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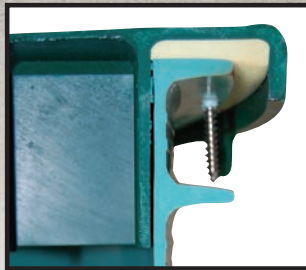
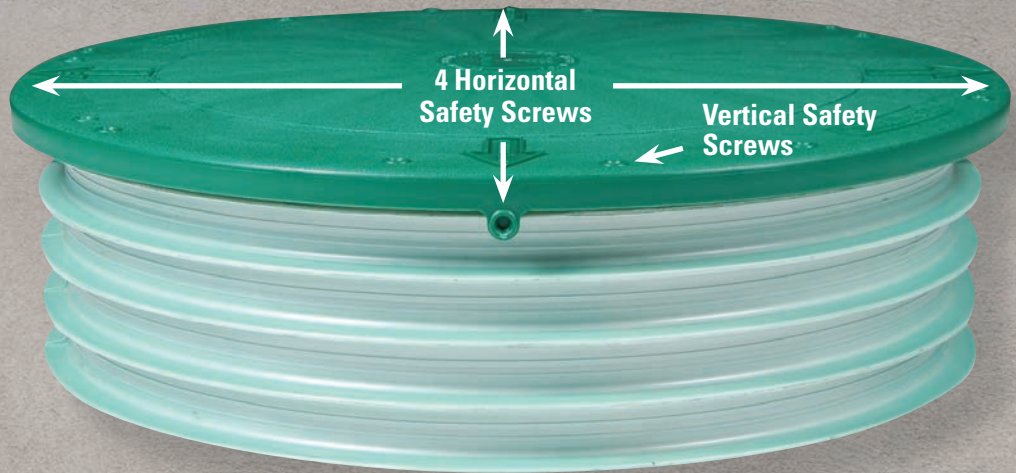
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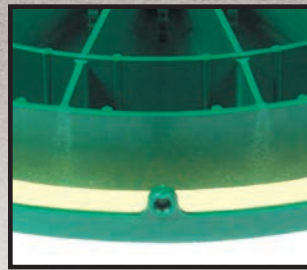
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INSTALLER PROFILE:

Digger's Hotline By David Steinkraus

ON THE COVER:

Working in rural southern Indiana, Black's Excavation is called on to provide a wide variety of commercial and residential services. Shown on a job site with a Case 590 backhoe are (from left) Lisa Black, Chance Black, Jeff Black, Colby Black and Kelly Kaeck. (Photo courtesy of Black's Excavation)

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Send to Editor, *Onsite Installer*, P.O. Box 220, Three Lakes, WI 54562 or email editor@onsiteinstaller.com.

REPRINTS AND BACK ISSUES

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

CIRCULATION

Circulation averages 20,823 copies per month. This figure includes both U.S. and International distribution.

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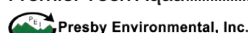
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Keep Encouraging Public Assistance for Septic System Upgrades

We all benefit through a cleaner environment and safe drinking water when tax dollars are dedicated to onsite improvements

There's been some good news and bad news recently involving government coming to the aid of owners of failing septic systems. And that's the first topic in our potpourri of onsite news and notes in this column:

For years, the suggestion for federal, state and local governments to earmark public funds toward septic system upgrades has been a heavy lift. Wastewater industry groups have maintained that tax revenues should contribute to helping modernize decentralized wastewater infrastructure in America for the benefit of all. They've argued that the general public suffers when onsite systems fail to adequately treat septic tank effluent.

Despite a message of serving the common good, the idea of directing public funds to private homeowners and businesses has always been met with reservations. When the government subsidizes the repair and replacement of septic systems, the homeowners are the beneficiaries of increased property values. Some would say it's only appropriate to support a crumbling wastewater infrastructure when it involves a public treatment system.

In recent years, there have been many little chinks in the armor of public funding of private wastewater projects. A handful of states have started to award grants to county health departments to dole out money to help defray the cost of private system repair and replacement. Then a few months ago, New York state blew a huge hole through that armor.

As part of New York's \$2.5 billion Clean Water Infrastructure Act of 2017, Gov. Andrew Cuomo announced a \$75 million program to replace aging septic systems. The plan will begin this year with distributing \$15 million in 31 counties, paying 50 percent of eligible costs up to \$10,000 to replace aging septic systems. The Septic System Replacement Fund will first attack problems of failing systems in areas with known impaired water sources and around sensitive waterways.

"Protecting water quality is vital to the health and future growth of our communities. This program builds on this administration's efforts to upgrade and improve water infrastructure across the state and help protect New York's lakes, streams and environmental resources," Cuomo says in announcing the payouts.

This is welcome news for homeowners who may understand the need to replace their systems but don't have the financial resources to pay for improvements. It's also good news for onsite installers who constantly face the balancing act of designing effective but affordable systems for their customers. They know that if a \$14,000 system ends up costing the homeowner \$7,000 through these grants, homeowners are more likely to move forward with necessary replacements.

That's good for the system user, the environment and the installer. Let's hope the New York program is a sign of more public support of decentralized wastewater systems.

SLOW DOWN CESSPOOL REPLACEMENT?

On New York's Long Island, one town at the center of a movement to replace polluting cesspools is rowing hard against the current. Officials in the village of Sagaponack want to take a wait-and-see approach when it comes to getting rid of cesspools in one of the few areas in the U.S. where they are still allowed. This is counter to the state's efforts, and it's mystifying how they would oppose the upgrades to advanced nitrogen-reduction systems called on for all of Long Island.

Get rid of the cesspools now, and don't fear the new advanced treatment systems already going in the ground in your neighboring communities.

That you still have hundreds of thousands of cesspools on Long Island should be a source of embarrassment.

"This is a very big change," the deputy mayor, Lee Foster, says at a board meeting recently. "These are very much more sophisticated systems, and I want to see how well they're working and whether there's been any profound difficulties with maintenance. I think maintenance is going to be an issue."

Despite a community preservation fund that will pay most or all of the cost of some system upgrades, Foster wants to slow down the process. "We're going to revisit it, of course," she says. "But you have to see how well these systems are working over a period of time, and we don't have those answers."

I could save Foster some time and get the village moving toward cleaner water. Get rid of the cesspools now, and don't fear the new advanced treatment systems already going in the ground in your neighboring communities. That you still have hundreds of thousands of cesspools on

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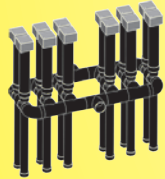


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Long Island should be a source of embarrassment when they have been outlawed elsewhere for decades.

This industry's nitrogen-reduction technologies have been proven time and again in other parts of the country. Make a few phone calls to system manufacturers, and they will put you in touch with local health department officials who can fill you in on how well the technologies work. You have no reason to wait and continue to put up with early American wastewater treatment.

LET THE BUYER BEWARE

A North Royalton, Ohio, couple learned a difficult lesson about the importance of having a wastewater expert inspect a home they're buying. When Troy and Heather Service purchased their house recently, county records, the real estate agent, and their home inspector all reported the property was hooked up to the local sewer system. Wrong!

