

March

2015

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LEADING THE WAY

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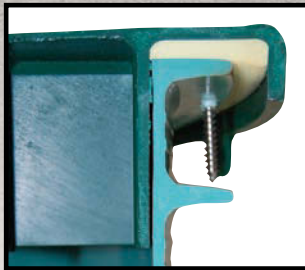
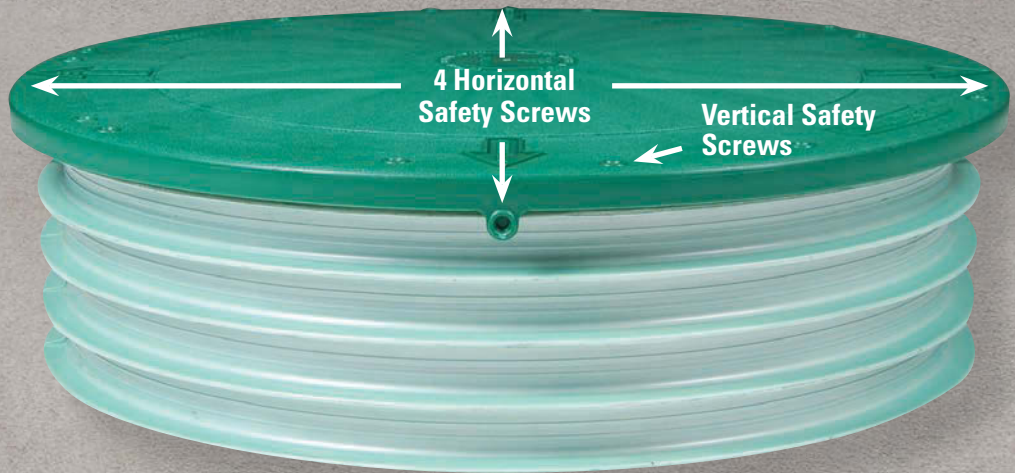
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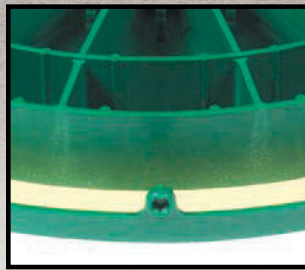
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EF-4 Combo Includes Filter, Housing and

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SD-4
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NSF®
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 ANS/NSF
 Standard 46

TB-6 Housing

Gas/Solids
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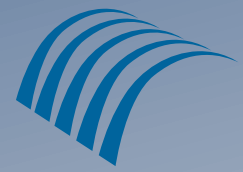
6" Effluent Filter EF-6

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Selling the Presale Inspection

How do you reach prospective homeowners with an onsite inspection message before they buy that dream home?

By Jim Kneiszel



Are point-of-sale onsite system inspections required in your state or county? The trend in requiring system inspections to validate real estate transfers offers more and more homeowners protection from unexpected costly repairs before they make the purchase. And with homebuyers stepping out to make the biggest purchase of their lives, that's how it should be.

Granted, general point-of-sale home inspections remain an optional – if not prudent – way for buyers to protect their investment in the major purchase of an item with a lot of costly moving parts. But the decision to disregard the value of a home inspection for such things as the condition of the roof, furnace and foundation puts only the homebuyer at a financial risk. Let the buyer beware, is the common caution.

But I would argue ensuring proper onsite wastewater treatment is a public health issue, and one where a homeowner's neglect can cause harm to a next-door neighbor or an entire community of nearby residents. A failing septic system can threaten the groundwater of many surrounding neighbors, and pathogen-laden effluent bubbling to the surface is a public health nuisance.

A more comprehensive service could be offered to the buyer of a home with an advanced system or one with challenging site conditions, where the home inspector might like to have you on hand as an onsite expert.

Whether or not homeowners in your area are required to seek out presale onsite inspections, as a professional you know conducting such inspections is a sound decision. But traditionally, consumers only seem to reach out to you when symptoms of a system failure emerge and the toilet won't flush. How do you get people to act outside of crisis mode and reach prospective homebuyers when your service can best protect their financial interests?

