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By Eric Casey

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Onsite Esperanto

An industry glossary aims to foster better communication in the onsite treatment profession, especially across states and regions

By Ted J. Rulseh, Editor



*Why can't the English teach their children how to speak?
This verbal class distinction, by now should be antique.*

Henry Higgins

The classic musical “My Fair Lady” was all about language – how speaking well or poorly helps separate people into castes.

There have been language divides in the onsite industry, too, though not as deep as the one between ‘Enry ‘Iggins and his pupil Eliza Doolittle. The Consortium of Institutes for Decentralized Wastewater Treatment (www.onsiteconsortium.org) has tried to bridge terminology barriers by creating a Decentralized Wastewater Glossary. You can think of it as a sort of Esperanto – universal language – for the onsite field.

The glossary isn’t new – the first edition came out in 2007 and a second in 2009. But I hadn’t really looked closely at it until recently. Now that I have, I consider it a great resource, both as a tool for promoting consistent terminology and as a way for people new to the profession to learn about it. Almost anyone in the industry would be well served by spending some time with it.

What drove the drafters

The document’s drafters said their aim was to define the management requirements for sustainable, long-term onsite system performance, as befits an industry that wants its offerings to remain a permanent component of the nation’s water treatment infrastructure.

Part of the aim was to get past regional disparities in terms. Professionals who spoke to groups from around the country or who attended national trade shows found some trouble communicating because people used different terms for the same thing.

“The final definitions were chosen on the basis of the best fit to the industry as a whole as determined by a wide group of stakeholders, and the result is a collection of terms that illustrates the broad landscape of decentralized wastewater treatment,” the introduction states.

Part of the aim was to get past regional disparities in terms. Professionals who spoke to groups from around the country or who attended national trade shows found some trouble communicating because people used different terms for the same thing.

In reviewing the glossary front to back, I found fewer such instances than I expected. Still, a meaningful number of terms now come with “see” references that direct the reader to the preferred term, as identified during the glossary review process. For example, “Septic System: see wastewater treatment system, onsite (OWTS).”

The chosen term

Another high-profile change has to do with what people from different (or even the same) parts of the country called the leachfield or drainfield. Now the preferred term is soil treatment area (and you will note that our “Basic Training” columnists Jim Anderson and Dave Gustafson use that term exclusively). Here are several other terms as identified in the glossary – the preferred (“official”) term is listed second:

- Aggregation – soil structure
- Cess pit – cesspool
- Clogging mat – biomat
- Curtain drain or French drain – interceptor drain
- Effluent filter – effluent screen
- Freeboard – headspace (the space above the water line in a septic tank)
- Fixed film process – attached growth process
- Greywater – graywater (just for consistency in spelling)
- Header pipe – manifold
- In-ground system – below-grade
- Leaching pit – seepage pit
- Wisconsin mound – mound (my home state loses a bit of its identity)
- Observation port – inspection port
- Outhouse or privy – pit toilet
- Packed bed filter – media filter
- Pump station – lift station
- Zone of aeration – vadose zone

Are you up to speed?

Now, this glossary is a useful tool, but how much impact it has depends

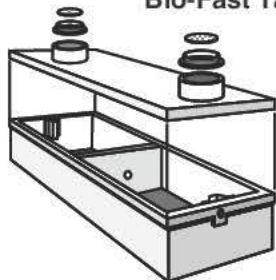
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on how widely it is accepted. The onsite consortium doesn't have a big budget with which to advertise it, let alone any authority to direct industry members to follow it.

So consider this an ad for the Decentralized Wastewater Glossary. Go see it at the consortium website. Consider downloading a copy (it's free) for your own use and for your team. It's educational, it's fun, and it's evident from the content just how much quality effort the authors and reviewers – all volunteers – put into it.

Henry Higgins in "My Fair Lady" lamented, "One common language I'm afraid we'll never get." Well, now the onsite industry can have one – if its members only have the wisdom to learn and start using it. □

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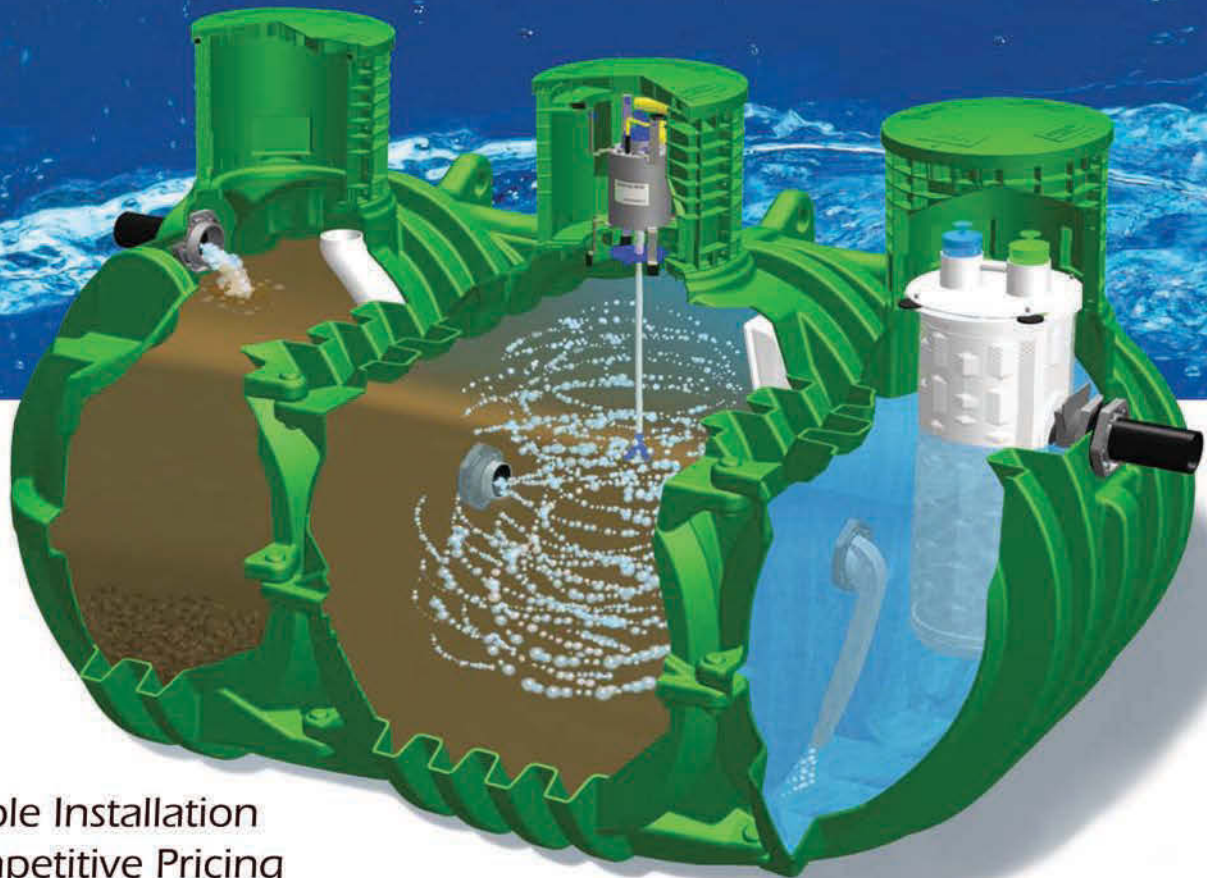
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A PARTICULAR Man

Udell Dooley takes a hands-on approach, putting his stamp on every detail as he installs new systems and replacement drainfields

By Gil Longwell

A two-year recovery after a car wreck gave Udell Dooley time to consider his future. Combining his love of the outdoors with his mechanical interests, he decided to buy a backhoe and start Dooley's Backhoe Service.

At first, he took every job that came his way and found himself working in his home state of Missouri as well as Kansas. New to the business, he kept his eyes open, eager to learn. He quickly recognized that businesses focused on a few niches prospered more than those that did everything.

"I also discovered that two older excavating contractors in the area would soon be retiring, and their departure would be an opportunity for me," he says. "These things led me to focus on onsite system installations."

"I'm particular. Every aspect of every job must be done right. I want to be on every job, every day."

Udell Dooley

Dooley has never regretted his decision. Working in six counties within a 50-mile radius of Raymore, Mo., he specializes in new systems and replacement drainfields, relying on a wide range of technologies with a heavy emphasis on low-pressure distribution. His stock-in-trade during 33 years in the business has been close attention to detail on every job.

Must be right

Dooley never wanted to grow into a multiple-crew operation, although he easily could have. "I'm particular," he says. "Every aspect of every job must be done right. I want to be on every job, every day." That keeps him

(continued)

Dooley's Backhoe Service, Raymore, Mo.



OWNER:	Udell Dooley
YEARS IN BUSINESS:	33 years
EMPLOYEES:	2
MARKET AREA:	50-mile radius
SPECIALTY:	New and replacement absorption areas

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"Over the years, the basic services and necessary skills have not changed a lot, but the details sure have," Dooley says. He considers himself too old (at age 70) to change jobs now, but definitely not too old to keep learning new technologies.

"Originally, we worked jobs in two states, but work became so plentiful that we have restricted ourselves to jobs in Missouri," he says. Six-day work weeks were common in the early days; today he has no trouble filling a five-day schedule, and he does not see the pace slowing further.