According to a *News 5 Cleveland* report, the couple learned after moving into the home that it has a 30-year-old septic system reportedly at the end of its useful life. The real estate agent took the records from the county, and the home inspector apparently was not well-versed in wastewater — no surprise there. The couple's advice for homebuyers? Don't trust anyone.

"We thought we had found the perfect home, only to find out a month later we have a septic system that we had no idea was there," Troy Service says.

If point-of-sale inspections are part of your service offerings, file this story away and share it with potential customers who are reluctant to go the extra mile with an inspection when buying a home. □

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



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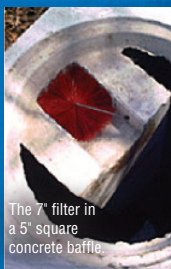
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EXPAND AND GROW

Introduction to Pipe Bursting

When your business is growing and you're thinking about ways to diversify your services, there might be one thing you've overlooked. Adding pipe bursting to your repertoire is worth exploring. Pipe bursting offers many advantages compared to open cut installations. If you're considering adding pipe bursting equipment to help with your onsite work, here's what you need to know.

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TROUBLESHOOTING

Footing Drains

When troubleshooting a system, if there are footing drains it's important to make sure water from those drains is not entering the system. Depending on soil type and location, the amount of water delivered through footing drains can quickly hydraulically overload a septic system. Read up on more troubleshooting tips from Jim Anderson. onsiteinstaller.com/featured

Overheard Online

"You can't be an expert in everything, so it's no slight on business owners to say that many of them simply haven't had time to master things like accounting and cash flow management."

- Do You Need a Virtual Contractor?

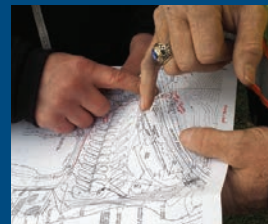
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SITE SURVEYING

Terms You Should Know

Our expert Jim Anderson kicks off a series on site evaluation and surveying with this introduction to terms you need to be familiar with for any surveying discussion.

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DIGGER'S HOTLINE

Customers all around their southern Indiana region call Black's Excavation for septic installs, coal mine work and other challenging site-prep jobs

By David Steinkraus



▲ Colby Black operates the Case 590 backhoe, and helper Cole Kirchoff handles a Spectra Precision/Trimble grade stick to check the level for a new tank install. (Photos by Lisa Black)

Location, location, location — so goes the common saying to explain why a business venture worked or didn't work. Location is one reason why Black's Excavation has succeeded in Wheatland, Indiana, for 21 years. Hard work, good service, and an attitude of getting the job done, whatever that job may be, are also part of the picture.

Although Wheatland looks isolated in the toe of Indiana about 60 miles from Evansville and the Kentucky border, the location is perfect. Three small cities — Vincennes, Washington and Petersburg — are within a 15-mile radius of the shop. They provide plenty of work for Black's Excavation, as do area coal mines that have their own water runoff needs and help add to the diversity of the company's revenue stream.



▲ Lisa Black and Kelly Kaeck install Infiltrator Water Technologies Quick4 Plus chambers in a drainfield. A Mustang-Gehl CTL85 skid-steer is used to backfill.

STANDARD DESIGNS

Wastewater systems in this part of the country are straightforward. It's septic tanks and drainfields. Advanced treatment units are not common. Most of the time, conditions don't require advanced treatment, and those systems are more expensive than customers want. There is a high water table on about half of the jobs, and all of the systems Black's Excavation installs are individual ones.

Farms need drainage ditches and ponds cleaned. The mine work includes cleaning out settling ponds that hold all the groundwater pumped up from a mine. The company also does housing site-prep excavation.

"We've always been really lucky to keep the local market here working for contractors. It's been steady, and believe it or not, when the coal market went down, it seemed like the housing market went up. We've done a lot of work for new-home construction in the last couple of years," says Colby Black who owns the company with his dad, Jeff Black.

He mentions the advantage of being almost equally distant from the three small cities. That's where housing growth is and where Black's Excavation has found work in new rural subdivisions beyond the municipal sewer systems.

"For the last few years, we've used poly tanks. That's all we've put in. We've had very good luck with them. They seal up well. They're watertight. They're lightweight. Two or three guys can probably pick one up and unload it from a trailer if there is a need," Black says.

Once it's in a hole, you can push a plastic tank around to make everything line up. And poly tanks are expected to have a long life, he says. The big savings is time. A crew doesn't lose productive hours waiting on a crane or delivery truck that's late.

The Blacks prefer Infiltrator Water Technologies tanks, and for some installations, they also like Infiltrator Water Technologies chambers. They




Black's Excavation

Location: Wheatland, Indiana
Owners: Jeff and Colby Black
Founded: 1997
Employees: 5
Services: Septic installation, tank repair, residential and mining site excavation, waterline and sewer line installation
Service area: 100-mile radius
Website: www.blacksexcavation.com

also use Infiltrator Water Technologies' ATL system, which includes a 4-inch corrugated pipe wrapped with synthetic aggregate and a geotextile fabric, and bedded in sand. The systems typically require less space than a conventional drainfield, he says.

"We do a lot of system repairs, and in most cases, the old septic system is abandoned in place so there is no room on the lot for a new full-sized drainfield," Black says.



» Colby Black, left, and Cole Kirchoff connect pipes to an Infiltrator Water Technologies advanced treatment system.



“We don’t want a reputation of always needing to come back and fix our work. We’d rather do less work and do it right than do more work and have to go back.”

Jeff Black



« Jeff Black operates a Vermeer V5800 trencher to install a waterline at a new home lot.

CLOSE TO HOME

Black’s Excavation does most of its work within a 15- to 20-mile radius of its shop. They’ve done some work near Evansville and crossed the Wabash River into Illinois for mine work, but that doesn’t happen often.

The business breaks down as about 45 percent moving dirt in some way, such as cleaning mine settlement ponds or farm drainage ditches; 40 percent drain, sewer, and septic work; 10 percent trucking; and 5 percent trenching and other work. There was a discussion among the Black family about how much work should fit into each of those categories.

“It’s hard to break it down because we offer such a broad range of services. If it can be done with the equipment we have, we’ll do it no matter what it is. We do something different almost every day,” Black says.

Waterline and sewer line work is mostly in the rural subdivisions. Quite a bit of the repair work comes to Black’s Excavation because of the inspections that mortgage lenders require at the time a home is sold. Inspections find drainfields not properly laid or a system that just doesn’t work well and needs troubleshooting.

QUALITY COUNTS

With all the work Black’s Excavation does, you would expect a big crew, but that’s not the case.

“We had more employees five, six, seven years ago,” Colby Black says. “There was an active coal mine about 4 to 5 miles away from our shop, and we did a lot of maintenance out there with our heavy equipment. When that mine shut down, we decided to downsize to keep the quality up. It seemed like if my dad or myself wasn’t on the job all the time, we weren’t happy with the work that was done.”