SERVICE BEFORE THE SALE

The stakes are high for homebuyers and for your long-term service reputation, so getting the word out is worth the effort. Here are a few steps you can take to market for point-of-sale inspections:

Advertise

The next time your community has a home show, rent a booth as some home inspectors do and promote your area of expertise. Explain to potential customers how an onsite professional can make a more thorough and accurate assessment of their wastewater system than a general home inspector. Take out ads in the local weekly newspaper or on a home improvement or real estate radio program promoting the value of presale inspections. Target an educational flyer distribution in neighborhoods of modest homes where homeowners may be contemplating a step up to a bigger house.

Offer a homebuyer's special discounted inspection that trades some of your immediate profit for the potential in creating long-term customer relationships. Establish a trust with a homebuyer and you will reap the rewards in maintenance contracts now and repairs or replacements when they are needed.

Educate

Offer a free class covering the proper care of septic systems through your local health department or county Extension service. Drive home the message that a system inspection is a smart move for would-be homeowners and not just for those who've owned a house for years. Be sure they understand the potential costs of repairs or system replacement and the health risks associated with neglected, failing systems.

Your company website is a great place to expand consumer education efforts. Populate your website with content explaining in detail how onsite systems function, including graphic drawings and photos that demystify the series of underground pipes, tanks and pumps. Let homeowners know the steps they can take to care for their systems for the long haul. And tell them to consider a presale system inspection when they put their current house on the market and look to move up to their next house.

Inform real estate agents

Unfortunately, it seems local Realtor associations are most responsible for fighting point-of-sale initiatives as they arise. I would characterize their now-predictable objections as knee-jerk reactions as they fear a small number of delayed or unrealized commissions from home sales. My view is their efforts to derail presale inspections are shortsighted and don't help them appear as professionals who want to work in the best interest of buyers and sellers.

That said, there might be some room for valuable partnerships between real estate companies and onsite professionals. Get together with local Realtors and offer to bring agents up to date about the latest onsite technologies. This will give you an opportunity to calm the fears of agents who may always have a worst-case-scenario mentality about point-of-sale inspections. Explain that many repairs are minimal and will cause barely a hiccup in the sale process. Remind them that a thoroughly educated homeowner benefits the real estate sales community in goodwill and long-term happy relationships with buyers and sellers.

Network with home inspectors

You may already cross paths with home inspectors in your area. Why not explore working together to make sure prospective homebuyers receive the best advice on all components of a house they're considering for purchase? Some home inspectors may feel comfortable assessing onsite systems while others may not. And the more complex and expensive these systems become, the more receptive home inspectors may be to seeking your professional service to augment their own.

Here's a strategy to consider: Suggest a tiered presale inspection service with offerings tailored to the needs of individual homeowners. A basic service for a home using sewers obviously wouldn't need your expertise. If the home in question uses a traditional gravity system with a tank and drainfield, the inspector may want to handle the inspection alone. A more comprehensive service could be offered to the buyer of a home with an advanced system or one with challenging site conditions, where the home inspector might like to have you on hand as an onsite expert. Offer the home inspectors an incentive to utilize your service and then establish a relationship with the buyers after the sale.

A PUBLIC SERVICE

When the onsite community promotes point-of-sale inspections, everyone wins. Homebuyers and sellers iron out any issues ahead of a sale to avoid contentious legal issues later. The real estate sales community proves it cares about being a thorough advocate for customers in these biggest-of-all transactions. And the onsite inspectors/installers create goodwill for the industry one house at a time. □

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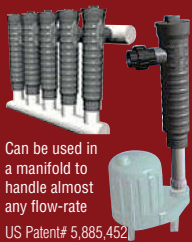
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The 4" filter in a 4" Tee. Patent# 6,811,692

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BIG PICTURE Mound System Location

Before determining where to place a mound system, it is probably a good idea to have a picture of the general mound profile. Location on the landscape is the first key component. An onsite expert walks you through mound system placement.