Managing costs

When it comes to equipment, Dooley takes a conservative path. "I never wanted to work to pay off my equipment," he says. Rather than buy brand new, he looks for used machines with about 500 hours on the meter. He does not own a dump truck, preferring to buy aggregate delivered, so that it arrives exactly when and where he wants it.

Dooley's Backhoe Service has developed a specialty in drip irrigation systems.



Seeking a Successor

Udell Dooley spent a lot of time selecting the onsite industry for his career. In a few years when he decides it is time to retire, he will have spent time devising his succession plan.

His son-in-law, Dan Owens, a long-term employee, is now interested and invested in the design side of the onsite industry and is not a succession candidate. He has no children who have been in the business or share his interest in the onsite industry. Simply selling out is an unappealing possibility.

Recalling his early years, he remembers how hard it was to get established, afford quality equipment, scout work and learn the industry. He observes that Mike Wilcox has been there for him around the calendar, day in and day out, for 14 years. Theirs is a relationship of senior mentor and apprentice, of trust, mutual reliance and respect.

Dooley likes the idea of placing his legacy in Wilcox's hands — hands he respects for their skill and the ability to continue the business in a particular way.

That eliminates job site and home-based stockpiles. Dooley once owned a dump truck but, "I could not justify the cost for the little value I got from it."

He regularly rents the specialized vibratory plow needed to install drip tubing into slit trenches six to eight inches deep. "We use our equipment to handle all of the other installation tasks, including tank excavations, manifold and return line trenches, and final grading," he says. "It just seems to work best that way."

The equipment pool, carefully chosen for diverse capabilities, includes a 1998 Case 580 Super L backhoe and a 2004 John Deere 250 skid-steer handle — these two machines handle nearly all tasks on job sites. When a machine reaches about 5,000 hours, Dooley sells it and replaces it with a newer machine.

The right jobs

While equipped for almost anything, Dooley is selective when considering jobs: He scrutinizes every project before accepting it. He will not work for a customer who tries to dictate the system technology without considering site conditions. If the system is not right for the site, he will pass.

"I sometimes discover an overflow pipe to a ditch," he says. "This is not a solution. It merely transfers the problem while making it less noticeable. I want to provide permanent solutions, not sell Band-Aids. I will not expand an existing absorption area that will delay, but not prevent, a total absorption area replacement."

For every malfunction he encounters, Dooley recommends that a new absorption area be designed based on comprehensive site evaluation, and with consideration of the homeowners' lifestyle.

He replaces broken pipes, faulty controls or burned-out pumps like-for-like. In some cases, it's feasible to reuse the existing treatment tank, but if there is reason to replace the tank and Dooley believes that is the best route, he will decline the job if the customer refuses the replacement. As he says, "I'm particular."

(continued)

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ABOVE: Norweco aerators and 1,000-gallon pump tank are part of a new installation in progress. RIGHT: Dan Owens connects fittings to supply and return lines in the trench.



Focused diversity

Dooley has installed a wide range of systems, including conventional beds and trenches, gravel mounds and sand mounds, pressurized trench and bed systems, drip irrigation systems and waste stabilization ponds (also known as sewage lagoons). “Each has its advantages, and I am willing to explain to a customer the characteristics, opportunities and drawbacks of each type,” Dooley says.

“When they were first introduced, we recognized that low-pressure distribution systems would become a highly profitable business opportunity. We pioneered their installation in our service area.” Today, about 80 percent of the systems he installs use that technology.

Dooley and the local regulators learned together on his first installations, and it was an opportunity to build bridges and rapport. “These systems let us both learn the technology, and the respect built in the process continues today,” he says. “Now we see this as a really simple system, and it always was, except when it was new.”

“We work in six counties, all of which share a common set of state-mandated regulations. This consistency helps us. The site may be hiding some surprises, but we know that the regulations will not change from job site to job site.”

Udell Dooley

Dooley has nurtured relationships with builder developers, and they have brought opportunities not found in single-homeowner interactions. Over the years, working in three subdivisions, he installed nearly 100 systems. The homes in each development were pretty much alike, and they were significantly different from the older properties and smaller houses for which he has installed replacements.

“These larger, high-dollar-value homes typically have six or more bedrooms,” he says. “The owners use a lot more water and don’t even think about conservation or cutting back on their use.”

Dooley works with the designers to be certain that each system is oversized to address the occupants’ lifestyle. He strongly cautions homeowners against using garbage disposals. “I tell them that every drop of water that

you use is going to stay on your property, and if you abuse your system, it will let you know it in a most unpleasant way. You can’t keep doing whatever you want to and avoid a problem forever.”

Crossing county lines

The diversity of his work and the size of his territory are made easier to handle by the regulatory scheme. “We work in six counties, all of which share a common set of state-mandated regulations,” Dooley says. “The consistency helps us. The site may hide some surprises, but we know that the regulations will not change from job site to job site.”

Inspectors are a resource Dooley cultivates and respects. There are jobs where the site evaluator, engineer, system designer, or permitting agency may miss something that he as the installer uncovers. “At times like this, you want the inspector on your side,” Dooley says. “You want him to be on your problem-solving team.”

His experience tells him that when a system reaches about 25 years old, absorption area problems begin to occur. When a system fails, especially in a catastrophic manner, the homeowner is usually desperate for a solution. Dealing with repairs, Dooley finds himself speaking with the wife more often than the husband. “Women are not ashamed to say, ‘I don’t know’ or ‘I don’t understand,’” he says. “They are willing to ask questions and willing to learn.”

Even when the husband places the initial call, the wife often handles the follow-up. As long as the customer is willing to learn and there is a satisfactory outcome, Dooley does not care with whom he speaks.

Pleasing customers

Investing in positive customer interactions is the best source of promotion, he has found. “When you solve someone’s problems, their happy voice is the best advertisement you can get,” he says. He regularly receives thank-you cards with heartfelt notes inside. His jobs may take a bit longer, but when he leaves, the site is fully restored. “Digging up someone’s beautiful yard can be devastating,” he says. “Putting everything back so the

owner does not notice the disturbance is priceless – it is better than money in the bank.”

Dooley has shaped his business so that his stamp of approval is on every aspect of every job. For 14 years, his only employee was son-in-law Dan Owens, but then things changed. Owens earned a designer credential and now specializes in that area.

Finding a new employee was challenging. In Dooley’s experience, it takes at least a year to train someone in the industry and in company practices. Michael Wilcox fit the bill and has been with Dooley for 14 years. “Mike does

**“I want to provide permanent solutions, not sell Band-Aids.
I will not expand an existing absorption area that will delay,
but not prevent, a total absorption area replacement.”**

Udell Dooley

all the field stake-outs and the heavy lifting,” says Dooley. “He looks after me when we’re in the field together.”

Dooley’s wife Mary handles the bookwork. The company’s small workforce is both focused and effective.

As he approaches retirement, Dooley ponders what lies ahead. Doing things differently has been a part of the firm’s success. It’s basics like holding grades, using a sealant to make unused tank access ports waterproof, bedding tanks in fine aggregate rather than dropping them on bare soil, and following designs with precision that attest to his being different, particular, and effective. □

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Florida

The Senate Environmental Preservation Committee approved a measure that would limit mandatory onsite inspections to counties with first-magnitude springs. The bill (SB 820) is an alternative to an all-out repeal of a 2010 law requiring septic tank inspections every five years.

A House committee unanimously accepted a proposal by the state Department of Environmental Protection to bypass stricter federal water pollution rules and apply state standards. The proposal still must be approved by the U.S. EPA and withstand a legal challenge from a statewide environmental advocacy group.

Minnesota

The Minnesota Pollution Control Agency issued a shorter, more concise onsite inspection form that became effective in February, as did regulations requiring service providers, advanced inspectors, and advanced designers to be licensed, and onsite professionals to use only registered treatment and distribution products. The rules are at www.pca.state.mn.us.

Missouri

Officials said rural and urban residents of Linn County were not following regulations requiring inspections of onsite systems for the sale of property. County sanitarian John Maloney stated that new people have moved in, but his office was never called for an inspection. The county commission proposed sending a second mailing to real estate agents and brokers about the legislation.

Wisconsin

Beginning in January 2013, Wisconsin septage haulers must file annual land application reports electronically with the Department of Natural Resources. Contractors must complete the Switchboard Registration form at www.dnr.wi.gov/environmentprotect/switchboard/sbregistration.html. The site has a registration tutorial and detailed summary of the process.

Idaho

The Department of Environmental Quality is considering new guidance on the use of evapotranspiration/infiltration systems. The proposed regulations are available on the agency website. "The guidance describes the site and design considerations for these types of systems to account for wastewater discharge into the surrounding soils," according to a public notice.

Maryland

Governor Martin O'Malley's legislative plan for 2012 includes a new bill dealing with septic system restrictions, replacing a similar proposal that failed in 2011. The new version prompted negative reactions concerning its complexity and the amount of power it would give state government to control residential subdivisions.

After last year's bill failed, O'Malley formed a task force to study the use of septic systems in the state. According to an O'Malley news release, his Sustainable Growth and Agricultural Preservation Act would include "a four-tiered comprehensive plan to guide growth on central sewer and septic systems and ensure the land use and pollution impact of future Marylanders is minimized." The bill discourages septic systems in favor of centralized sewer systems, according to opponents.