“Finding people who take pride

in their work was the problem,” Jeff Black says. “Or they’d take a shortcut and think it doesn’t matter because the work is covered with dirt. But we’re the guys who had to go back and fix it, and we don’t want a reputation of always needing to come back and fix our work. We’d rather do less work and do it right than do more work and have to go back.”

Finding good, versatile workers is a challenge in the market where some employers pay good money, especially the mines, and equipment operators

want high pay. A desire for good pay is understandable, especially for full-time heavy equipment operators, Black says. But the work Black’s Excavation does is diverse, and it’s hard to justify top dollar for someone using a shovel.

“We don’t feel we can pass that cost on to a customer. We try to be as reasonable as possible, and I think that’s why we’ve had good success with our business. We don’t overprice, and people get a good job for the money they’re paying.”

KEEPING COAL CLEAN

In addition to doing wastewater work at homes and businesses in southern Indiana, the crew at Black’s Excavation in Wheatland, Indiana, has developed an additional business in cleaning settling ponds at coal mines.

“They have to keep all the water on their property, so all the ditches and the groundwater will go into a settling pond. Then it will go through another pond before it goes off the property,” says Jeff Black, company co-owner.

How often ponds need cleaning depends on the mine. Some mines are more active than others, so some ponds must be cleaned every year, while others need cleaning only once every 10 years.

But every year the Black’s Excavation crew must do eight hours of mine safety training. When they arrive at a mine for work, they are checked for the right clothing and shoes, safety glasses, hard hats, and fire extinguishers. “They check everything. All the equipment has to be up to the right specifications,” Black says.

The incentive for the mine owner is not getting a citation because if there is a government inspector on site and the Black’s Excavation crew receives a violation, so does the mine. In the case of a rule violation that endangers life, the fine could amount to thousands of dollars.

Black’s Excavation has had only one citation, and it was minor. The crew went to dinner, and when they parked, they turned off the headlights on their vehicles. Rules dictate headlights must be on while on the mine site. When they went back to the job, a federal inspector asked to check their headlights. As luck would have it, the dimmer switch in Lisa Black’s truck was bad, and the lights didn’t come on. The inspector said he wouldn’t cite her, but a \$150 ticket showed up in the mail later.

Mama always said... “It’s what’s on the inside that counts!”



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▲ Summer helper Cole Kirchoff, left, and Colby Black install Infiltrator Water Technologies septic and pump tanks for a new mobile home.

➤➤ Jeff Black levels sand over a new drainfield using a Mustang-Gehl CTL85 skid-steer. Dirt was brought in and mounded over the system.

Chance Black, Jeff Black's younger son, helps out in the family business, but he's still in high school, so his help is limited to summer months. Kelly Kaeck, the main nonfamily employee has been with the company for 15 years and knows the area and the jobs very well. He has two weeks of paid vacation a year from the company. Once he was hurt on the job, and the Blacks helped him through that period of not working. Taking care of their people is how the Blacks do business, and at this point, Kaeck is considered part of the family because he has been so good for so long.

REFERRALS ARE KEY

Reputation is the reason Black's Excavation does very little marketing.

"We really don't mail anything out to people. Most of our business is word-of-mouth. We do a little advertising, but not a whole lot,"

Jeff Black says. They used to buy space in a local advertising directory, but the price eventually exceeded the value. "I'd ask people where they heard about us, and most of them would say they heard about us from someone else," he says.

What advertising they do is primarily through the local school. The company backs the athletic department, and it sponsors three-point shots at basketball games. With every long-range basket, the radio announcer calls out a Black's Excavation three-point shot.

The company has been listed with the Better Business Bureau since 2009. No one has made a complaint, says Jeff Black's wife, Lisa.

"And the contractors are valuable, too," Jeff Black says. "If we have 15 carpenters who build houses and they all see our name out on a job, that's good. Even if they build only one house a year, we'll usually get that work."

continued >>

"Most of our business is word-of-mouth. We do a little advertising, but not a whole lot. ... I'd ask people where they heard about us, and most of them would say they heard about us from someone else."

Jeff Black





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The company website has not only the office phone, but also the cellphone numbers for Jeff Black and Colby Black. That's because Lisa Black is in the office only part of the time. At other times, she's out driving truck, getting parts, or helping on job sites. And bookkeeper Sherry Davis, who has been with the business since Jeff Black started it, is in the office only a couple of days each week.

Publishing cellphone numbers hasn't caused a problem with late night phone calls about unimportant issues. Occasionally people will call late in the evening, but if they're faced with a broken pipe, it's better that they call, Jeff Black says.

"We feel that if we're going to be offering a service, then people need to reach us," Black says.

EQUIPMENT INVENTORY

Given the Black's Excavation workload, the company needs a wide variety of equipment. They have:

- A 2010 Hyundai 290 excavator (useful because of its 60-foot reach).
- A 2014 Case 590 rubber-tired backhoe.
- A 2004 Komatsu America 220 trackhoe.
- A 1999 Kobelco Construction Machinery USA 300 trackhoe.
- A 2006 Mustang-Gehl CTL85 tracked skid-steer.
- A 1999 Volvo Construction Equipment tri-axle dump truck, bought used, with a 10-ton Trail King Industries trailer.
- Two 10-wheel dump trucks, one a 2008 International and the other a 1995 International.
- A 50-ton Dynaweld low-boy trailer.
- A newly purchased Diamond C Trailers tilt-top trailer to move smaller equipment.
- A 2003 New Holland Construction tractor and 6-foot tiller for finish work.
- A 1999 Vermeer trencher.
- Four bulldozers, all Cat: a 1969 D7, a 1985 D7 LGP, a 1988 D5H LGP, and a 1999 D6R LGP.

ALL THE RIGHT MOVES

From a part-time start in 1997, Jeff Black moved up to a full-time business in 2003. He's been at it ever since. He knew when growing the company was the right thing to do, and he downsized when it was the right thing for his company — which meant it was the right thing for his customers. □

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Retrieving False Teeth: Every Day Presents a New Wastewater Challenge

The president of the Michigan Septic Tank Association reflects on strange workplace stories and the great networking opportunities he gets from being involved in a professional group

Compiled by Betty Dageforde

In States Snapshot, we visit with a member of a state, provincial or national trade association in the decentralized wastewater industry. This time, we learn about a member of the Michigan Septic Tank Association.



Dave W. Snyder
vice president

Business: West Michigan Septic Sewer & Drain Service and Heckman's Contracting, Muskegon, Michigan
Age: 60
Years in the industry: 20

Association involvement:

I'm currently president of the Michigan Septic Tank Association. I've been involved for 20 years and have been a director that long. I have also held the vice president position.

Benefits of belonging to the association:

The benefits of being involved in this 66-year-old association have been plentiful. Some that stand out are the legislative involvement to help our industry, the professionalism it has brought to our work, and some insurance

benefits that have helped our member businesses. But an important one is the friendships I have had over the years with different business owners like us throughout our state and beyond. You can get some valuable ideas from folks who do the same things you do, and you can also give your information to them. It's a win-win.

