systems most efficiently, the approach needs to encompass use and operation of the entire system.

It is not enough to simply say to maintain a BOD level in effluent exiting the septic tank to 170 mg/l or less and everything will be all right. While that number may be key, a lot can be done in all parts of the system to ensure it lasts for a long time.

Studies have shown that resting parts of the soil treatment system can have positive impacts on acceptance of sewage effluent.

**Rest periods of a few months results in increased infiltration rates by 70 to 280%.**

## REDUCE SOLIDS

Everything starts with the user inside the house and the water-use habits of the residents. As we have discussed before, BOD levels can be reduced by keeping solids out of the wastewater stream (not using a garbage disposal). Besides adding solids, water is added to the system to move those solids through the piping to the septic tank. Another kitchen-related problem is the addition of grease down the drain from cooking. It can be wiped off or decanted for composting or disposal in the garbage.

In addition, keeping the use of anti-bacterial soaps and cleaners to a minimum ensures the biology in the tank remains healthy and able to break down solids and reduce BOD. Bacteria in the septic tank can be negatively affected by anti-bacterial additions reducing treatment efficiency in the tank, which translates directly to an increase in BOD exiting the tank and contributing to faster biomat development and formation of a more resistant biomat.

The next obvious place to reduce solids and BOD from being delivered to the soil treatment part of the system is to have regular maintenance of the septic tank and any other sewage tanks in the treatment train. Pay attention

to development of and depth of sludge and floating scum and set maintenance intervals to maintain BOD levels in the effluent to less than 170 mg/l. Installing effluent screens, while not impacting BOD levels, prevent larger solids from moving downstream and plugging the infiltrative surface. Plugged screens act as an early warning to clean the tank.

If usage in the house is such the septic tank cannot adequately treat the raw sewage to reduce BOD levels, additional pretreatment can be added. Primary ways this can be done is through addition of a media filter (sand, peat, fabric) or an aerobic treatment unit. The selection of a pretreatment device depends on usage in terms of total flow, frequency of flows and timing of peak flows. These pretreatment devices can reduce BOD levels in effluent significantly slowing biomat development.

## MANAGE BIOMAT

In the soil treatment component, biomat can be managed in a variety of ways depending on system configuration, size, and how effluent moves between parts of the system. Using trenches to provide the soil treatment area instead of a bed provides more soil area in contact with sewage effluent to help control biomat development. Trenches afford an easier opportunity to rest parts of the system out of use for periods of time to manage biomat accumulation. This is more to do in bed systems without digging up parts of the system.

Several studies have shown that resting parts of the soil treatment system can have positive impacts on acceptance of sewage effluent. Rest periods of a few months results in increased infiltration rates by 70 to 280%. While this always needs to be balanced with the treatment aspects of the soil being used, it indicates we can control biomat development through system management and increase system longevity.

Our preferred method of managing trenches is to use drop boxes to distribute effluent between trenches. This is called sequential distribution, where effluent does not move out of one trench until the trench is operating at capacity. This distribution mechanism allows taking a trench offline by simply capping off the outlet pipe from the drop box to the trench. It allows effluent to bypass the trench and move onto the next without disturbing any other parts of the system.

## DUAL DRAINFIELD

Drop boxes and inspection ports in each trench provide access points to evaluate whether the trench is being used and the level of ponding in the

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trench, indicating biomat development. It allows the homeowner or system professional to observe how each trench is doing and to be able to switch the use when needed.

There are options to manage or shut of parts of the system. One is to have a dual drainfield setup, where one-half of the system is used and then switched periodically to the other with use of a switching device or valve. This is particularly effective for replacing or adding to existing systems that are struggling due to biomat development.

Controlling biomat development by managing the total system from the user through the soil treatment area can pay dividends to the client by extending system life and providing them with peace of mind that the system is ready for use. □



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## SYSTEM PROFILE



▼ With the trenches dug, the Dig-It crew begins laying lines of Infiltrator's Advanced Treatment Leachfield on a bed of sand. Jim Sanders, left, sets the lines while Dervin Witmer runs the excavator. (Photos courtesy Dervin Witmer)

# The Shoehorn System

Dig-It Excavating used Infiltrator Advanced Treatment Leachfield technology to cope with a small-lot replacement system

By David Steinkraus

**T**he system in the Indiana subdivision failed due to nothing more than old age and heavy soil. A couple of the old trenches were plugged, the result of root intrusions from the extensive landscaping around the house.

Dervin Witmer, owner of Dig-It Excavating of Cassopolis, Michigan, started looking for solutions. The job was located north of South Bend, Indiana, and only 1,000 feet from the state line, but this gave Dig-It the opportunity to use the Infiltrator Water Technologies Advanced Treatment Leachfield, a technology recently approved by St. Joseph County, Indiana.

The lot was 118 feet by 155 feet. A 15-foot drainage and utility easement along the rear, and a 7 1/2-foot easement along one side reduced the available space for a drainfield, as did a well setback on a neighbor's property and the setback for another well next to the street. The home used most of the space on this lot. "He had mature landscaping all around there, one little strip of grass in the backyard," Witmer says.



▲ There was little room to maneuver at the Dig-It Excavating job in northern Indiana. The Kenworth T880 was eased in next to the house to drop loads of fill sand, and the Caterpillar 299 track loader distributed it.



▲ A SlatTrax system of recycled plastic panels protected the driveway from damage at the Indiana project and also minimized compaction of the lawn when equipment was moved to the backyard job site, also when a big Kenworth T880 brought in loads of sand and fill.