California

The state Water Resources Control Board issued the final draft policy designed to institute AB 885 (onsite treatment system regulations) in March. The law was passed back in 2000, but the regulatory changes, originally due by 2004, have been delayed several times. The agency says the rules will affect about 2 percent of existing onsite systems. After a public comment period that ends May 4, final adoption is scheduled for June 19. Visit http://www.waterboards.ca.gov/water_issues/programs/owts/. ■

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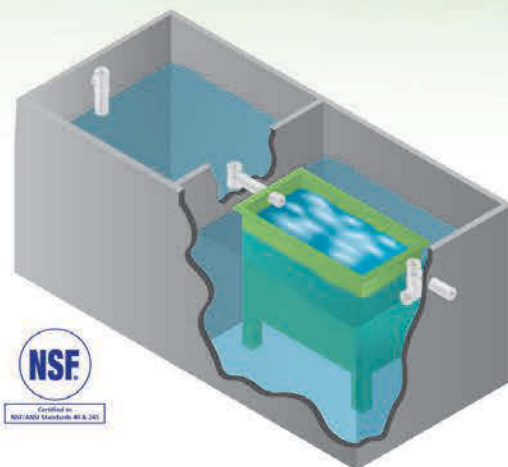


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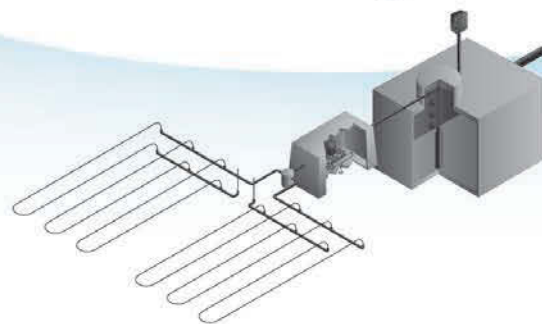
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Bear Necessities

Recirculating trickling filters anchor an onsite treatment system that enables construction of a world-class research facility on an Alaskan island

By **Scottie Dayton**

Koniag, an Alaska Native corporation, is building a world-class bear viewing and research facility on Camp Island in Karluk Lake on Kodiak Island. The Kodiak Brown Bear Center houses 40 people and has two full-service kitchens and a laundry.

The area has one of the highest densities of Kodiak brown bears in the world and a diverse ecosystem. Its onsite treatment system had to meet strict discharge limits, function with little to no downtime, and require minimal maintenance.

Ed Ward, the center's general manager, hired Jeff Garness, P.E., owner of Garness Engineering Group in Anchorage, to design the system. Senior engineering technician Jody Maus developed the materials list. Garness chose septic tanks, a pump station, a recirculation tank, and open-cell foam fixed-film filters discharging to chambers.

"Compiling the materials list was huge," says Ward. "If Jody forgot anything, we could add \$1,225 to the cost for the float plane from Kodiak." Freight for the system cost 1.5 times as much as the installation.

Ward and his crew faced unbroken wilderness, a short work season,



Ed Ward graded a slope, then used a sheet of plywood to drag the septic tanks into position. The middle riser in the front row marks the pump station. (Photos courtesy of Garness Engineering)

SYSTEM PROFILE

Location:	Kodiak Island, Alaska
Facility served:	Kodiak Brown Bear Center
Designer:	Jeff Garness, P.E., Garness Engineering Group, Anchorage
Installer:	Ed Ward, Kodiak Brown Bear Center
Site conditions:	Sandy loam and clay over shale bedrock; water table five feet below grade
Type of system:	AeroCell recirculating trickling filter units, Quanics
Hydraulic capacity:	2,400 gpd

challenges of coordination with other subcontractors, and deer and bears that seemed to believe the workers were building a playground for them. Once installed, the system operated as designed even at minus 20 degrees F.

Site conditions

Soils are sandy loam and overburden (peat and fines) on a thin layer of clay over shale bedrock three to six feet below grade. The loading rate for highly treated effluent is 0.6 gallons per square foot per day. Winds blow in excess of 100 mph.

System components

Garness designed the system to handle 2,400 gpd. The major components are:

- Four TW 1,250-gallon fiberglass septic tanks with Polylok A-300 effluent filters in the second compartment. All tanks made by Infiltrator Systems.

(continued)

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- GUV-3 gravity UV disinfection unit (3 gpm or 4,320 gpd), Quanics.
- 100 Quick4 chambers from Infiltrator Systems.
- Control panels, Quanics.

System operation

Graywater from kitchens in two buildings tees into the sewer gravity line. Laterals and mains are 4-inch PVC pipe. Wastewater flows through the septic tanks and into the pump tank. Alternating pumps run for five minutes, sending 100 gallons every 15 minutes 500 feet through 1.5-inch HDPE pipe to the recirculation tank, where it mixes with treated effluent. The line drains back to the pump tank after each cycle.

"Compiling the materials list was huge. If Jody forgot anything, we could add \$1,225 to the cost for the float plane from Kodiak."

Ed Ward

Every 15 minutes, the pumps in the recirculation tank activate for three minutes, sending 100 gallons to the secondary treatment modules set in series. Helical spray nozzles in the units evenly distribute effluent over the media. The porous foam cubes have a large surface area for microbial attachment, allowing high loading rates.

A gravity collection system at the bottom of the last module sends 80 percent of the effluent to the recirculation tank and 20 percent through the disinfection unit to the drainfield. During low flows, a float valve changes the recirculation rate to 100 percent.

The recirculation device in the last module sends 25 gallons to a flow divider through 2-inch Schedule 40 PVC pipe. The two 15- by 45-foot zones in the drainfield each have five laterals three feet on center and 45 feet long. Effluent will average 10 mg/L TSS and BOD with 99 percent reduction in fecal coliforms and no pathogens.

Installation

Every element of the system and redundant parts were shipped from Crestwood, Ky., to Seattle, Wash., to Anchorage, then by landing craft to Uyak Bay, the staging area on Kodiak. A helicopter flew the materials over a mountain range to the installation site.

Camp Island in Karluk Lake on Kodiak Island.



ABOVE: The drainfield zones with 4-inch monitoring tubes flank the AeroCell secondary treatment units set in series. The closest module has the UV disinfection unit.

RIGHT: Ed Ward uses a Caterpillar mini-excavator to prepare the second drainfield zone. Each of the zones, separated by 10 feet, have five rows of Quick4 chambers from Infiltrator Systems.



The island had no equipment. After a 301.8 Caterpillar mini excavator, one of the smallest made, and 247B Caterpillar track loader arrived at Uyak Bay, workers took them apart to fit the helicopter's 3,000-pound lift capacity. Both machines required four airlifts. It took 26 lifts and two days to import the onsite components and equipment.

The island had no utilities. Ward built a power generation system with diesel generators, inverters, batteries, solar panels and wind turbines, and a 2,400 gpd water-processing facility.

"We needed heavy equipment to excavate the 22- by 80- by 12.5-foot-deep hole for the septic tanks and pump station, but airlifting it wasn't economically feasible," says Ward. "Instead, we flew in a small hydraulic hammer attachment and spent six weeks chipping through bedrock and moving 800 cubic yards with the mini excavator."

During excavation, Ward struck a vein of fines that he stockpiled for bedding and backfill. "If we hadn't found it, we would have had to import material with a skiff," he says. With the water table five feet below grade, Ward ran two 2-inch Honda trash pumps continuously during the excavation and filtered the discharge to prevent silt from entering the lake. He built the filter from 8-inch PVC pipe and geotextile fabric, directing the discharge to a small swale enclosed by silt screens and straw bales. Ward later used the accumulated sediment for backfill.

Ward graded a slope to the excavation, then bedded the area with six inches of gravel. He set each tank on a 1.5-inch-thick plywood sheet and dragged it into place with the excavator. Eight people manhandled the 300-pound septic tanks into final position, then filled them half full with water and backfilled to the mold seam.

Meanwhile, Ward extended the forks on the loader to set the aerobic units. After Maus plumbed the system, the two-member crew placed two layers of 2-inch rigid foam insulation over the components to protect them from freezing. They bedded and covered the pipes with 12 inches of fines and added three feet of overburden for insulation.

To prepare the drainfield on a hill, workers cut trees, pulled stumps, removed 2- and 3-foot boulders, stockpiled the overburden, and graded the site. Ward then began the time-consuming process of hauling fines up the hill with the loader while the crew laid the laterals. The final stage was building two sheds for the control panels.

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ABOVE: Ward uses a small hydraulic hammer attachment to remove shale bedrock from the tank area. RIGHT: Workers removed 2- to 3-foot boulders from the tank area. (Photos courtesy of Kodiak Brown Bear Center)



Throughout the installation, bears played bulldozer in the dirt and gnawed on the aerobic units. Teething cubs chewed on everything. When Ward tired of repairing the damage, he posted a guard overnight. "The deer

were fascinated by the excavator arm," says Ward. "We had about 16 of them watching every bucket that came out of the ground or gathered around the spoil piles looking for food."

The possibility of food caused fights between the deer and bears as to who would enjoy it. Several times, Ward had to break up their quarrels.