Biggest issue facing your association right now:

Some of our biggest issues involve legislation within our state. In 2004, when the state was trying to cut costs, they were talking about doing away with the septage program, which had regulations for disposal and other things. We didn't want to see that happen. We're trying to make the industry a little bit more professional and make everyone legal. Otherwise everybody and their brother can go buy a truck and pump tanks for next to nothing. So we offered to pay more in costs for licensing, and that kept the program going. Currently the state of Michigan is trying to create a sanitary code and has asked our association to help. We have a great relationship with the Department of Environmental Quality, and it has been good for all.

Our crew includes:

Our business of 30 years includes my business partner and president, Terry B. Kiel. Jonathan Stephens is our septic truck leader and has done it all here for 23 years. T.J. Stariha and Jacob Kiel have been here for numerous years and are our top guys for sewer and drain work. Ron Williams and Joe Magnier are our newest employees and are becoming valuable to our companies. We have had many others over the years to help us move to the position we are at now.

Typical day on the job:

My daily role is running the office, dispatching, scheduling, invoicing and running some service calls. Terry Kiel does most of the excavating duties with the guys, so it's usually just me in the office.

The job I'll never forget:

In 1998, a storm in our area carried straight winds up to 120 mph. We were called to the city of Grand Haven to help pump lift stations that were down due to power loss. The city was a twisted mess of broken trees, power poles, siding, roofing, etc. We worked around the clock to keep things from backing up in the hospital that was taking in elderly and hurt folks.



When I was ready to be relieved by one of the guys, my wife picked me up and we drove through the area and couldn't believe the destruction.

On a funnier note, I was on call one Easter weekend and got a call from an elderly woman who was out for Easter dinner and got sick. She had thrown up her false teeth and flushed the toilet in a panic. I retrieved the stuck false teeth from the toilet. She snatched them from me, washed them quickly and put them back in her mouth. I had a hard time eating my ham dinner after I got home.

Most challenging site I've worked on:

We had one situation where the house was way down the hill, and we couldn't get down there with a piece of equipment to move stones. We ended up using chutes. We had the stone brought in by a cement truck. They rolled it out onto the chute and then we were down there at the bottom to catch it and build the drainfield by hand. We are on the shore of Lake Michigan and have had to put systems in where there isn't much room. On a lake, the homes all get built right next to each other. So, as installers, we have had to come up with different ideas.

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

"Do you need to clean a septic tank?" My partner and I still use the same answer and explanation — "Nope, and you don't ever have to change the oil in your car either. Just replace the engine!" They seem to understand after that.

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

I'd like to see a statewide sanitary code in place with mandatory system inspections and cleaning. I believe we need to be accountable for taking

care of our environment and should start at our little piece of the world called home.

Best piece of small-business advice I've heard:

After 30 years in the industry and being 60 years old, I can't remember all of the advice I've heard, but one would be "Honesty is still our policy." We use that in our business, and I believe it came from my partner Kiel. The odds of having a partnership survive in business are not good, but we have made it work. We take it for granted because it wasn't that difficult for us. We still enjoy it but know our goal now is retirement and hope someone taking over will carry our company to the future with our standards.

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

I left a good job in the vending industry to go into partnership with Kiel. Just before I decided to leave, they were promoting me to management. So who knows?

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

I believe the industry has shown great professional growth over the years but still can move forward. Hopefully we'll see a sanitary code for the state of Michigan and more education with certification for installers of septic systems. □

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.



Compact Fuji Clean USA Unit Chosen to Replace a Failed Virginia System

An onsite designer finds there's no room to fit in a second conventional system and turns to a one-tank pretreatment solution

By David Steinkraus

The old wastewater system at the house was failing. The system had a concrete tank and dated to about 1963. Loudoun County, Virginia, wouldn't allow a new conventional system because there was no room for a new drainfield and no possibility for pretreatment. The old concrete tank and drainfield were abandoned.

The onsite designer selected a Fuji Clean USA system, and that led McKim Septic of Purcellville to install what may be the first Fuji Clean USA system in the county. Loudoun County is about 54 miles northwest of Washington, D.C.

Installation

Wastewater exits the home in a 4-inch PVC pipe that runs about 60 feet to the Fuji Clean USA tank. The system consists of only one fiberglass tank. The five-compartment Fuji Clean USA CEN5 fiber-reinforced plastic tank has a hydraulic load of 450 gpd and a total volume of 749 gallons divided into a sedimentation chamber (277 gallons), anaerobic chamber (278 gallons), aerobic contact filtration chamber (127 gallons), storage chamber (63 gallons), and disinfection chamber (4 gallons). Assuming an influent of typical household strength, the system effluent will have a BOD of 10 mg/L, TSS of 10 mg/L, and total nitrogen of 10 mg/L.

The system is driven by a FujiMac 80R11 that uses electromagnets, smaller diaphragms, and redesigned compression chambers that, Fuji Clean USA says, enable the pumps to run cooler, quieter, and with greater energy efficiency. A set of valves and an airlift pipe recirculates about 4-6 times daily flow to the head of the treatment chain.

Technicians set the blower next to the house and ran the air line beside the wastewater pipe. A Fuji Clean USA panel controls the system. There is an alarm to warn of air compressor failure, plus one float in the middle compartment to warn of high water.

From the Fuji Clean USA tank, water comes out in a 4-inch pipe and runs about 80 feet to a concrete distribution box from Winchester Building Supply in Winchester. Four 4-inch solid-wall PVC lines come out of the box and are connected to 80-foot-long laterals made with corrugated 4-inch perforated pipe.

◀◀ Cody Carr of McKim Septic in Purcellville, Virginia, fits a riser on the Fuji Clean USA system installed at a home in Loudoun County. Risers and lids came from TUF-TITE. (Photos by Austin Echols)

▶▶ The tank is at top center, the concrete distribution box at lower right, and part of the drainfield is visible on the right edge of the photo. Working on the project were Joey Nagy and Cody Carr.

▼ After leaving the Fuji Clean USA tank, wastewater flows into this concrete distribution box where it is split to feed the drainfield.



System Profile

Location: Lovettsville, Virginia
Facility served: Private home
Designer: Ken Carbaugh, Carbaugh Environmental, Lovettsville
Installer: McKim Septic, Purcellville
Type of system: Fuji Clean USA
Site conditions: Silty loam
Hydraulic capacity: 450 gpd

“It’s a whole lot smaller than other systems.

Because of that, we didn’t have to bring in heavy equipment to handle the tank, and that kept the cost down for the owner and also held down the amount of disturbance to the property.”

Michelle McKim

The old drainfield was buried so deep that the new pipe could be laid almost on top of it. Laterals were laid in 3-foot-wide trenches between 12 and 14 inches deep. Pipes were bedded in native washed stone between 1/2 and 1 1/2 inches in diameter from Luck Stone. Geotextile fabric was laid on top, and that was covered with a foot of dirt.