## System Profile

<b>Location:</b>	Granger, Indiana
<b>Facility served:</b>	Single-family home
<b>Designer:</b>	Stuart Meade, Meade Septic Design, Goshen, Indiana
<b>Installer:</b>	Dig-It Excavating Inc., Cassopolis, Michigan
<b>Type of system:</b>	Septic tank with Infiltrator Advanced Treatment Leachfield
<b>Site conditions:</b>	Loamy clay and some gravel
<b>Hydraulic capacity:</b>	600 gpd

The customers were a man and woman, longtime real estate brokers planning to downsize to a smaller home. The couple had been conservative with their water use — which saved them from running into immediate trouble with the old onsite system — but they wanted a new system so a family of four or five could buy their house. Under county rules, they would have needed a 3- or 4-foot-tall mound system with long tapers, and that was not possible in the space available, Witmer says. The owners also did some research of their own and wanted to use an alternative technology.

### Synthetic aggregate

The existing tank under the patio was in good condition and of suitable size, so that was reused. (The property was so tight, Witmer says, that a replacement tank could only have been a plastic model maneuvered into position by hand.) Only the bad drainfield was replaced.

About 6 feet separates the old tank from the edge of the new drainfield.

The ATL field consists of 280 linear feet divided into four sections set about 2 feet on center. Each piece of ATL consists of a 4-inch perforated pipe surrounded by a layer of coarse synthetic aggregate and a layer of fine synthetic aggregate, with geotextile fabric wrapping each layer.

ATL pipes sit on top of 1 foot of No. 23 sand. Another foot of sand surrounds the pipes. Cover is about a foot of fill soil. Water flows through the system by gravity.

Technicians from Dig-It depended on two pieces of equipment: a new Cat 310 excavator and a Cat 299 track loader. One of the company's Kenworth T880s was used to bring in the 60 to 80 yards of sand and backfill.

The excavator is less than two years old and has an engcon EC209 Tiltrotator, an attachment that rotates buckets and other tools 360 degrees and to a 45-degree angle. "That makes it really nice for digging in tight areas, and improves efficiency when installing systems" Witmer says.

A laser catcher on the excavator integrates with Trimble Earthworks software to provide precise digging and cutting.

The excavator did most of the cutting, including ripping out the old drainfield of stone and pipe. There were roots all through it, Witmer says.

## SYSTEM PROFILE



◀ As Joshua Sanders, left and Jim Sanders, second from left, check depths, Dervin Witmer uses the Cat 310 excavator to drop the first loads of fill sand. Because of the tight working space, the excavator was used for initial filling until the sand depth was great enough to support a track loader.

▼ With the job in the ground, the Dig-It Excavating technicians used their Caterpillar 299 track loader to bring the last loads of fill to return the job site to grade.



“He had mature landscaping all around there, one little strip of grass in the backyard ... **We like a job with creativity and that makes you think.**”

**Dervin Witmer**

Witmer — along with technicians Joshua Sanders and Jim Sanders — dug the new drainfield trenches slightly larger than needed in order to add extra washed sand around the edges. The larger area allows for a wider dispersal area and the coarse washed sand should help discourage roots from invading the new drainfield, Witmer says.

### Protecting the earth

The small working space and need to protect landscaping and a brick-paved driveway created the biggest challenges.

Getting the excavator and track loader up from the street was done with a SlatTrax system. The modular slabs of recycled plastic spread the weight of equipment, Witmer says. In the backyard was a small strip of irrigated sod that equipment had to cross to reach the job site. “It was a little soft, and we did very little compaction on it when we had the mats down,” he says. Even the T880 did minimal damage when it moved loads across the SlatTrax.

The other challenge was staging material. Technicians covered a patio with tarps and on them piled as much material from the excavation as possible. To minimize the need for holding excavated soil on the site where

there was minimal room, the crew started installing at the end of the drainfield farthest from the driveway. The Kenworth dump truck would bring in a load of sand for bedding the ATL, and the crew would load the empty truck with extra spoils to be hauled away.

When the job was done, Dig-It did a final grade, and the owners’ landscaper handled the restoration, seeding, trimming and resetting patio pavers.

Also, the crew worked in stages. The excavator did the digging and used its long reach for the first part of sand filling. Once the sand depth was great enough to allow the loader to move around, the crew parked the excavator and used the loader to move material.

“We liked that job,” Witmer says. “We like a job with creativity and that makes you think.” ◻

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# Michigan Infrastructure Package Includes \$35 Million for Septic Replacement Loans

By David Steinkraus

Five years after contaminated water in Flint became a national news story, Michigan's governor announced a huge infrastructure bill to address water quality on several levels.

With a combination of federal money, borrowing and a one-time appropriation, the state will invest \$500 million in water infrastructure. Of that amount, \$35 million will be marked for low-interest loans to homeowners and communities to replace or eliminate failing onsite systems, news reports said. About 30% of Michigan homes use onsite systems.

Among other expenditures, the project would also spend \$207 million on work such as replacing lead service lines in disadvantaged communities and addressing PFAS chemicals. (PFAS is the abbreviation for per- and polyfluoroalkyl substances, a family of chemicals produced for decades and used in products such as firefighting foam for airports and military bases.)

The variety of funding sources means the work can be done without a tax increase, Gov. Gretchen Whitmer said in a statement.

The project will need approval of the state's Republican-controlled legislature, and one legislator already expressed support. "Having access to quality water is a fundamental, basic need that every Michigan family should have the right to," said state Sen. Rick Outman, R-Six Lakes. He said he looks forward to seeing details of the proposal.

The Michigan League of Conservation Voters and Michigan Agri-Business Association also expressed support.