Ward installed the system before winter. In December, a warm spell melted two feet of snow. Within 18 hours, the primary tanks were under a foot of water with ice below. "I heard the high water alarm go off at 8:30 that night," says Ward. "Two days before, I had chased a huge boar from the pump tank, but hadn't looked at it."

In the flashlight beam, he saw that the bear had deformed the lid and water was pouring in. Ward and a helper quickly cut drainage ditches. Ward replaced all riser lids with screw-down covers that were more difficult for the bears to deform and tear off.

Maintenance

Ward erected an electric fence around the tanks. He services the system, checking the condition of the media, vents, air supply and lids. He also removes and cleans the spray nozzles and inspects the pumps, controls, and effluent filters. □

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The Most Important Tool

A digital camera (and an effective filing and storage system) can be powerful allies in documenting work done and sharing information with customers

By Russ Lanoie

Having spent much of my 40-plus-year career searching belowground for things that have gone wrong, I've vowed to make it easier for those who follow me to discover what I've left in the ground for them.

Not that I plan on anyone having to unearth things that I screwed up but, as we all know, stuff happens, especially belowground, and sooner or later something I installed or repaired might have to be dug up for maintenance, further repair, or upgrade. So the simple solution I've adopted is to take lots of photographs before, during, and after any task I perform. Modern digital cameras and data storage systems make it increasingly easy to record and catalog images of projects.

So a digital camera has become the most important tool in my toolbelt.

The camera

What I use today, about tenth in a long line of replacements and upgrades, is an Olympus Stylus Tough. Though I have not tried to take photos below the scum level of a septic tank, it is waterproof to a depth of 16 feet and shockproof to five feet (I have tried the latter, accidentally and otherwise).

It has survived where an earlier camera succumbed to being buried under crushed stone and dug up by shovel, though apparently not gently enough. This is the second Stylus Tough I've had. I upgraded for the greater optical zoom and because the screen on the old camera had been badly

I've often used the camera inside septic tanks and pipes where I can't see without a mirror or my SeeSnake inspection camera. It often takes many tries to get just the image I want because I typically can't see the camera screen until after the photo is shot.

scratched, a hazard when mixing optics and soil. A plus I've come to appreciate is the menu setup on the new camera that makes it easy to turn the flash on and off and set the macro adjustment for close-ups.

Although this camera has a 14-megapixel capability, I keep it set on 5 megapixels to save storage space. Again, the menu makes it easy to change the resolution. The camera also shoots great video.

Occasionally I forget my camera and have to take an important photo



The custom leather case attaches quickly and securely to a belt. The type of clip used is more secure than the pushbutton type that can pop the case open if it brushes against something. (Photos courtesy of Russ Lanoie)

with my cellphone. While cellphone technology has come close to merging with camera technology, even phones with the best built-in cameras can't compare in image quality to basic dedicated digital cameras. Cellphones lack optical zoom lenses and sophisticated image processors that deliver print-quality images and other standard camera features.

Also, I like using a camera with a tether I can wrap around my wrist to keep from losing it and, perhaps more important, my photos, into a ditch or a septic tank. One advantage of a phone, of course, is that I can instantly send a photo to a customer, contractor, engineer or code enforcement person right from the work site if I need their input immediately.

The case

An important complement to the camera is a durable, reliable and accessible case. I had mine custom-made by a local leather shop. The owner simply asked for a block of wood that matched the size of the camera, plus a little clearance. He made my case of premium leather that will long outlast the camera.

I had him make it with a cover flap that is attached to the bottom of the case and extends up the back before coming over the top and down the face, where it buckles. This lets me quickly and securely attach it to my belt.

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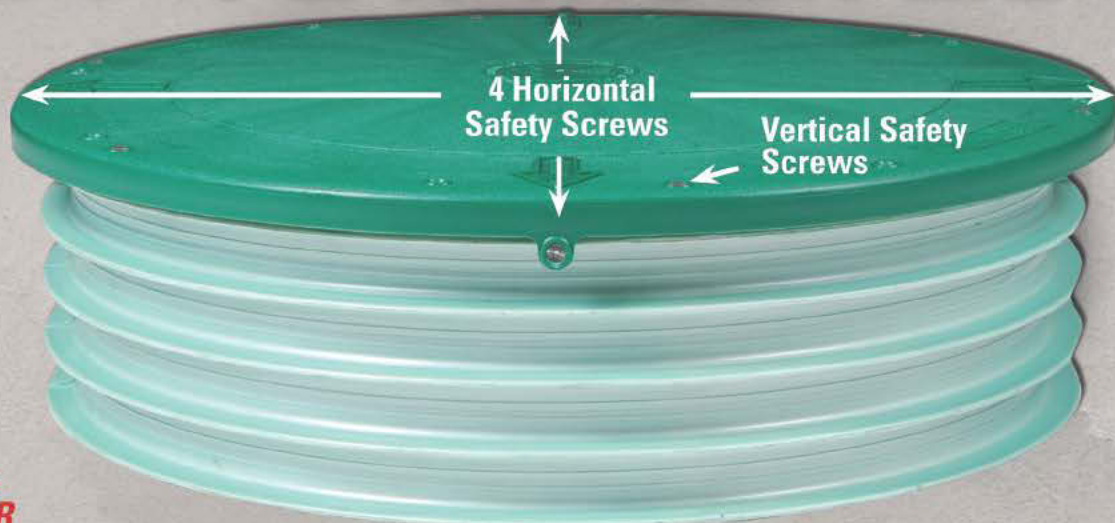
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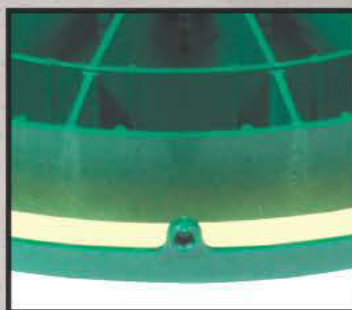
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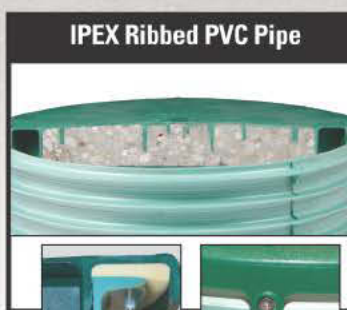
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Worthwhile shots

To increase the value of the information in my photographs, I've learned to align my shots with recognizable surface features that should be there in the future. Shooting a measuring tape (or two for swing ties) combined with a wide-angle shot of where the distances are being measured from, plus a close-up of the tape over the location of the subject, helps provide a quick pictorial record of locations without making sketches.

I've often used the camera inside septic tanks and pipes where I can't see without a mirror or my SeeSnake inspection camera. Using the LED Macro setting (macro with no flash but a steady light that doesn't burn out the photo) can provide clear images of the inside of a pipe. It often takes many tries to get just the image I want because I typically can't see the camera screen until after the photo is shot.

I usually leave all but the most obviously useless of photos in the camera. I delete them only after I've viewed them on the computer monitor to see if they tell a story I might have missed on the camera screen. I also use the camera to shoot the screen of the SeeSnake to record something I want to show a customer or keep on file.

The filing system

For organization, I have a PHOTOS folder on my PC where I regularly download new photos. Within that folder are other folders that start with two numbers that will allow me 50 years of cataloging (at present that's another 40 years).

I started the first folder with number 99, followed by the date of the first photo beginning that file. Then I worked backwards (e.g. 98 follows 99), starting a new file twice a year. This puts the newest photos first, simplifying quick access as the filing system grows. Example: C:\Documents and Settings\User\My Documents\PHOTOS\88 Start 6 05 holds the photos from June to December of 2005.

I simply download photos regularly to the current file, and they end up being in sequence by photo number and date. When I need to find a photo for a customer, real estate agent or home inspector, I go to my JOBS database that contains all of my work files and billing records to find the date the work was done. Then I jump over to that date in the PHOTOS file. I've looked at other schemes for filing the photos, but this seems quickest and easiest both to record and to access later.

Showing customers

I often send photos to customers along with my invoices, especially because so many folks I work for are "from away" (I live in a vacation area). I strongly suggest they keep the photos on file with other important papers and my invoice, for their own use and to pass on to new owners if and when the time should come.

Since each photo is "worth a thousand words," it saves me considerable time explaining what I've done for present and future owners, and it has been known to help me when I've had a return visit to a site several years later. I often make a note of the file number of the photos I've sent in the customer's job file, in case I have to communicate with them or a subsequent owner, particularly if it's in the distant future.

The savings

In addition to the convenience of the digital camera and storage, I've enjoyed a considerable savings over shooting film. I've gone from nearly \$1,000 per year for photo development and tons of space for storage to a fraction of that cost – and I can check photos on site before things get covered up to be sure they tell the best story.

Besides the storage built into the computer, backup storage requires only a few square inches of space for an external hard drive that lives in the safe, except for twice a year when I pull it out to transfer six months of files




This photo reminded the author of the location of an old distribution box he had uncovered years ago. The tape measure told just how far out from the house to dig. It turned out that the pipe between the box and the septic tank had plugged with roots.



This is the inside of the holding tank for a church. It had been filling up with groundwater even while the church was not being used, requiring expensive pumping. The camera showed where the water was leaking in through a poorly sealed knockout.

to it. (Admittedly, the savings has become a moot point in recent years as film photography has all but disappeared and as digital cameras have become ubiquitous while decreasing in cost and improving in quality and features.)