Diverting water

The topography of the site also played a role. Water from properties across the street ran through the home’s yard. That had saturated the old drainfield and was the reason the county wanted pretreatment. McKim Septic technicians built a French drain to intercept water before it reaches the new drainfield.

To make the drain, technicians dug a trench about 1 foot deep and 100 feet long and laid 4-inch corrugated, perforated pipe. That was bedded in gravel. On one end, the pipe transitions to 4-inch solid-wall pipe that emerges onto the surface of the ground and discharges water into a nearby swale.

The company rented a John Deere 50G mini-excavator because the weight of the Fuji Clean USA tank was slightly more than what the company’s own Caterpillar mini-excavators can handle. A Takeuchi 130 skid-steer took care of the rest of the work.

SYSTEM PROFILE

» Dave Honeycutt (left), Joey Nagy (second from left in orange), from McKim Septic and three representatives of Fuji Clean USA take samples of the finished system in Loudoun County, Virginia. The pronounced slope of the property required installation of a French drain to divert surface water away from the new drainfield.

» Effluent from the Fuji Clean USA system is sent into four 80-foot-long laterals made of 4-inch corrugated, perforated pipe bedded in native washed stone. The laterals are curved to follow the contours of the ground.



Maintenance

Installation went smoothly, and using this system provided some definite advantages for the owner.

“It’s a whole lot smaller than other systems,” says Michelle McKim, whose parents own the company. The Fuji Clean USA system weighs maybe 500 or 600 pounds when it goes in the hole.

“Because of that, we didn’t have to bring in heavy equipment to handle the tank, and that kept the cost down for the owner and also held down the amount of disturbance to the property,” McKim says.

The Fuji Clean USA unit will be inspected twice a year. That means checking operations and also taking samples for a lab analysis to be filed with the state and county. Factory technicians worked with McKim Septic

on the installation and also trained its workers in maintenance techniques.

“On top of the one we installed, we’re maintaining six others, and from what I’ve seen in visiting a few of the sites, the effluent quality in the tank is great,” says Austin Echols, technician.

Tracking performance

The state approved the use of the Fuji Clean system. County sanitarians are tracking the system’s performance to ensure it will work well under local conditions. County officials also visited the installation site to see the Fuji Clean USA and talk with company representatives, McKim says.

In Japan, the system works well, but there are differences in the behavior of Americans, McKim says. Americans use more water and gar-

bage disposals, and they tend to put grease and other substances down their drains, she says.

The other benefit from this job was a couple of more jobs. Homeowners with their own wastewater system problems drove by, saw the work, saw the company logo on equipment, and hired McKim Septic to solve their problems. □

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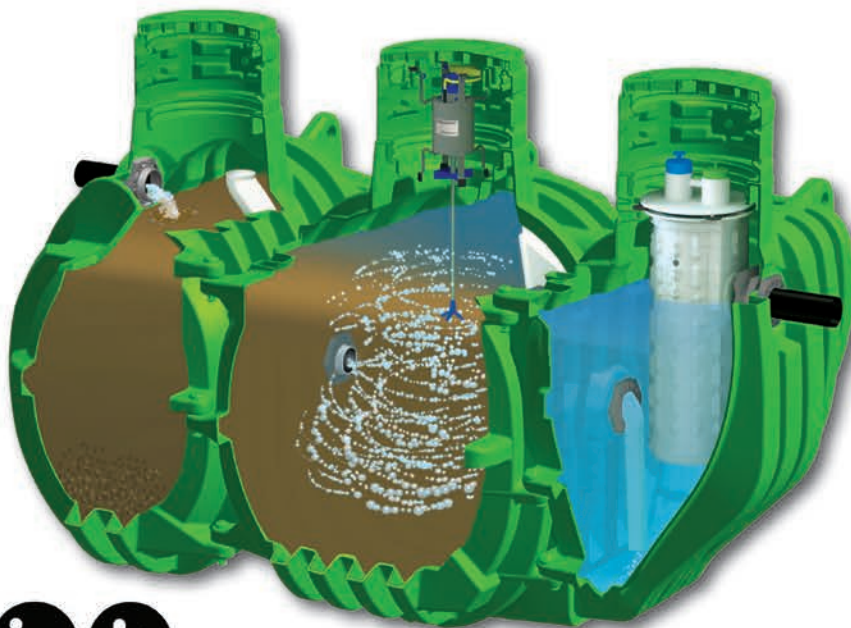


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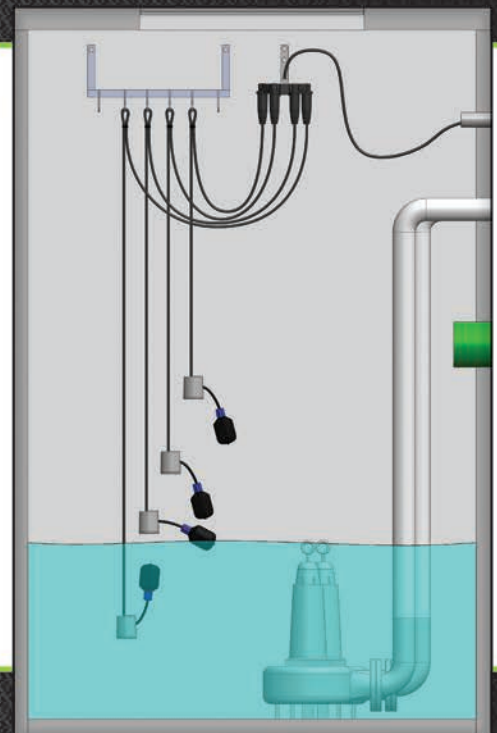
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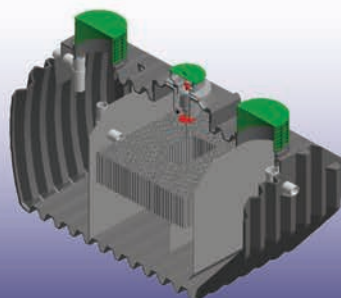
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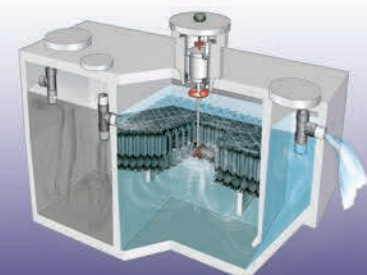