## New York

The Suffolk County Legislature unanimously approved a bill to require advanced onsite treatment for many home and commercial installations.

The legislation would take effect in July, and it is the latest action in the county to reduce nitrogen pollution of its near-shore waters. Suffolk County occupies the eastern tip of Long Island and includes the wealthy Hamptons communities. Cesspools were the treatment system of choice for decades, and the county has thousands in place.

Republicans concerned about the cost for homeowners stalled the bill for about a month, reported *Newsday*. The bill was amended so it applies to fewer types of renovations. It was also amended to apply only to home expansions that create more than five bedrooms and increase the building's footprint. Originally the bill required advanced treatment if the number of bedrooms in a home increased.

Another amendment exempted construction within a sewer district because of concerns that residents would spend thousands on an advanced onsite system that would have to be abandoned when municipal sewer becomes available.

In total the county is planning a 50-year, \$4 billion program to replace cesspools and old septic systems.

\* \* \*

The town of Dresden may follow other municipalities around Lake George by requiring an onsite system inspection before any transfer of property. A citizen addressing the town board in September said she gathered more than 200 signatures from people who are interested.

Communities around Lake George, in the southeastern corner of the state's Adirondack Park, have enacted similar ordinances. Their intent is to prevent pollution of the lake by failing onsite systems.

\* \* \*

After about two years of mandatory onsite inspections, a Queensbury official recently noted the success of the rule and the need for it.

"Almost 80% of those systems being inspected needed some attention," Supervisor John Strough told *The Post-Star* of Glens Falls. "For most of them, it was relatively small adjustment, but it improved the system."

Like some other communities around Lake George, Queensbury adopted a rule requiring an onsite system inspection before the transfer of property.

Problems found, said Dave Hatin, director of building and codes, include baffles that fell off and distribution boxes that are not level, which puts too much stress on one part of a system.

## Minnesota

Mower County, in the southeastern corner of the state and next to Iowa, is on track for a record number of onsite system installations in 2020. Officials are expecting to have 120 systems in the ground, said news reports.

That would mean no carryover of projects to 2021, said Angela Lipelt, the county's environmental services supervisor. She said a strong real estate market, and the accompanying review of systems in the ground, was responsible for some of those jobs. The number also reflects the county's long-running initiative to achieve septic system compliance. Another factor was wet weather last year that delayed construction work.

## Massachusetts

An interest group announced its intent to sue two towns and the state in order to stop septic system pollution in the waters around Cape Cod. The Conservation Law Foundation said it will sue the towns of Barnstable and Mashpee, and the Massachusetts Department of Environmental Protection.

"These three entities have utterly failed to protect Cape Cod's waters," said Christopher Kilian, vice president of strategic litigation at the

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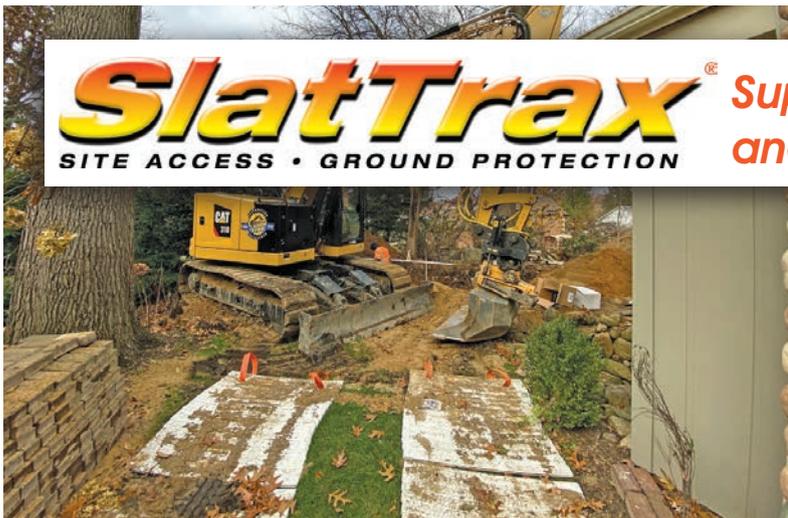


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foundation, according to the *Cape Cod Times* in Hyannis, Massachusetts. "Until they get this problem under control, the installation of new systems and the inspection of properties that rely on septic inspections must be halted."

He said the foundation wants the moratorium in place until there is a remediation plan with implementation targets. The foundation is concerned about toxic algae blooms fed by nitrogen and phosphorus from septic systems. Kilian said the suit will also ask for an order commanding the state to develop training materials and a standard policy for approving onsite system inspectors.

### South Carolina

State health officials are revising onsite system regulations and environmental groups have an idea of what the revisions should include.

"What we'd like to see is a robust inspection, maintenance, and reporting program for septic tanks," said Andrew Wunderley, the Charleston Waterkeeper.