A final note: Though I have not yet had to do this despite serving numerous customers over the years, all those readily accessible photos might give me an edge if a customer calls something I've done for them into question. I'd simply show and tell:

"Your honor, this is what I found, this is what I did, and this is what they owe. Any questions?" 

ABOUT THE AUTHOR

Russ Lanoie is a 40-year veteran septic designer and installer in Conway, N.H., who specializes in locating, troubleshooting and repairing systems in New Hampshire's White Mountains. He is a member of the Granite State Designers and Installers and maintains a troubleshooting website at www.RuralHomeTech.com.

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A Sound Foundation

A successful mound or at-grade system installation starts with proper preparation of the ground surface

By Jim Anderson, Ph.D., and David Gustafson, PE.

As we travel around the country, we often talk to installers about aboveground systems. We explain how soil treatment mound systems and, in the last decade, at-grade systems are designed to solve specific soil problems, including lack of separation distance to a limiting soil layer and slowly permeable clay soils.

As we describe the success we have had with such systems in Minnesota and Wisconsin, the discussion usually turns to a statement like, "Our state tried these systems and we had problems, so we don't use them anymore."

In our view, this is unfortunate, as it severely limits installers' ability to use what is in fact a conventional technology to solve some of the most common soil problems. So, over the next several articles, we will break down the installation of these systems into their components and show where installers have had problems, leading to the conclusion that the systems are too difficult to install or just do not work.

At the surface

This month we begin at the beginning: preparation of the surface where the aboveground system will be installed. The first layer of any aboveground system is the original soil surface. We like to point out that the installer is using an aboveground system precisely because there is some soil problem that needs to be overcome. That means good installation principles of Keep it Dry (KID) and Keep it Natural (KIN) need to be followed even more closely than when installing a conventional system in a deep, well-drained soil.

For proper hydraulic performance, there needs to be at least three feet of natural or clean sand above the limiting soil condition. This provides the necessary separation distance from the infiltrative surface where the septic tank effluent is applied to the limiting soil layer.

The three-foot separation distance is a Minnesota requirement; many states require

four-foot or five-foot separations, so check your local regulations. You can use any combination of good soil and clean sand to provide the separation distance. However, recognize that you need at least one foot of natural, unsaturated soil to construct a mound. Unless the soil under the mound will transmit liquid both vertically and horizontally, the mound will not function properly.

In no case should any surface soil be excavated or moved more than one foot from its original position. Failure to observe this rule is one large cause of mound and at-grade failures.

You need to inspect the area where the mound or at-grade will be installed to evaluate the soil condition. This evaluation assures that the KIN principle is followed. A soil surface that has been smeared or compacted or otherwise made unsuitable for the movement of liquid will not recover its capacity to transmit liquid without a great deal of additional time and effort.

Clean sand is stockpiled around the perimeter of a new mound system to be placed after the soil is scarified.



If the mound is simply placed on this damaged soil regardless, effluent will likely seep out the toe of the berm, and the system will be classified as failing in a very short time. As a side note, the discharge pipe from the pump to the mound or at-grade area should be installed before soil surface preparation. The trench excavated to install the piping should be carefully back-filled and compacted to prevent seepage.

Keep it clear

All vegetation longer than two inches must be removed, along with any dead organic debris, leaves and woody material. This often means mowing the grass to two inches or less in height and then raking the entire area. This may involve some hand labor.

One question we often hear is: "What if the site is wooded? Do I need to remove the stumps?" The answer – contrary to what you may have read elsewhere – is that trees should be cut as close as possible to flush with the ground and the stumps left in place. Hauling or pulling stumps will likely cause damage through compaction of the soil.

The total area that will be under the mound or at-grade berms should be roughened to break up the existing sod layers and provide a transition zone between the original soil and the sand you will place to construct the mound. You can prepare the surface with a moldboard plow, a disk, or a backhoe using the bucket teeth. We call this turning the greenside down.

Moldboard plow furrows should be thrown upslope and should run perpendicular to the slope. There should be no dead furrow under the mound. If you use the backhoe technique, the operator needs to move around the perimeter, reaching toward the center. Do not drive to the middle and work the area, then drive back out – this can cause considerable damage to the soil's ability to transmit liquid.

Work dry soil

You can use a disk to roughen the soil surface and to break up the sod, but take care not to compact the deeper soil layers. Rototillers should not be used to prepare the surface.

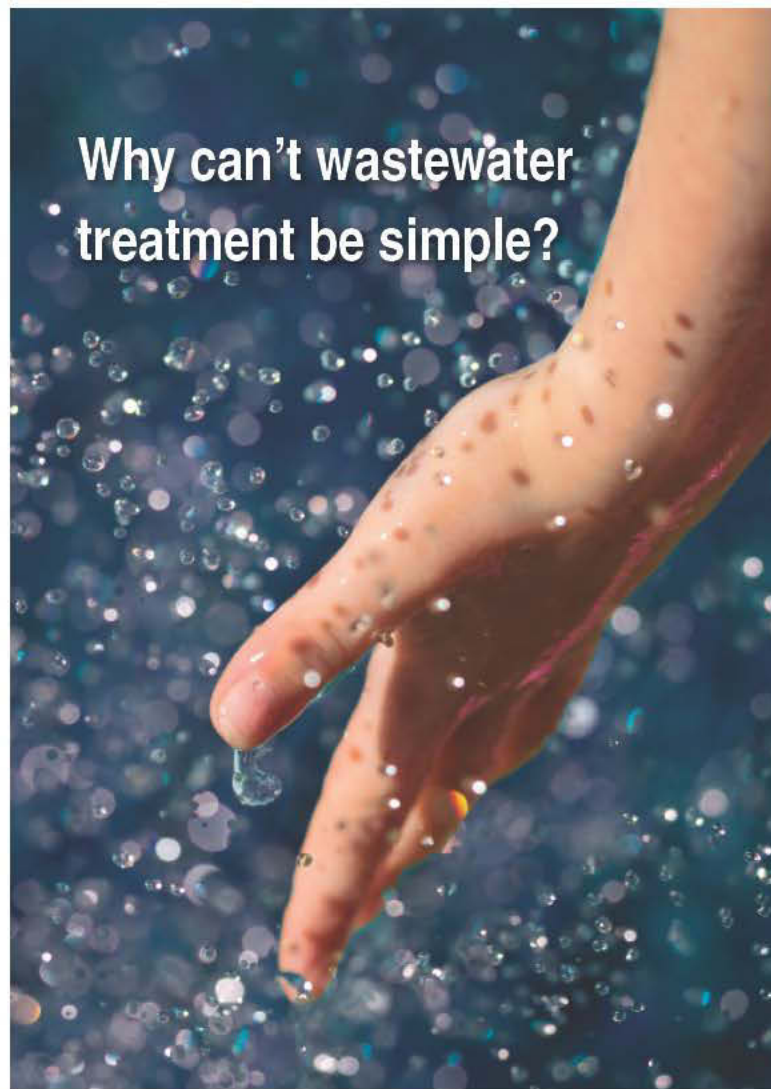
In some cases we have seen installers use a scraper or tracked vehicle to remove the upper portion to the soil, either to stockpile the topsoil or for ease of construction. In no case should any surface soil be excavated or moved more than one foot from its original position. Failure to observe this rule is one large cause of mound and at-grade failures.

One final comment: Since these are problem soils, often high in clay content and sometimes wet, the KID principle is key. Remember, if you can take a sample of the surface soil and roll it into a wire 1/8-inch in diameter, the soil moisture content is above the plastic limit, and the soil is too wet to begin construction. You need to wait until the soil is dry enough to fall apart when you try to roll it into a wire.

During rainy, wet periods, it may be difficult to wait, but waiting will pay dividends in system performance. Once you have prepared the soil surface, start construction immediately. Do not allow rain to fall on the prepared surface, or you will have to let it dry and rework it.

In the coming months we will cover other important aspects of mound and at-grade installation. □

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Drainfield Media and Design

By Briana Jones

Line splitter

The **Tru-Flow Splitter** system from **Clarus Environmental** can split wastewater effluent flows from 0.1 gpm to 30 gpm into two to five distribution lines. The lightweight and non-corrodible system is long lasting and easy to install. It consists of a diverter basin and cover, and a diverter.

The bubble-level design allows for post-construction adjustments, solving problems associated with distribution box settling. The unit may settle as much as 15 degrees front-to-back (30 degrees total) and 12 degrees side-to-side (24 degrees total) and, when adjusted, will still evenly split effluent. With a 4-inch riser to the surface, the system is easy to inspect and maintain. 877/244-9340; www.clarusenvironmental.com.



Septic chamber

The **Quick4 Plus Standard Chamber** from **Infiltrator Systems** offers high strength through a center structural column and is available in standard and standard low-profile (LP) models. The unit can be installed in a 36-inch-wide trench and a Contour Swivel Connection permits 10-degree right and left turns, making it well suited for tough terrain and tight job sites. The chamber's 4-foot length provides optimal installation flexibility. Only 8 inches high, the LP model is 4 inches shorter than the standard model, allowing for shallow installations.

Two simple, flat endcaps are offered with the chambers. The all-in-one endcap can be used at the end of a chamber row or installed mid-trench to allow for a center feed and inlet pipe connections. Additional accessories are available. 800/221-4436; www.infiltratorsystems.com.