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EXPERT ADVICE

Siphon Sizing

There are a lot of factors to consider when properly sizing a siphon. In response to a reader question, an expert relays an in-depth discussion on how to select the right dosing siphon for an onsite system.

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Overheard Online

“What business owners and managers do understand is the importance of good planning, and marketing, like so many other aspects of business, needs a good plan to be effective.”

- *6 Ways to Fix Your Crappy Marketing Plan*

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CLIENT CLASH

Keeping Calm

Learning how to deliver bad news to customers is a must in any service industry. Check out these seven tips for understanding the customer's perspective and relaying bad news in the best way possible.

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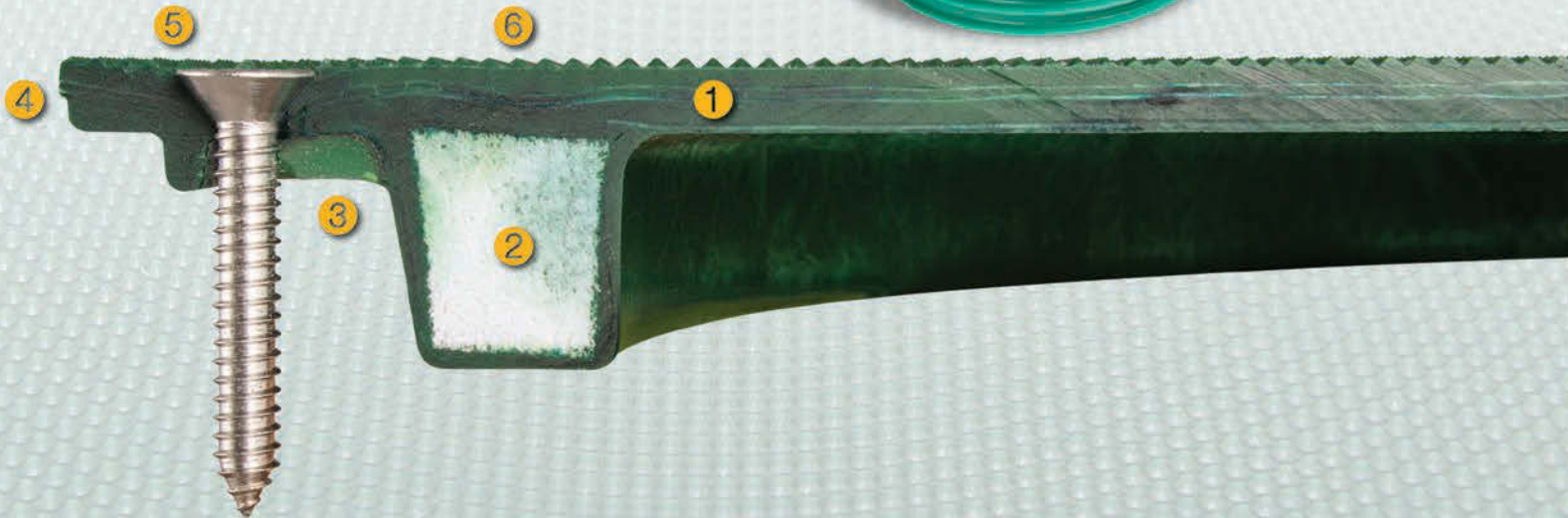
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LEADING THE WAY

Missouri's Hill and Hill Maintenance and Excavation takes on the tough onsite challenges and isn't afraid to employ the latest technologies to satisfy customers and regulators

By Gil Longwell

Ease of maintenance. It's the first consideration Jeff Hill gives to every onsite installation job he tackles.

"Before we select component locations, we consider how those locations will facilitate long-term maintenance. It is a given that the wastewater treatment technology selected must match the site's soil and slope conditions," Hill says. "So we start from this somewhat unusual but most important vantage point."

Hill is president of Hill and Hill Maintenance and Excavation Inc., which he founded 30 years ago. The company serves residential, commercial, institutional and government clients from its headquarters in Shell Knob, Mo. The lake resort community is about 20 miles west of Branson, Mo., on Table Rock Lake.