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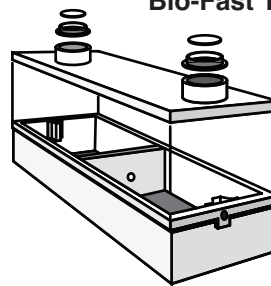
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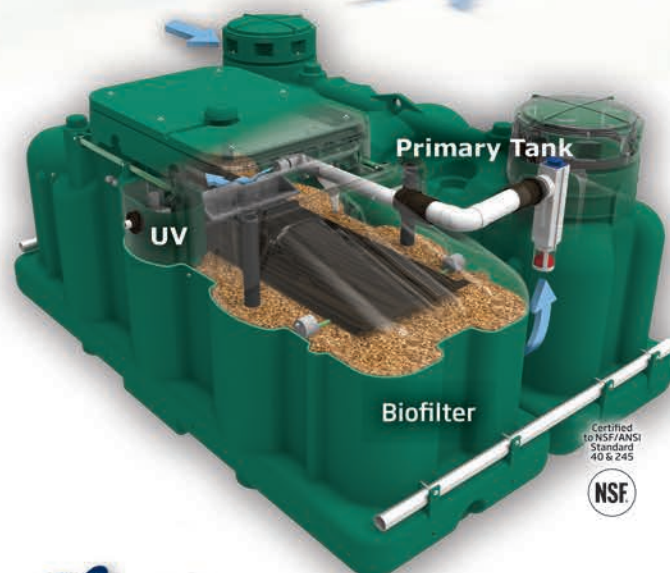
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California Pushes for More Wastewater Reuse Options

By David Steinkraus

In 2017, California Gov. Jerry Brown signed a bill to set up a framework for direct potable reuse of wastewater. Now California is at the beginning of another push on water use, as state Sen. Scott Wiener, D-San Francisco, introduced Senate Bill 966 to change state rules about the non-potable reuse of wastewater.

An analysis of the bill by legislative staff says the State Water Resources Control Board is now required to establish standards where the protection of public health is involved. The bill would order the board to adopt risk-based regulations for onsite treatment and nonpotable reuse by 2022. Those uses could be in commercial buildings or multifamily housing.

And the regulations would have to be adopted by local units of government if they establish nonpotable reuse programs. Graywater systems used only for subsurface irrigation would be exempt because they are regulated by a different part of California law.

Because of a lack of state permit standards, local governments are often hindered in their ability to create programs for the reuse of graywater, blackwater, rainwater, and stormwater, Wiener says in a press release.

“California is so far behind on water recycling, and we must take aggressive steps to catch up. Yet, due to a lack of state standards on how to permit onsite water reuse systems, most cities don’t even have an onsite recycling program. SB 966 gives cities the tools they need to put water recycling programs in place, and the bill gives innovative water reuse businesses clear standards for designing new technologies. Climate change is already impacting our state, and we need action today to prepare for tomorrow’s drought,” Wiener says in the release.

Meantime there is action on large-scale reuse. Earlier this year, the city of San Francisco was scheduled to break ground on a water recycling plant that will treat about 1.6 million gpd of wastewater and send it to irrigate the 1,000-acre Golden Gate Park and two city golf courses.

Steven Ritchie, assistant general manager for the city water division, tells the *San Francisco Chronicle*: “What we’re really trying to focus on is getting the right water for the right uses. This is the first serious use of wastewater by San Franciscans for irrigation in decades.”

In an extreme example of onsite reuse, Salesforce, a maker of customer relations software, is building a 1,070-foot-high headquarters building in downtown San Francisco that will include a water system to reuse rooftop rainwater, cooling tower water, graywater and black water. Recycled water will be used for cooling the building, flushing toilets and drip irrigation. According to the company, the system will cut potable water consumption by 76 percent, saving up to 30,000 gpd.

Hawaii

Cesspools are common across the Hawaiian Islands, and when a report found that the community of Makawao is one of the high-priority areas for system upgrades, 250 residents turned out at a state meeting to vent their outrage about a new state law that bans all cesspools by 2050.

Makawao is in the Upcountry region of Maui, and untreated wastewater is beginning to affect drinking water wells. State Health Department investigators found significantly elevated nitrate levels in groundwater downhill from cesspools, reports *The Maui News*. The Health Department report, expected to be published in about a month, says Upcountry has 7,400 cesspools that are potential threats to drinking water.

Almost all of the Upcountry residents who attended the meeting of the state Health Department rejected the idea of updating their wastewater systems. They say they do not have money for upgrades, and they questioned the validity of the state report. Will Spence, the county Planning Department director who spoke as a citizen, says he estimates it will cost residents about \$300 million to eliminate cesspools.

Resident Rod Taylor designs septic systems and says properties in the area do not have enough space for a standard system. “If we can design it on paper, the equipment operators can’t put it in,” Taylor says. “We actually were able to design one in Makawao on paper and got it permitted, and the equipment operators did a heck of a job. But it cost \$70,000.”

New York

Cesspools will be completely banned in Suffolk County on Long Island under a new law. Although new cesspools have been prohibited since 1973, the county has allowed the replacement of an existing cesspool with another. That will end in July 2019.

Beginning this summer, contractors must notify the county Department of Health Services of all pumping and replacements or retrofits of septic tanks, alternative onsite systems, cesspools, and grease traps, reports *The East Hampton Star*. Starting next July, a department permit will be required to replace or retrofit a cesspool or onsite wastewater system. More than 360,000 residences in the county have outdated cesspools or systems that do not properly treat wastewater and remove nitrogen.

Businesses are required to install nitrogen-reducing systems if they have a grandfathered wastewater system and make significant changes to the use of the property.

A county press release says the law is the first step in an anticipated series of changes over the next several years as officials consider policies to reduce water pollution.

New Jersey

The state Legislature had been edging toward repealing a rule allowing for a greater septic tank density, and thus more development, in the northern part of the state. In January, lawmakers voted to repeal the rule.

Adopted in 2017, the rule would have allowed 1,100 more septic systems on 69,000 acres of protected land in the Highlands. This 880,000-acre region of northern New Jersey was created with the Highlands Act that said the land was an essential source of drinking water for half of the state's population and said protection of the area was necessary for the economic viability of the region's communities.

The repeal narrowly passed the state Senate and Assembly. Although the state constitution gives the Legislature power to block new rules, that authority has been used only once in recent years.

Montana

Ravalli County must pay \$13,380 in legal fees that a couple spent fighting county allegations of sanitation rule violations.

The case began in 2015 when the local Board of Health said Tim and Elaine Burt had too many connections on their onsite wastewater system and it overflowed. At the time, the Burts had four rental units on their property: two structures and two trailers, reports the *Ravalli Republic*. In August 2016, the couple negotiated an agreement to resolve the allegations, but the Burts refused to sign because the agreement had a clause requiring them to admit to violating wastewater regulations.

That led Ravalli County to file thousands of criminal counts against them based on the number of days they were allegedly in violation, although the county also admitted in court filings that the couple had corrected all problems. The Burts sued, claiming "prosecutorial vindictiveness." Two judges sided with them.

The first judge, in Justice Court, said trying the cases would be a waste of time and tax money. When the county appealed to District Court, the judge there wrote in his opinion that while there wasn't enough evidence to prove vindictiveness, there was a settlement in place and it should have been followed. He dismissed the criminal counts "with prejudice," meaning the county cannot refile them.

The Burts says they spent more than \$20,000 defending themselves against the county. The District Court judge ordered the county to pay legal costs minus \$8,400 that the couple had previously agreed to pay the county.

The county says it will appeal to the state Supreme Court.

Oklahoma

A man from rural Tahlequah was accused of operating a septic business without a license.