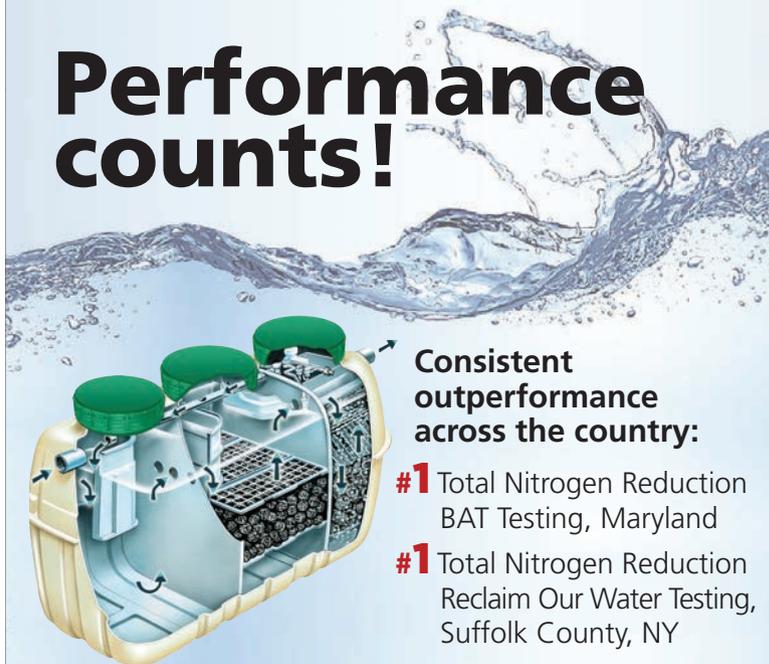
Once tanks are in the ground, there are no major requirements for maintenance or operation, he said, according to WCSC News of Charleston.

The Coastal Conservation League and the South Carolina Environmental Law Project are joining Charleston Waterkeeper in asking for changes to onsite rules.

Wunderley said the groups would also like the state to focus resources on areas where people are most affected by bacterial pollution. □

"Rules and Regs" is a monthly feature in *Onsite Installer*<sup>™</sup>. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to [editor@onsiteinstaller.com](mailto:editor@onsiteinstaller.com).

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# We Need to Educate Rural Customers and Promote the Onsite Industry

Indiana installer Andrew McAfee networks with other professionals, constructs a system in Haiti and adds a pumping service

Compiled by Betty Dageforde

*In States 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 Indiana Onsite Wastewater Professionals Association.*



## **Andrew McAfee**

**owner**

**Business:** L.A. Brown Inc., Bluffton, Indiana

**Age:** 30

**Services we offer:** We're most known for installing septic systems and working on sewers. We also do residential drainage work and trench footers for buildings.

**Years in the industry:** I started working for L.A., the guy who started this company, when I was 16. In 2019 I bought the business from him.

### **Association involvement:**

I've been in the Indiana Onsite Wastewater Professionals Association (IOWPA) about four years. I'm currently on the board of directors. After L.A. sold me the business, he wrote an article for the spring 2019 issue of the association's newsletter about how it was for him going from being employer to employee, and then in the next issue I wrote about how it went for me doing the opposite.

### **Benefits of belonging to the association:**

The biggest thing is the installer certification. Most of the county health departments either recognize that certification or require it. Having that certification means I don't have to take local tests or register with all the different counties. I just send them my certificate. Also valuable is the networking we get in the association.

### **Biggest issue facing your association right now:**

We have about 1,000 members and 75% are installers and pumpers. The rest are regulators, a few soil scientists and a few people from academia. Having an organization that includes installers/pumpers, inspectors and regulators creates some unique challenges and the need for a balance. Installers and pumpers sometimes feel the State Department of Health holds more power in the organization and some would like this to be an organization just for contractors. But contractors have a lot going on just to keep their businesses running and don't always have the time or desire to do the work that's required in our organization — serving on committees, planning the conference, etc.

Many of those jobs are being done by people from the local health departments and the State Department of Health. So it's a little bit of a balancing act between the segments of our membership. We're also in a transition period with the board of directors and management, with some people leaving, some people coming in, so it's a challenging time. And we have other pressing issues, like working on our website (which seriously needs an overhaul) and running the day-to-day business.

### **Our crew includes:**

L.A. is semiretired now but helps out. There's also my brother-in-law Jacob Gerber and my dad Sam McAfee. We're mentoring a young kid, Micah Gilly, to hopefully work for us one day. And we would be lost without Cathy Noble, our bookkeeper. Here in Bluffton we work with about five other excavation companies, each with their own niche. If somebody needs something — stone hauled, a machine to borrow, help on a job — we call on each other.

### **Typical day on the job:**

I start the day reading and responding to emails. Then I get the equipment, trucks and materials ready. I get to a job site and do everything from laying out what we need to do to running the machines to shoveling. I take phone calls in between and meet with customers in the evening.

continued >>

# On Par with Precast

## Golf Course Chooses Precast for New Treatment System



Photos courtesy of Unit Precast

**Challenge:** When it came time to upgrade the septic system at a Canadian golf course, ownership needed to replace it during a short construction window following the end of play for the season but before the frigid Canadian winter started. Crews had to work within a small footprint to avoid disturbing the surrounding greens and a nearby lake.

**Solution:** The contractor chose a precast concrete solution that was designed to treat nearly 8,500 gallons of wastewater per day. The system features eight tanks, which were manufactured in sections to make delivery and installation easier for the contractor. The project was finished in just more than a month, thanks to precast concrete's local availability and hassle-free installation.

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**PRECAST PROUD**



After a full day's work, I go home and spend time with the family and maybe do some paperwork.

### **The job I'll never forget:**

A small town upgraded its wastewater treatment plant. A 6-inch line fed into a 15,000-gallon settling tank. During construction, they put in a test plug to bypass that line so they wouldn't get the water in there. The ball went flat and went down the pipe towards the settling tank. On the outside of the tank it turns to a 4-inch pipe. So there's a 6-inch plug up against this 4-inch pipe. All the companies on the job talked about it at lunch for several days, brainstorming how to get it out. We ended up just having to reach back in there and cut it out using a utility knife, a drill with a long bit and a pair of pliers. The worst thing was that it had many thousands of gallons of water behind it. It was back in there just far enough to where it was up to our shoulders so all that water was spraying back at us while we were working. It took about two and a half hours.