Gravelless drainfield

The **Q²** (Q squared where Q is flow) high-efficiency gravelless drainfield product from **Koi Environmental** consists of interconnected pieces of expanded polymer, including expanded polystyrene, designed to maximize surface area and void space. The pieces are formed into strong, lightweight dimensional blocks 6 to 12 inches square and 5 feet long. The blocks weight 2 1/2 to 5 pounds each, and can be stacked and cut for any dispersal system design.

Design features optimize oxygen transfer and bacterial growth, allowing effluent to be channeled to the sidewall of the trench. Variable porosity of the individual pieces making up the blocks can be adapted to different soil types. Vertical channels enhance evaporation, and provision is made for aeration and heating through a channel in the bottom of the block. Insulation of the polymer improves cold-weather performance. The unit is transportable and quick and easy to install. 800/980-9898; www.koienvironmental.com.



Septic vents

Vents from **Pagoda Vent Company** are septic system vents that look like a yard or landscape accent. They can be installed with or without the company's odor filter cartridges. The vents are easy to install, economical, come in three natural landscape colors, and are available in heights from 1 to 14 feet. 888/864-1468; www.pagodavent.com.



Vent filter

The **6-inch Poly-Air carbon odor-eliminating vent filter** from **Polylok** fits on 4- and 6-inch vent pipes. It contains 5 pounds of activated carbon that removes offensive odors, such as hydrogen sulfide. The filter is well suited for odor elimination in commercial and residential applications. It is a discreet way of treating septic odors and can be installed on existing vents. A smaller version is available to cover 1 1/2-, 2- and 3-inch pipe. 877/765-9565; www.polylok.com.



Pipe stand

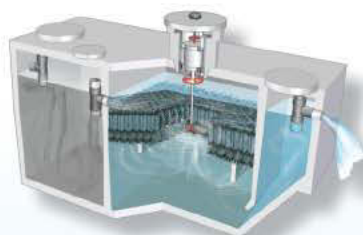
The **STF-BTBS bow tie pipe stand** from **SIM/TECH FILTER, Inc.** is designed for use in chamber systems where the distribution piping is suspended above the soil. The stand is independent of the chamber, allowing pipe to be installed before chamber installation and before the squirt test is performed. The unit installs by a squeeze-and-release action that makes installation quick and easy. The stand can be installed on the pipe before placing in the trench, and is easily adjusted to any desired spacing. The stand stores flat. It is available to fit 1-, 1 1/4-, 1 1/2-, and 3-inch pipe. 888/999-3290; www.simtechfilter.com.



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The **Sweet Air Filter** from **Tuf-Tite** was invented by Bud Sweet of Sweet Septic. The filter is a self-cleaning D-Vent filter that uses activated carbon to remove offensive odors from roof vents. It uses heat from the sun to automatically clean and refresh itself. The filter comes with a removable cap for easy carbon replacement. It fits 2-, 3- and 4-inch pipes, and custom sizes are available. 800/382-7009; www.tuf-tite.com. □





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Drainfield Media and Design

By Scottie Dayton

DEVICE CONCEALS SEPTIC VENTS

Problem

A homeowner in Sharon, Mass., spent thousands on a new porch and landscaping and wanted to disguise the 3-foot-tall vent pipe from the onsite system in the yard.

Solution

Kevin Orlando of All Seasons Septic Service in Stoughton suggested the Dirty Bird yard ornament or pedestal with birdbath from BS Design Corp., a concealment device with a serviceable charcoal filter that addresses odors. The unit comes in three colors to match any decor.



RESULT

The homeowner has a focal point instead of an eyesore and guests don't realize it vents an onsite system. 866/968-9668; www.thedirtybird.com.

FILTERS BRING BACK CLIENTELE

Problem

The owners of Tall Timbers Campground in Sussex, N.J., were losing business due to odors from a vented onsite system.

Solution

Septic Experts in Sussex installed a Puraflo peat fiber treatment system and teed Wolverine Brand activated carbon vent filters from Simple Solutions Distributing to 20 laterals servicing mobile homes. Workers installed Super Wolverine filters with solar fans on pump stations to circulate fresh air through the system, reducing gas concentrations and eliminating odors.



RESULT

After two years, the campground is odor-free and the filters are still using the original carbon. 973/846-7817; www.industrialodorcontrol.com. □

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Go to www.COWA.org

June 22-23, 2012 - Waco, TX

Instructors: Jim Anderson and Dave Gustafson
Go to www.NAWT.org

August 27-28 - (TBA) Arizona

Univ. Of AZ - NAWT
Contact: Kitt Farrell-Poe at (520) 621-7221

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sales@septicsew.com
www.septicsew.com
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800-292-9087 • 713-777-2626 • Fax: 713-988-1750
dchurch@swcontrols.com
www.septicsewagepumps.com
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602 E Union St.
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888-565-8908 • 262-567-9030 • Fax: 262-567-9532
susan@septronicsinc.com
www.septronicsinc.com
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SIM/TECH FILTER, Inc.

1455 Lexamar Dr.
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888-999-3290 • 231-582-1020 • Fax: 231-582-7324
sales@gag-simtech.com
www.simtechfilter.com
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866-667-8465 • 973-846-7817 • Fax: 973-858-0219
sales@industrialodorcontrol.com
www.industrialodorcontrol.com
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800-426-3349 • 231-348-5866 • Fax: 720-834-3102
kbeer@sludgehammer.net
www.sludgehammer.net



Snyder Industries, Inc.

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402-467-5221 • Fax: 402-465-1220
sales@snydermet.com
www.snydermet.com
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SPI - Septic Products, Inc.

1378 Twp. Rd. 743
Ashland, OH 44805
419-282-5933 • Fax: 419-282-5943
sales@septicproducts.com
www.septicproducts.com
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T



T&T Tools, Inc.

PO Box 531
Spring Lake, MI 49456
800-521-6893 • Fax: 800-521-3260
sales@tandttools.com
www.mightyprobe.com
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Sharon, MA 02067
866-968-9668 • 781-793-9334
Info@bsdesigncorp.com
www.thedirtybird.com
Ad on page 51

The Shaddix Company, Inc.

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256-338-4987 • Fax: 256-737-0051
mitch1850@att.net
www.theshaddixcompany.com
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Tuf-Tite, Inc.

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800-382-7009 • 847-550-1011 • Fax: 847-550-8004
sales@tuf-tite.com
www.tuf-tite.com
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W

Waterloo Biofilter Systems, Inc.

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Rockwood, ON N0B 2K0
Canada
519-856-0757 • Fax: 519-856-0759
Info@waterloo-biofilter.com
www.waterloo-biofilter.com
Ad on page 41

Wieser Concrete Products, Inc.

W3716 US Hwy. 10
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800-325-8456 • 715-647-2311 • Fax: 715-647-5181
andy@wieserconcrete.com
www.wieserconcrete.com
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X



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www.xerxes.com

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sales@blomicrobics.com
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Info@clarusenvironmental.com
www.clarusenvironmental.com
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Delta Environmental Products
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Denham Springs, LA 70726
800-219-9183
www.deltaenvironmental.com
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Eljen Corporation
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East Hartford, CT 06108
800-444-1359 • 860-610-0426 • Fax: 860-610-0427
Info@eljen.com
www.eljen.com
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Fergus Power Pump, Inc.
24978 225th St.
Fergus Falls, MN 56537
800-243-7584 • 218-736-6772 • Fax: 218-736-7115
fppproducts@prtcl.com
www.ferguspowerproducts.com
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888-878-4668 • 337-474-2804 • Fax: 337-477-7904
questions@hootsystems.com
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Info@presbyeco.com
www.PresbyEnvironmental.com
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877-782-6427 • 502-992-8235 • Fax: 502-992-8249
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Ad on page 51



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dchurch@swcontrols.com
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www.libertypumps.com
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www.septicsserv.com
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dchurch@swcontrols.com
www.septicsewagepumps.com
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www.septronicsinc.com
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SPI - Septic Products, Inc.

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www.nawt.org
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Info@alita.com
www.alita.com
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Norwesco, Inc.

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888-878-4668 • 337-474-2804 • Fax: 337-477-7904
questions@hootsystems.com
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Waterloo Biofilter Systems, Inc.