Percy Sellers was charged in Cherokee County District Court with five counts of pumping without a license, one count of engaging in a pattern of criminal offenses, and one count of engaging in transactions involving unlawful proceeds, reports the *Tulsa World*. Pumping without a license is a misdemeanor, and the other two charges are felonies.

The Oklahoma Department of Environmental Quality says Sellers operated his business for several months in 2017 without having a proper license and received repeated warnings to stop. If convicted, Sellers faces up to six

months in jail and a \$10,000 fine for each of the misdemeanors and up to two years in prison and a \$25,000 fine for each felony.

California

Santa Rosa police arrested a man on suspicion of illegally dumping waste from septic tanks.

Carlos Chavez, 63, of Petaluma is suspected of pumping out tanks and dumping the septage into sewers throughout the county, reports the news website www.patch.com. He was arrested on suspicion of theft or diversion of utilities, malicious dumping into a sewer, and prohibited septic waste disposal. Chavez owned Petaluma Septic Service.

Police Sgt. Marcus Sprague says evidence indicates Chavez dumped illegally for years, including on 300 occasions in 2017. Sprague says Chavez has a previous conviction in Sonoma County (where Santa Rosa is located) for illegal dumping.

* * *

Proposed rules for onsite wastewater systems have raised some opposition over the cost for residents in Monterey County. The county Environmental Health Bureau has released the regulations it is proposing to meet state requirements.

The county's draft regulations would not affect existing systems that function properly. But anyone seeking to install, expand, or replace an onsite system would be required to conduct a more thorough site evaluation including groundwater monitor borings, a soil profile analysis, and a percolation test. An alternative technology or supplemental septic system would be required for shallow or slowly percolating soils, for properties of less than 1 acre, or for systems within 100 feet of a waterway, reports the *Monterey Herald*. The depth of dispersal systems would be limited, and pumpers would have to report when they pump a tank.

Jain Farnsworth, president of the Quail homeowners association, says she has warned other association members about the potential costs involved. Most of the association homes have septic systems on lots of less than 1 acre. She says she replaced her own system in 2017 to avoid the potential additional cost of the new regulations. The \$20,000 she paid would have been more than double under the draft regulations, Farnsworth says.

Maryland

Some residents who upgrade their onsite systems may get a break on state fees under legislation proposed by Gov. Larry Hogan.

If people upgrade their onsite systems with more advanced technology to reduce the amounts of nitrogen, phosphorus, and other pollutants seeping into groundwater, they would be exempt from the annual \$60 fee that funds cleanup efforts for Chesapeake Bay, reports *The Baltimore Sun*. Hogan's proposed law would exempt any resident from the fee, called the "flush tax," as long as they did not receive any state or federal assistance to upgrade their wastewater systems.

It was not clear how many people would benefit from Hogan's proposal.

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Ask Customers Lots of Questions and Listen Carefully to Their Answers

Details from customer interactions can reveal potential issues that could lead to spectacular system failures down the road

By Jim Anderson and David Gustafson

Recently we had a question from homeowners who just bought a house and had the septic system inspected before closing. The reported system had passed the inspection with flying colors, and there were no issues. They then asked if it was common practice to have a piece of sheet metal over the top of the concrete tank buried beneath about a foot of soil.

Right away this raises at least a couple of red flags, and you may be able to think of a few more. How many times have we read that someone was walking in the backyard and fell through a faulty cover or lid of a septic tank or cesspool that was hidden by soil cover? Way too often, the person falling in has been seriously injured or died as a result. Our first advice to the homeowners was to avoid walking over the area until a professional can inspect the tank lid and makes sure it is structurally sound.

QUESTIONABLE INSPECTION

Our concern was heightened when the owner reported the tank was approximately 40 years old. It would take a good deal of research to find out how and where this tank was constructed and to what standards. Our best guess is it would probably not meet current standards for best tank construction put forward by the National Precast Concrete Association. Tanks are reinforced with rebar and must be able to withstand soil loads both vertically and laterally.

The homeowner then indicated he thought the sheet metal was placed to deflect or prevent water from moving through the soil to the top of the tank. If this was the purpose, the tank is probably not watertight and this was an attempt by the previous owner to stop water from infiltrating the tank during rainy periods and flooding the drainfield.

These comments also highlight that the tank was not opened and inspected during the real estate inspection. As we have discussed previously in this column, proper inspection for structural soundness and operation requires inspecting both the tank and its contents. Checking the contents before pumping can provide valuable information about system performance. After pumping, the tank can be carefully inspected for deterioration or cracks.

Our recommendation to the homeowner was to have the tank pumped and inspected by a professional to evaluate structural soundness, watertightness and operation. It is likely that the tank will either need to be replaced or significantly repaired to bring it up to today's standards.

Back to the question about a proper cover over the tank. During installation, proper backfilling and cover around the tank are important to long-term operation and stability of the tank. The tank needs to be installed level in the excavation. The bottom of the excavation needs to be level and free of any large rocks or debris. This will avoid cracking when the tank is set in the excavation and is ultimately filled with sewage. Natural soil can sometimes be suitable for bedding the tank, but often it will require a layer of granular material such as rock or coarse sand.

FINISHING THE SITE

Backfill around the tank should be done using a series of compacted lifts. The backfill should be free of large soil clods, rocks, chunks of frozen soil (in our part of the world) or any construction debris. This is done to avoid any voids in the backfill that over time will result in differential settling, which may put stress on the walls of the tank and/or provide pathways for water to infiltrate around the tank, potentially causing flotation or infiltration into the tank. If the native soil is heavy clay or other unsuitable backfill material, crushed rock or pea gravel 1/2 inch in diameter can be used. When the lifts are compacted, care needs to be taken to avoid damage to the tank.

The top of the tank should not be covered by more than 4 feet of soil unless the tank has been rated for additional depth and is specifically part of the design requirements. Minimum soil cover over the tank should be 6 inches. In most cases, native soil can be used as long as it is not in large clods or contains large rocks. The final cover should be mounded to allow for settling and graded away from the tank so water cannot collect over the tank. Any ponding on or around the tank provides the potential for water to infiltrate the tank. Any surface water should be diverted away from the tank through final grading or installation of berms.

To help ensure the tank is watertight after installation, any risers and lids should be installed using proper materials (sealants) at the joints, as well as having the right type of joint connection between the riser and the tank, usually some type of tongue and groove connection with the application of additional sealants.

For this particular case, it would be useful to review the local inspection requirements at the time of sale and work toward having an inspection requirement that does a complete operation inspection of the system, including opening the tank, viewing the contents, and evaluating structural integrity. □

RULES AND REGS

continued from page 39 >>

In 2016, Hogan repealed a requirement of former Gov. Martin O'Malley that would have required advanced technology onsite systems everywhere in Maryland. Instead, Hogan allowed counties to decide what systems to use on properties outside environmentally critical areas.

Elaine Lutz, a staff attorney for the Chesapeake Bay Foundation, which handles the money from the flush tax, questioned why fees should be waived even for people in environmentally sensitive areas where upgrades are required.