### **My favorite piece of equipment:**

Just a good old shovel. But not just any shovel — a particular shovel. When I trained on the job, we never had the shovels you buy at the hardware store. The heads are way too big. We have heavy clay dirt in our area and you'd have to be a man-and-a-half to run one of those shovels. So we have the smaller ones. It's a Jackson J-250. The head size is zero, two sizes smaller than the hardware store models. I just really enjoy shoveling when I need to.

### **Most challenging site I've worked on:**

We installed a septic system in Haiti. The Loving Shepherd Ministry in Bluffton, which does a lot of mission work there, was building a vocational school and wanted to do a septic system. There are no regulations at all in Haiti. Most people just let the sewage run in the street and over into the ocean. They wanted to set an example and be environmentally conscious. We helped them with the design, the material list, the sizing, we donated material, and got some of our suppliers to do the same. They sent the material to Haiti in a shipping container, then a few months later I went down there with a couple friends.

The job site was about a four-hour drive from the airport in Port-au-Prince. It was a very challenging site. There was a big wall, like a barrier fence, around the school. We had to get a pipe underneath the wall into their septic tank — which they were using like a privy with six holes for girls, six holes for boys. We had to get the pipe through the block wall and then over to the field. There were plenty of shovels but no backhoes, hammer drills, or electricity, so it was all manual labor. And it was very hot down there. But there was a good group of locals that worked on it with us and we got it done.

### **Oops, I wish I could take this one back:**

It's embarrassing but a while back we had to set a plastic septic tank three times because it floated out. We set it, backfilled it, but obviously didn't put enough water in there for counter buoyancy. It rained and it floated up out of the ground. We reset it two more times. We had put stone

around it and then the stone gets mixed in with the dirt and there's water in the hole and then it's mud. It's a nightmare. Now we put water in every one of them, it doesn't matter.

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

We were asked if we could move a cinder block septic tank that was in the ground.

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

We are required to backfill perimeter drains with stone. We have some systems that we're putting just as much stone in the perimeter drain as in the leach field fingers and we just think that's kind of crazy. The soil scientists say putting stone in the trench is worse than just putting dirt back in but the state says it's needed to act as a curtain drain. So I'd like to see some adjustment on that rule. It is needed in some areas but not on everything. Another thing — we're not allowed to put any pumps in perimeter drains, they have to be gravity. So if there's a site you can't get a natural gravity drain to, you can't put a septic system in. If they would allow pumps or pump assisted, just like a sump pump on a house, it would give us a lot more options.

### **Best piece of small business advice I've heard:**

A friend recommended we raise our rates a little bit every year, rather than a lot every few years. If you wait too long, then you're like, "Man, am I going to raise my rates that much?" or, "Everybody is so much higher than us." It's better to just keep a steady increase.

### **Planning for the future:**

We just got a vacuum truck to start offering pumping. My dad retired from his city job and wanted something to do.

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

I've worked for the railroad, I've done welding and I've been in the military (I'm currently in the Air National Guard), so I'd probably be doing one of those or something in construction. I've always wanted to operate a tunnel-boring machine.

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

I hope to see rural homeowner attitudes change. We're in an agricultural area and farmers complain about having to put in these "stupid septic systems that don't work anyway, and what was wrong with the old tank-to-tile that goes to the ditch." They see it more as government telling them what to do than something that will help keep the water of the state and the country clean. □

### **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](mailto:editor@onsiteinstaller.com).

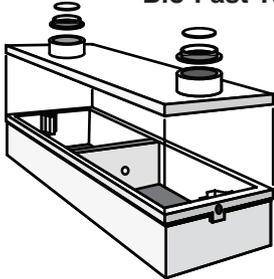
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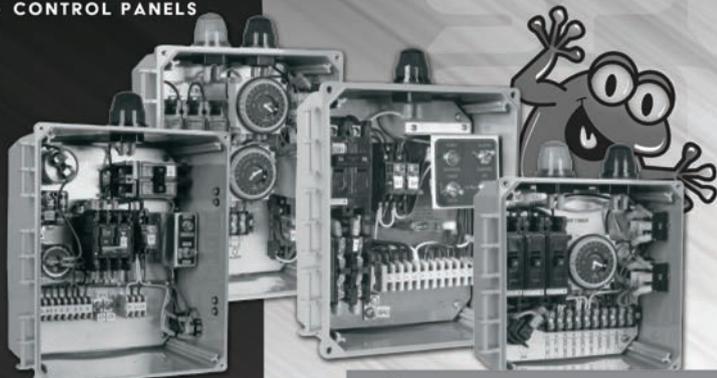
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# Drainfield Media and Design

By Craig Mandli

## DRAINFIELD COMPONENTS

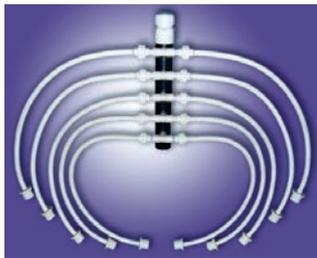
### Advanced Drainage Systems' Arc Leaching Chambers

Advanced Drainage Systems Arc Leaching Chambers provide a structural design to handle any conventional leachfield system challenge without sacrificing performance. Built to accommodate gravity-fed and pressure-dose systems, the sturdy, lightweight polyethylene plastic units combine maximized infiltrative surface area and storage capacity. This allows for increased effluent dispersal performance, improved structural integrity and increased load-bearing capability. They come in five sizes. Built in 5-foot lengths, they have a 20-degree joint that is suitable for either straight or contoured septic leachfield applications. The lock-and-drop joint provides a secure connection during installation and backfill. To assist in job site flexibility, inspection vent ports are on each chamber with an easy-to-remove knockout. A side port coupler snaps into place to allow side entry at any joint throughout the trench line. 800-821-6710; [www.ads-pipe.com](http://www.ads-pipe.com)