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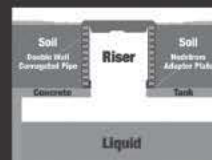
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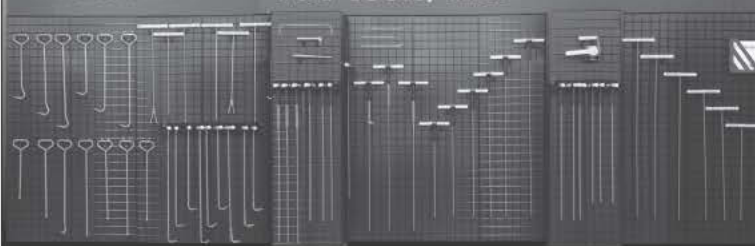


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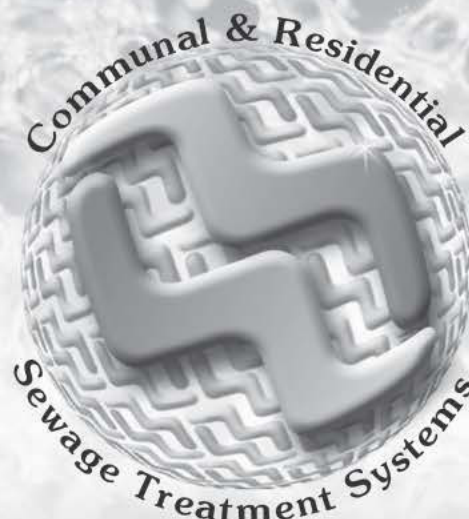
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The National Association of Wastewater Transporters Shoot-Out at the 2012 Pumper and Cleaner Expo Feb. 27-March 1 in Indianapolis featured attendees competing for prizes in four timed events. Here is a summary:

Vacuum Truck Hose Set-Up, sponsored by Progress Tank, Kuriyama of America, and Fergus Power Products, consisted of connecting two 30-foot-long, 4-inch Tiger Green hoses onto the Progress Tank and racing the end of the second hose into a riser. Tiger Green hoses went to the winner, Chris Hartman, with a time of 21 seconds. Kuriyama of America donated two more Tiger Green hoses and a 10-foot Tiger Green drop hose that were sold with proceeds going to NAWT.

Professionals raced to see who could install an SJE-Rhombus septic tank alarm fastest. The winner received \$100 from COLE Publishing and four passes to the 2013 Pumper & Cleaner Expo.



Larry Ward II (left), winner of a Fruitland RCF 500 pump is shown with Fruitland Tool & Mfg. representative Keith Myers.

Vacuum Pump Vane Replacement, sponsored by Fruitland Tool & Mfg., consisted of changing out pump vanes. A Fruitland RCF 500 Pump worth \$5,200 went to winner Larry Ward II, of Hillbilly Pumping & Hauling, Joplin, Mo.

Portable Restroom Race, sponsored by PolyPortables and Allied Forward Motion, involved pushing a portable restroom through a course and using a Mini Metro Mover to pull it back to a designated mark. The PolyPortables restroom and Mini Metro Mover went to winner, Dave Kibbe of Complete Septic Service of Belchertown, Mass.

Tank Alarm Installation, sponsored by SJE-Rhombus and COLE Publishing, involved installing an SJE-Rhombus septic tank alarm. COLE Publishing awarded \$100 and four 2013 Pumper & Cleaner Expo passes to winner John Hignett, of Mr. Rooter Plumbing of Cordova, Md.

NAWT also hosted training and certification Inspector and Operation and Maintenance courses and a Vacuum Truck Technician course. □



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The S450TX mini skid-steer from Vermeer has a 500-pound operating capacity with 1,430-pound tipping capacity. Features include a four-pump hydraulic system, single pilot-operated joystick and choice of Kubota 24.8 hp diesel or Kohler EFI 27 hp gasoline engine. Track options include the standard 9-inch or 7-inch-wide version for tight work areas. Other features include spring-cushioned platform, LED lighting, rear panel and side shields. 888/837-6337; www.vermeer.com.



Little Beaver Kwik-Trench mini trencher

The KT 200B and KT 2400B Kwik-Trench mini trenchers from Little Beaver can trench up to 30 feet per minute. Featuring carbide-tipped teeth and a powerful drive system, the mini trenchers cut through compacted clay, road fill, asphalt and tree roots up to 10 inches thick. Powered by a 5.5 hp Honda engine with V-belt drive system, the 265-pound KT 200B can achieve depths up to 8 inches and trenches from 1 to 3 inches



wide. The 430-pound KT 2400B is powered by an 8 hp Honda engine, achieves depths to 12 inches and produces trenches from 1 to 4 inches wide. 800/227-7515; www.littlebeaver.com.

Ditch Witch walk-behind trencher

Ditch Witch RT12, RT16, RT20 and RT24 walk-behind trenchers from The Charles Machine Works Inc. feature a hydraulic drive system, solid, adjustable trail wheel and skid-steer type steering. Models RT12, RT20 and RT24 are powered by 12, 20 and 24 hp Honda engines, while RT16 has a 16 hp Vanguard Briggs & Stratton engine. 800/654-6481; www.ditchwitch.com.



Norwesco seamless septic tanks

Low-profile, seamless septic tanks from Norwesco feature one-piece construction for greater strength and to ensure against leakage. Tanks are available in 500-, 750-, 1,000-, 1,250- and 1,500-gallon sizes. 800/328-3430; www.norwesco.com.



Scalewatcher water conditioner

The Scalewatcher water conditioner from Scalewatcher North America Inc. produces a varying, electronically applied force field, induced by a coil wrapped around the outside of the pipework that keeps minerals in suspension and prevents limestone from forming. Systems can treat from 1- to 80-inch pipes. 610/932-6888; www.scalewatcher.com.



Premier Tech Aqua wastewater treatment system

The Ecoflo polyethylene, ready-to-use wastewater treatment system from Premier Tech Aqua is available in nine models for greater flow and disposal flexibility. The plug-in, plug-out system comes pre-assembled (components and filtering media) and shipped to the site. 604/346-8199; www.premiertechqua.com.



NAWT/NEHA INSTALLER TRAINING AND CERTIFICATION

WHEN:

Course: Wednesday, June 27
8:00 a.m. - 5:00 p.m.
Exam: Thursday, June 28
8:00 a.m.

WHERE: San Diego, CA
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SJE-Rhombus redesigns website

SJE-Rhombus redesigned its corporate website, www.sjrhombus.com. The site enables users to access information through market segments, product specifications, descriptions in seven languages, news events, video and newsletter registration.



Ditch Witch supports 'I Make America' campaign

The Charles Machine Works Inc., manufacturer of Ditch Witch construction equipment, has joined with other American manufacturers to support "I Make America," a grassroots campaign to promote the growth of American manufacturing jobs. The goal of the campaign is to persuade lawmakers to pass legislation that will create more manufacturing jobs for American workers.

Puraflo peat fiber biofilter approved in Manitoba

The Environmental Services Branch of Manitoba Conservation approved the use of in-ground and mounted pads for the dispersal of the Anua Puraflo peat fiber biofilter effluent. Manitoba Conservation also approved Puraflo modules in a polishing filter configuration.

Bear Onsite receives patent for filter cartridge

The U.S. Patent Office awarded Bear Onsite owner and ML3 inventor Theo Perry a patent for his filter cartridge. Patent 8,075,774 allows for a filter cartridge with progressive filtration like its predecessor ML3 series, but with a more economical design.

Alteris SeptiCover program receives NOWRA endorsement

The National Onsite Wastewater Recycling Association (NOWRA) has endorsed Alteris Inc. and its SeptiCover program as the preferred errors and omissions insurance provider for its nationwide membership. Designed for septic designers and inspectors, the program is underwritten by Darwin Select Insurance Co., a member company of Allied World Assurance Company Holdings, AG. □



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Texas Legislation Raises Issues

Writing in the Texas On-Site Wastewater Association newsletter, Perry Burney of Aerobic Septic Service Co. in Azle reports on the aftermath of legislation that eliminated maintenance contract requirements and allowed homeowners to make their own repairs.

He reports service technicians are finding more and more systems with lids not screwed down, lightweight lids substituted for heavier childproof ones, or coverings like wood, boards, plywood, 5-gallon buckets, and water meter lids. This last item caused the death of a 3-year-old in Denton County in 2009 when she fell through and drowned.

Burney also sees more large repairs. "Many people moving to Tarrant County don't realize that their system needs maintenance because no one tells them," he writes. "By the time we get the call, a minor repair has escalated to a major problem."

Johnson County has mostly mobile homes. Driving through those areas at night reminds Burney of red-light districts because of all the blinking alarm lights. "I will guarantee you that those people have no intention of repairing the problem," he says.

CALENDAR OF EVENTS

June 5-6

Trenchless Technology Road Show, Scotiabank Convention Center, Niagara Falls, Ontario 330/467-7588; www.trenchlessonline.com.

June 28-30

State Onsite Regulators Alliance, Captains of Industry, and National Environmental Health Association Conference, Marriott Marquis and Marina, San Diego, Calif. 800/624-8301; www.nesc.wvu.edu/sora.

TRAINING & EDUCATION

Alabama

Licensing classes are the joint effort of the Alabama Onsite Wastewater Association (AOWA) and University of West Alabama (UWA). Courses are at UWA Livingston campus unless stated otherwise:

- June 21-22 – Continuing Education Class, Dothan
- July 12-13 – Pumpers Class
- July 18-20 – Advanced Installer I Class

The first day of Continuing Education classes is for installers and the second day is for pumpers and portable restroom operators. Call the training center at 205/652-3803 or visit www.aowatc.uwa.edu.

California

The California Onsite Wastewater Association is offering these NAWT classes:

- June 26 – Installation of Onsite Systems (NAWT course), San Diego
- June 28 – Outreach (NEHA schedule), San Diego
- July 26 – Low Pressure Pipe Drainfield and Drip Dispersal Design, Chico

Call Kit Rosefield at 530/513-6658 or visit www.cowa.org.