"We typically don't subsidize people for doing what they're required to do," Lutz says. "It's not really a time or a place to be reducing the amount of money and effort going into septic pollution reduction."

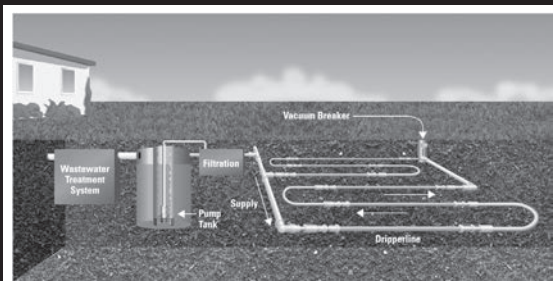
The most recent numbers available, for 2014, show the foundation paid out about \$80 million in flush tax money for septic upgrades. Hogan's bill would also reduce the amount of money devoted to septic projects. About 60 percent of receipts were used on system upgrades. The other 40 percent, about \$58 million in 2014, paid for farmers to plant cover crops that reduce offseason fertilizer runoff. Hogan would split the tax money evenly between the two uses. □

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



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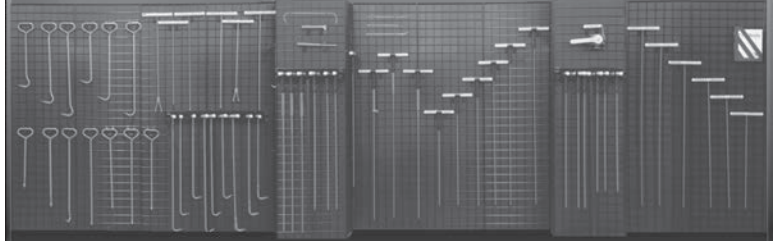


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Protect Your Drivers When They're Hauling Equipment

Your crews have a lot of safety concerns on any work site. Be sure to have them protected while they're on the road.

By Jared Raney

Whether you have one vehicle or 100, your operators spend nearly all their time in or around their service vehicles.

Often, whether or not an operator follows proper safety protocol hangs on how easy it is for them to do so. They perform these job duties every day, and it is easy to become complacent when safety means going out of your way.

That's why it's important to have proper safety gear as part of your everyday fleet or vehicle monitoring program. While some aspects of vehicle safety are required under Department of Transportation regulations, many are just good sense.

FOR STARTERS

When it comes to DOT regulations, what's most important is researching and understanding exactly what is required for your specific service vehicles, as they don't all require the same gear.

For example, larger trucks often require fire extinguishers, and if you are hauling trailers or other equipment, the DOT specifies a certain grade of chain for securement.

"On the newer trucks, obviously there are lots of new safety features being incorporated. **Our newer trucks actually come with an orange seat belt, so you can tell if the drivers are wearing their seat belt or not.**"

Eric Wright

"That's important for compliance; a lot of companies don't know that your chains have to be rated for all of the various equipment," says Eric Wright, vice president of safety for Washington state-based Northwest Cascade, which maintains 300 service vehicles in its fleet. The business started in 1968 as a septic system installer and has grown to offer many construction-related services.



Here's a personal protection equipment, or PPE, kit sent out with drivers at Northwest Cascade. (Photos courtesy of Northwest Cascade)

On a more basic level, most service vehicles are required by the DOT to carry reflective triangles or cones in case of roadside maintenance or accidents. Consider adding flashlights and emergency phones, especially if operators regularly drive long distances.

BEST PRACTICE

It's a good idea to stock all vehicles with first-aid kits. First-aid kits are a universally applicable feature, which could be expanded depending on the service industry. They can be tailored to specific applications, such as adding an eyewash kit when drivers work around hazardous chemicals.

Bel-Art carries two mobile eyewash products — a larger version that can rinse both eyes simultaneously, in any orientation, and a smaller, 120 mL belt-pouch version.

"It's highly mobile. It's one-time use, but it's sealed, and it has a long expiration date," says Peter Yoo, product manager for SP Scienceware, parent company of Bel-Art. "So they can bring it wherever they need. The solution — it's great not just for physical dirt or debris, but also different things like acids and alkalis."



1



2



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4



5

- 1 - A cone bracket is a smart way to carry bright orange safety cones on your work truck, ensuring your technicians are seen both while they are driving and when they are stopped on the roadside.
- 2 - Safety beacons and other accessory lighting help make a work truck and your drivers more visible on the job.
- 3 - Maintaining a safe following distance is critical in a heavy work truck. These stickers are a constant reminder not to tailgate.
- 4 - Safety triangles are required onboard work trucks by the Department of Transportation.
- 5 - When Northwest Cascade drivers step out of the cab, one of the first things they see is this safety reminder, "Get Out And Look."

Northwest Cascade not only keeps first-aid kits on their vehicles, but also issues a personal first-aid kit to each operator.

The personal first-aid kit is part of a basic personal protective equipment, or PPE, bag that is provided. It also includes safety gear like a hard hat, two pairs of gloves, an orange vest, safety glasses (regular and tinted), headlamp, earplugs, and a safety regulations booklet.

In many cases, it's not just providing the necessary equipment for operators, but making it as convenient as possible for operators to use that equipment.

Bel-Art offers an eyewear holder for safety glasses or goggles that can be installed in service vehicles. Other shelving units and organizational products across the market could be used for similar easy-access safety items.

WORTH A TRY

Beyond the basics, consider many safety-enhancing additions for your trucks.

Laws against cellphone and mobile device use are becoming more prevalent in states across the country, which makes Bluetooth and hands-free GPS options increasingly helpful.

Northwest Cascade stocks spill kits on their vehicles in case of oil or other hazardous waste spills. "The spill kit we carry as just a company policy," Wright says. "Same as the first-aid kit."

Needs are different for every operation, but some outfits benefit from going toward the far end of safety precaution, as Northwest Cascade has done with the addition of dashcams.

The company's dashcams are integrated into a vehicle monitoring system that also records hard braking, speeding and other driver habits that could affect safety. "It has parameters that you can set, so it ties in with the vehicle, what's happening with the vehicle, as well as the driver," Wright says.

Backup cameras are fast becoming a standard feature on both service and pickup trucks, but they may be something worth adding to older trucks as well.

Small things can make a difference too, like stickers in the cab and on the mirrors of service trucks. Those are reminders for the busy operator to observe common safety practices.

"On the newer trucks, obviously there are lots of new safety features being incorporated," Wright says. "Our newer trucks actually come with an orange seat belt, so you can tell if the drivers are wearing their seat belt or not."

WORTH CAREFUL CONSIDERATION

Safety shouldn't be a throwaway checklist item for any company. That being said, every organization has its own needs, and owners should think carefully about what is best for the operators. In the end, it depends on the specific industry, jobs that operators will be involved in, and frankly the operators themselves — the likelihood of any operator in question going out of their way to embrace safety.

All of these factors need to be considered when assessing safety protocol. The only thing that's a certainty: There is no shortage of options.





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