### Clarus Environmental Spider Valve

The Spider Valve assembly from Clarus Environmental ensures appropriate filtered effluent distribution when regulations require pressurized splitting or when small lots require lateral lines of unequal length. Combined with a pump, customizable orifices within the manifold prevent individual laterals from receiving more than their share of total flow. A convenient sizing program is available to allow customization for any project. It is available in models serving up to 10 laterals. Each assembly includes 5/32-inch predrilled washers and a union for each washer. Unions allow washers to be removed for cleaning and maintenance. It comes with 3 feet of 1/2-inch PVC flexible pipe on each discharge for easy assembly. It mounts in a 24-inch-diameter access riser. 800-928-7867; [www.clarusenvironmental.com](http://www.clarusenvironmental.com)



### EZ Treat Recirculation Sand/Media Filter System

E-Z Treat recirculating synthetic media filter systems are designed to create a suitable setting for bacterial growth to flourish. They are manufactured to treat sewage across multiple applications and for flows of 100 to 100,000 gpd. The system uses natural biological processes to break down waste. When septic-treated effluent first enters the recirculating chamber, it is dosed passively through an active film matrix. Through a series of bypass valves and recirculation pumps, the effluent is continuously circulated through the media, where it can exit through a bypass valve and flow into a gravity drainfield or into a pump chamber for dispersal options. 866-753-4770; [www.eztreat.net](http://www.eztreat.net)



### Geomatrix Systems SoilAir

SoilAir from Geomatrix Systems intermittently aerates the drainfield/leachfield and surrounding soils rather than constantly aerating wastewater in a tank. This process allows rapid rejuvenation of failed septic systems, extends the life span of new leachfields and enhances treatment, according to the maker. Systems can serve single-family and multifamily homes, as well as challenging and high-strength waste streams found at restaurants, hotels, marinas, laundromats, health care facilities, grocery stores, food-processing facilities and convenience stores. 888-764-5247; [www.soilair.com](http://www.soilair.com)



### Sim/Tech Filter orifice shields

Orifice shields from Sim/Tech Filter are designed to prevent drain media, such as drain stone, from blocking discharge holes, promoting even distribution of effluent in pressurized systems. The shields have a sturdy design that keeps them firmly in place after snapping them on the laterals, according to the maker. The large amount of open area between the pipe and shield allows for easy placement over the holes and reduces media clogging by debris. The enclosed design has a large amount of open area, but all openings are small enough to prevent media from entering the shield. Two styles are available — for top-discharge distribution holes and bottom-discharge holes. Shields are available to fit 3/4-, 1-, 1 1/4-, 1 1/2-, 2- or 3-inch pipe. 888-999-3290; [www.simtechfilter.com](http://www.simtechfilter.com)



## VENT PIPE FILTERS

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The Poly-Air activated carbon roof vent from Polylok is designed to help remove offensive odors as they come out of the roof vent from hydrogen sulfide, for example. The 6-inch unit offers 5 pounds of activated carbon, while smaller units offer 1 pound. 877-765-9565; [www.polylok.com](http://www.polylok.com)



### Simple Solutions Distributing WVI Inline



The WVI Inline activated carbon filter from Simple Solutions Distributing is installed in an attic or crawl space inline of existing vents to remove septic odor. The filter comes in 4- and 6-inch sizes, with the smaller able to be bushed down to 1.5-, 2- and 3-inch sizes. It comes with 2 pounds of Sulforsorb Plus

activated carbon, which is poured into the 2-inch fill port. The unit is equipped to accept an optional screw-in saturation indicator that changes color to indicate when carbon needs to be changed. 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](http://www.industrialodorcontrol.com)



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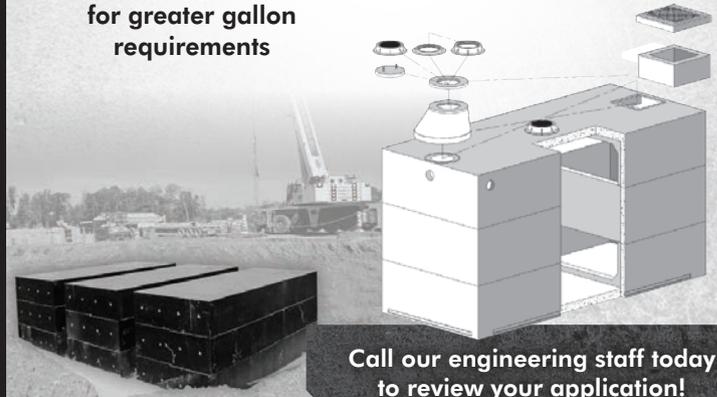
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# Drainfield Media and Design

By Craig Mandli

## Modules enable drainfield placement on undersized property



**Problem:** The owners of a three-bedroom lake home in Wisconsin utilized a holding tank and wanted to have a drainfield installed. The wooded property had limited space for a septic system due to multiple setbacks, including a well located at the side of the house, an S-curved driveway and the lake behind the house.

**Solution:** H&H Construction designed and installed a pump-to-gravity system that navigated through the wooded area. The installation included adding a 660-gallon pump chamber in series following the existing 1,000-gallon septic tank, with effluent pumped to the drainfield. A 77-by-6-foot trench was constructed to follow the setback from the curved driveway. The drainfield consists of a base of ASTM C33 sand and 14 Eljen GSF (Geotextile Sand Filter) B43 modules. The pipe on top of the GSF modules was connected using elbow fittings.