Florida

The Halifax District of the Florida Environmental Health Association will host a septic system training program June 4-5 at the Volusia County Health Department in Daytona Beach. Guest speakers include Dave Gustafson of the

University of Minnesota, Bob Rubin of North Carolina State University, and Gil Longwell of the Onsite Institute. Visit www.halifaxfeha.com.

The Florida Onsite Wastewater Association Training Center is offering these courses:

- June 19 – Operations and Maintenance A, Fort Myers
 - June 20 – Operations and Maintenance B, Fort Lauderdale
 - June 21-22 – Alabama and Florida Combined Training Sessions, Dothan, Ala.
 - July 10 – Operations and Maintenance A, Gainesville
- Contact FOWA at 321/363-1590 or www.fowaonsite.com.

Georgia

The University of Georgia Center for Urban Agriculture is offering its Onsite Wastewater Management class on July 26 in Gainesville. Contact the Continuing Education Center at 770/229-3477, conteduc@uga.edu, or www.ugaurbanag.com.

Iowa

The Iowa Onsite Wastewater Association has a Habitat for Humanity Systems Installs course June 14-15 in Waverly. Contact Alice Vinsand at 515/225-1051, execdir@iowwa.com, or visit www.iowwa.com.

Kentucky

The Kentucky Onsite Wastewater Association has a continuing education course for certified installers on June 15 at the Bluegrass Community Technical College in Lawrenceburg. Call 270/401-2301 or visit www.kentuckyonsite.org.

Minnesota

The University of Minnesota Water Resources Center has these classes:

- June 5-6 – Inspecting Onsite Systems, St. Cloud
- June 7 – Soils Continuing Education, Rushford Village
- June 14 – Soils Continuing Education, Detroit Lakes
- June 19-21 – Soils, Rochester
- June 27 – Soils Continuing Education, St. Cloud

Call Nick Haig at 800/322-8642 or visit www.septic.umn.edu.

New England

The New England Onsite Wastewater Training Center at the University of Rhode Island in Kingston has these courses:

- June 6 – Soil Basics for the Onsite Wastewater Contractor
- June 13 – Advanced Soil Morphology
- June 14 – Hands-On Component Installation
- June 21 – Bottomless Sand Filter Design and Installation
- June 27 – Advanced Soil Morphology
- July 12 – Microbiology for Wastewater Professionals
- July 26 – Surveying Techniques for the Wastewater Professional

Call 401/874-5950 or visit www.uri.edu/ce/wq. For soil courses, call Mark Stolt at 401/874-2915 or email mstolt@uri.edu.

North Carolina

North Carolina State University has these Web-based courses:

- June 6 – Cycling of Water Through Soil
- June 13 – Chemistry of Soil
- June 20 – Role of Soil in Plant Nutrition
- June 27 – Soil Ecosystem

Call Joni Tanner at 919/513-1678 or visit www.soil.ncsu.edu/training. □

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BUSINESSES

FOR SALE: Septic pumping and portable toilet business in north central MN. Includes 2 vacuum trucks, 3,000 gallon Tandem and 2,000 gallon, single axle, portable toilet service truck, 1 ton service van, 6 place portable toilet trailer, and 59 portable toilets. Asking \$215,000. Home: 320-676-8638. Cell: 320-630-3640. (P07)

RETIRING AFTER 30 YEARS: Well established septic/pumper business. Located in Lower Hudson Valley, Dutchess County, New York. Many accounts and area is growing rapidly! Serious inquiries only please. Call Brad 914-447-5043, IL. (P06)

BUSINESSES WANTED

WANTED: Looking to acquire septic businesses in Massachusetts. All inquiries will be confidential. 508-868-7627. (PIBM)

DRAINFIELD RESTORATION

Soil Shaker 2000. Universal skid steer attachment for drainfield restoration. Buy factory direct \$6,250. www.soilshaker.com or call 320-293-6644. (P1-12)

HAND TOOLS

Crust Busters - Portable, lightweight machine guaranteed to mix up septic tanks and grease traps! Save time and money! www.crustbusters.com, 1-888-878-2296. (IM)

PUMPS

Hydromatic, Zoeller, Liberty, ABS, Myers, Grinder and Effluent pumps. Lift station packages and high water alarms are also available. Septic Services, Inc. www.septicserv.com. 1-800-536-5564. (IM)

SEPTIC TRUCKS

1991 Mack CH 613: 1998 Delzato unloader 7, 1,150-gallon tank, forms 1-1500 multiform. Truck: \$15,000, forms: \$3,500. 360-275-1996. (P06)

SEPTIC TRUCKS



1978 Mack Vac Truck: Mack diesel, M/T, 10,500/19,040 axles, camelback susp., spoke wheels, 22.5 tires. \$24,500
715-546-2680 WI BM



2003 Sterling L7500 Vac Truck: Cat 3125 @ 315 hp, A/T, 55K miles, spring susp., 2003 Vac-Con V390LHAD, 3 compressor fans, 10' telescopic boom, HS drive, articulating hose reel, hi-dump debris tank. \$99,500
715-546-2680 WI BM

2005 F550, diesel, auto 4x4, NEW flatbed w/ lift gate, NEW steel slide-in, 300 waste, 150 water, 5.5 Honda engine w/ Kondisix pump. \$36,000. www.pumpertrucksales.com. Call Mike @ 303-478-4796 or JR. @ 720-253-8014, CO. (PBM)

TRUCKS (DUMP, SEPTIC, MISC.)

1997 Mack CH613 with a 2009 Lely 80 BBL vacuum tank, Jurop pump. \$42,500. 2000 Peterbilt 330 with a 2,000-gallon vacuum tank, NVE pump. \$32,500. Call 254-534-5007 for details. (P05)

FOR SALE: 1998 International, single axle patrol truck, model 2554, 6-speed Allison auto. This truck comes fully equipped with a 12' Monroe reversible front plow, 11' reversible underbody, 8' wing and a 9' tailgate spreader. This truck has only 41,841 miles and has been well taken care of. Asking price is \$30,000. For more information contact John Stevens Pine Lake Town Shop Foreman at 715-362-2657. Pictures can be seen at www.townofpinelake.com/truck.html. (OCMP06 TGI05)

WANTED

Wanted to Buy: Vactor 2100s and late model Guzzlers. Cash. Phone 800-336-4369. (CPBM)

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ABOUT THE AUTHOR

Eric Casey is executive director of NOWRA. For more information, visit www.nowra.org or call 800/966-2942.

Being Online

It's your choice whether to establish a presence on the Internet – but if you don't, you could be hurting your business prospects

By Eric Casey

Does your company have a website? A presence on Facebook, Twitter or LinkedIn? If your answer is no, you're not alone. More than 90 percent of NOWRA members don't list a website in our database, and more than 20 percent don't even provide an email address.

Every company has to decide whether being online is worth the time and investment it involves, but one thing no company should do is ignore the impact of the online world on a business. Whatever your views on the value of being online, here are a few things to consider:

When people look for a septic system contractor in your area, and don't see a website for you, but they do see one from a competitor, chances are they won't even consider your company – and you won't even know it.

If you're not online, you don't exist – at least to some potential customers. There is a reason Google has become a verb. For large numbers of people, Google is the number one source of information. When they look for a septic system contractor in your area, and don't see a website for you, but they do see one from a competitor, chances are they won't even consider your company – and you won't even know it.

Websites nowadays are easy to build. Wordpress.com offers free websites to anyone, and they provide lots of easy point-and-click widgets to make building a site a snap. Other websites, like GoDaddy, Homestead and VistaPrint offer even easier tools for building a website and cost less than \$10 per month. Even if your efforts only bring in one or two customers, your investment of time can pay dividends.

If you don't want to build a website, consider putting your company on Facebook, which has nearly a billion users worldwide. Many people use Facebook to learn more about companies they are considering. Creating a fan page or a group page costs no money, yet it gives you a presence online, helping you connect with customers and allowing new people to find you.

While the details for doing this are beyond the scope of this column, if you go to Facebook and type in the word "septic," you will see how many onsite industry professionals are already there. Look at some of those pages and you will quickly get ideas about how you can make this social media platform work for you.

Even if you don't have a website, your business is online – and it's telling lies about your company. If you've never typed your company name into the Google search engine, you should do so. At a minimum, you are likely to find your company information on websites such as yellowpages.com, manta.com and others. Chances are also good that the information shown there is wrong. At the very minimum, you should work with those websites to make sure your information is accurate. Some will also let you post a picture of your company or include a couple of sentences about what your company does.

More troubling are the many places where disgruntled customers can post negative information about you. Angie's List, Yelp.com, Contractor-FromHell.com, Kudzu, BetterBusinessBureau.com and others let consumers vent frustrations with contractors. They'll also use Facebook, Twitter and even YouTube to complain about the job you've done.

Before the Internet, it was said that one unhappy customer would tell 10 people. Now unhappy customers can tell millions – and those posts never go away. Fortunately, you can fight back. There are almost always two sides to a story, and most websites provide a mechanism for you to add your version of events.

But you can't tell your side of the story if you don't know that complaints are out there. A Google search will help you find websites with negative customer reviews. To find out whether people are complaining about you on Facebook or other social media sites, websites such as SocialMention.com, OpenBook.com and TweetBeep are good tools.

The decision to have a website or a Facebook page is yours. What people are saying about you online is beyond your control. But if you choose to ignore what people are saying, the consequences will hurt you, and you probably won't even know why. ❑

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