**Result:** The homeowners were able to stop costly pump-and-haul services by having a code-compliant drainfield. The Eljen GSF system ensures effluent is treated to secondary treatment standards before reaching the groundwater and lake. 800-444-1359; [www.eljen.com](http://www.eljen.com)

## Advanced treatment leachfield allows early spring installation



**Problem:** A cost-effective replacement septic system was needed for a two-bedroom house in New York State. The home was on 0.6 acres with a collapsing, existing metal septic tank located under a deck and a stone and pipe leachfield approximately 30 feet from an existing shallow well. The shallow well and other existing structures limited available space for a septic system. The owner wanted to continue using the well, which tested clean of any fecal coliform, because new wells in the area yield poor water quality with high iron and sulfur content. The system had to meet township and New York state standards including a minimum separation distance of 45 feet from the existing shallow well to the leachfield.

**Solution:** An Infiltrator ATL system was selected and installed in 21 inches of C-33 sand. The system's small footprint, at 35 feet per lateral, enabled the maximization of separation distance from the well. A lightweight IM-1060 septic tank with 12-inch snaplock riser was easily transported and installed in muddy April conditions. The passive system has no moving parts and requires no power to operate.

**Result:** The project was completed in three days. The light weight of the installed products and easy mobility of the materials allowed for an early Spring project completion extending a limited construction season. 800-221-4436; [www.infiltratorwater.com](http://www.infiltratorwater.com)

## System solves replacement challenge for extended-stay motel



**Problem:** The Riverside Inn in Maine experienced abnormally high solids buildup requiring frequent maintenance, and sought replacement of its old, concrete-chambered septic system. A new design would enable the existing system to remain operational during construction to accommodate long-term tenants at the facility. With soils only draining at negative 6 inches to the seasonal water table, the new system design required state of Maine approval.

**Solution:** The selected **Presby Enviro-Septic** system design handles the 1,720-gpd flow from the 16-unit motel. The system includes two 1,500-gallon septic tanks with a Presby Maze installed in one tank to further trap suspended solids and provide increased bacterial breakdown. During ground preparation for the replacement system, 3 feet of silty clay contributing to the perched water table was removed. The system was installed in two phases. Approximately 2 feet of clean sandy loam fill was placed below the proposed disposal system, and once the first section of the system was installed and inspected, the existing disposal system was disconnected. Then, the new 1,500-gallon septic tank with the Presby Maze and a new pump station was installed and connected to the replacement disposal system. Once complete and functional, the second section of the system was completed, connected, and loamed and seeded as required by code.

**Result:** Kathy-Rae Emmi of Septic Systems of Maine reports that the new disposal system is functioning as designed with no signs of stress or indication of breakout. 800-473-5298; [www.presbyeco.com](http://www.presbyeco.com) □

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334-396-3434

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Recycling Association;  
www.azowra.org; 928-443-0333

## ARKANSAS

Arkansas Onsite  
Wastewater Association;  
www.arkowa.com

## CALIFORNIA

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

## COLORADO

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

## CONNECTICUT

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

## DELAWARE

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

## FLORIDA

Florida Onsite  
Wastewater Association;  
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## GEORGIA

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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

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## KANSAS

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

## MAINE

Maine Association  
of Site Evaluators;  
www.maine.com

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

## MARYLAND

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

## MASSACHUSETTS

Yankee Onsite  
Wastewater Association;  
www.maowp.org; 781-939-5710

## 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 HAMPSHIRE

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

Granite State Designers and  
Installers Association;  
www.gsdia.org; 603-228-1231

## NEW MEXICO

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

## NEW YORK

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

## NORTH CAROLINA

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

North Carolina  
Portable Toilet Group;  
www.ncportabletoiletgroup.org;  
252-249-1097

North Carolina Pumper Group;  
www.ncpumpergroup.org;  
252-249-1097

## 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](http://www.pa-seo.org); 717-761-8648

Pennsylvania Onsite Wastewater Recycling Association; [www.powra.org](http://www.powra.org)

Pennsylvania Septage Management Association; [www.psmna.net](http://www.psmna.net); 717-763-7762

## TENNESSEE

Tennessee Onsite Wastewater Association; [www.tnonsite.org](http://www.tnonsite.org)

## TEXAS

Texas On-Site Wastewater Association; [www.txowa.org](http://www.txowa.org); 409-718-0645

Education 4 Onsite Wastewater Management; [www.e4owm.com](http://www.e4owm.com); 713-774-6694

## VIRGINIA

Virginia Onsite Wastewater Recycling Association; [www.vowra.org](http://www.vowra.org); 540-377-9830

## WASHINGTON

Washington On-Site Sewage Association; [www.wossa.org](http://www.wossa.org); 253-770-6594

## WISCONSIN

Wisconsin Onsite Water Recycling Association; [www.wowra.com](http://www.wowra.com); 888-782-6815

Wisconsin Liquid Waste Carriers Association; [www.wlwca.com](http://www.wlwca.com); 888-782-6815

## NATIONAL

Water Environment Federation; [www.wef.org](http://www.wef.org); 800-666-0206

National Onsite Wastewater Recycling Association; [www.nowra.org](http://www.nowra.org); 800-966-2942

National Association of Wastewater Technicians; [www.nawt.org](http://www.nawt.org); 800-236-6298

## CANADA ALBERTA

Alberta Onsite Wastewater Management Association; [www.aowma.com](http://www.aowma.com); 877-489-7471

## BRITISH COLUMBIA

British Columbia Onsite Wastewater Association; [www.bcossa.org](http://www.bcossa.org); 778-432-2120

WCOWMA Onsite Wastewater Management of B.C.; [www.wcowma-bc.com](http://www.wcowma-bc.com); 877-489-7471

## MANITOBA

Manitoba Onsite Wastewater Management Association; [www.mowma.org](http://www.mowma.org); 877-489-7471

Onsite Wastewater Systems Installers of Manitoba, Inc.; [www.owsim.com](http://www.owsim.com); 204-771-0455

## NEW BRUNSWICK

New Brunswick Association of Onsite Wastewater Professionals; [www.nbaowp.ca](http://www.nbaowp.ca); 506-455-5477

## NOVA SCOTIA

Waste Water Nova Scotia; [www.wwns.ca](http://www.wwns.ca); 902-246-2131

## ONTARIO

Ontario Onsite Wastewater Association; [www.oowa.org](http://www.oowa.org); 855-905-6692

Ontario Association of Sewage Industry Services; [www.oasisontario.on.ca](http://www.oasisontario.on.ca); 877-202-0082

## SASKATCHEWAN

Saskatchewan Onsite Wastewater Management Association; [www.sowma.ca](http://www.sowma.ca); 877-489-7471

## CANADIAN REGIONAL

Western Canada Onsite Wastewater Management Association; [www.wcowma.com](http://www.wcowma.com); 877-489-7471 □

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## PRODUCT NEWS

### PRODUCT SPOTLIGHT



## BIOROCK system provides aerobic treatment without electrical power

By Tim Dobbins

In many onsite systems, aeration is supplied mechanically by way of a pump. The BIOROCK Aerobic Septic System offers an eco-friendly and silent solution to break down waste without electric pumps.

With the use of a degradation-resistant media, BIOROCK systems rely on natural aeration and require no electricity, eliminating the buzzing sounds that may come from electric motors powering aeration. “The natural aeration eliminates any smell too,” says Michael Martinez, the company’s product manager. By eliminating the need for a pump, Martinez contends users will save money on electrical and maintenance costs.

Starting in the primary tank, BIOROCK systems clarify raw sewage by dividing fats, oils, greases and organic solids. The sewage then passes through an effluent filter before discharging in the BIOROCK reactor. The bioreactor is designed to purify the pretreated wastewater with a biological process using a media exclusive to BIOROCK. After undergoing that natural process, the effluent is discharge by gravity or by pump depending on the specific ground type.

BIOROCK systems can be used for new residential onsite treatment system installs or to retrofit existing ones. The company focused on building the system to meet the needs of a diverse range of applications so different sizes and capacities are available.

For individual dwellings, campsites or small rural offices, the MONOBLOCK line of sewage treatment plants are compact with a 528- or 792-gallon primary tank and come pre-assembled. The ECOROCK system is used for groups of houses, restaurants, hotels, institutions or medium-sized dwellings. When a solution is needed for larger applications, such as commercial offices or apartment complexes, the MULTIROCK design uses multiple ECOROCK systems installed in parallel using a splitter-box system. This guarantees equal flow to each unit and allows for unlimited expansion.

“There have been units in operation for over 20 years in northern Europe, where customers praise that the system is still working like it did when it was first installed with the original media bags still in use,” says Martinez. [www.biorock.com](http://www.biorock.com). □

## INDUSTRY NEWS



Hank Vanderveen, right, was presented with the 2016 Ralph Macchio Lifetime Achievement Award by COLE Publishing founder Bob Kendall.

### Industry veteran Hank Vanderveen passes away

Hendrik “Hank” Vanderveen, a nearly 50-year veteran on the manufacturing side of the liquid waste industry and 2016 winner of the Ralph Macchio Lifetime Achievement Award, from COLE Publishing, passed away Nov. 10. He was 83 years old.

Vanderveen had been employed as national vacuum tank product manager at Amthor International since 2007. Previously he worked for Lely Mfg., Rovac Pump & Supply and Jay’s Waste.

Vanderveen was known far and wide as one of the wastewater industry’s nicest guys, according to COLE founder Bob Kendall. And he was a fixture at the Pumper & Cleaner Expo, now the WWETT Show, for generations.

“Everyone liked Hank. He was one of those guys you just enjoyed seeing,” Kendall said. “Always with a friendly smile, something nice to say and a willingness to help in any way. His attitude toward the industry was the same, lending his knowledge and experience to help solve problems.”

Vanderveen, of Wilson, North Carolina, is survived by his wife, Cheri Ridall Vanderveen, five children, 10 grandchildren and six great-grandchildren. A memorial service will be planned at a future date.

### Mainline Sales joins SJE Rhombus as new rep for Nevada

Mainline Sales is SJE Rhombus’ new manufacturer’s representative for the state of Nevada. Mainline Sales has nearly 40 years’ experience as a manufacturers’ representative firm covering California, Nevada, Arizona and Hawaii. They serve the following markets: commercial and residential plumbing, mechanical, fire protection, industrial, irrigation and water and sewer waterworks. Mainline operates multiple distribution centers located in Anaheim, California, San Diego, Sacramento, Las Vegas and Phoenix.

### BioMicrobics receives Global Company of the Year award

Based on its recent analysis of the global decentralized water and wastewater treatment market, Frost & Sullivan recognized BioMicrobics with the 2020 Global Company of the Year award. Each year, Frost & Sullivan presents a Company of the Year award to an organization that demonstrates excellence in growth strategy and implementation in its field. The award recognizes a high degree of innovation with products and technologies and the resulting leadership in customer value and market penetration. □



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