The company's primary market sectors are site preparation, excavation, onsite systems, disaster cleanup and concrete fabrication.

Dale Jenkins, installer, describes much of the company's service area as

Hill and Hill Maintenance and Excavation Inc., Shell Knob, Mo.



OWNER:	Jeff Hill
YEARS IN BUSINESS:	30
EMPLOYEES:	10
SERVICE AREA:	50-75 mile radius
SERVICES:	Onsite system installation, site preparation, excavation, disaster cleanup and concrete fabrication
AFFILIATIONS:	Table Rock Better Business Bureau, Missouri Smallflows Organization
WEBSITE:	www.hillandhill.biz

<< **OPPOSITE PAGE:** The crew at Hill and Hill Maintenance and Excavation Inc. includes, from left, Chance Sherfy, Dale Jenkins, Jeff Hill, Steve Campbell and Lorraine Brauer.

>> **RIGHT:** Jeff Hill is shown at Hill and Hill's screening plant operation, which creates soil suitable to use in their installation projects. (Photos by Bruce Stidham)

“topsoil deprived.” There just isn’t that much in so many places, and solid rock is as prevalent as deep soil is scarce, he explains. Excavations for treatment tanks are typically hydraulically hammered into the bedrock.

The company operates its own screening plant. This allows production of a soil material that satisfies the county regulators. “We can screen down to 1/4-inch, which gives us an advantage,” Hill says. Readily available suitable cover material in proximity to a job site reduces haul distances and costs.

“New installation of conventional box-and-rocks systems are few and far between. They are just 10 percent of all systems we install. This is partly because of the shallow soils and partly because there’s not much flat ground available,” Jenkins adds.

EMBRACING TECHNOLOGY

It is important for Hill to be familiar with a variety of advanced treatment technologies, and he started filling this market niche long ago. Table Rock Dam, completed in 1958, created its namesake lake. About 20 years ago, the Army Corps of Engineers recognized the importance of advanced treatment for onsite systems in the lake’s soil-deprived drainage area. When the Corps sought contractors to install those early systems, Hill was one of the first successful project bidders.

“I guess I was in the right place at the right time. We got involved with those early systems and learned how to match technology to the site,” he recalls.

Hill has embraced each emerging technology. To be sure, he favors some, but “matching the system to the site is the first priority,” he says.

Effluent dispersal is as important as effluent quality, and with only 18 inches of heavy clay sitting on bedrock, Hill and Jenkins rely on drip irrigation and low-pressure pipe systems. Jenkins explains that “typical linear loading for these is about 0.2 gpd, and that’s a bit less than half the 0.45 gpd for conventional systems.” They believe there is a substantial evapotranspiration rate, perhaps as high as 80 percent. “Some of [the effluent] must go up – it can’t go down into the bedrock,” they reason.

LEARNING CURVE

Hill’s careful site layout and installation detail are compatible with his “do it right the first time” philosophy. “I will not throw a system in quick so I can get to the next job and the next ...,” Hill says.



Jenkins points to the learning opportunities inherent in repairing other installers’ systems. “We have picked up many ideas on what to avoid or do differently by seeing others’ work.” They use lessons from the field to avoid duplicating mistakes in their jobs. Perhaps their greatest learning opportunity came when they had to build a new system simply to facilitate future maintenance.

“One common mistake is that installers fail to adequately educate the homeowner or system user,” Hill says. A properly sited and installed system may be at greatest risk from an uninformed user. Advanced system users need advanced instruction; it goes beyond the traditional “what not to flush” briefing. Hill believes a high number of homeowners who fail to take

Dale Jenkins removes a Polylok lid at a job site on Table Rock Lake.



Something positive can come out of a lawsuit

Caught in the middle of a lawsuit between a customer and his neighbor, Jeff Hill, president of Hill and Hill Maintenance and Excavation Inc., now insists on documented property surveys before he turns the first shovel of dirt for an onsite system project.

Hill's company, located in an area dominated by vacation homes, is perhaps more vulnerable to escalated property disputes than the typical residential construction area. He explains:

"In our service area, there are many absentee landowners," Hill says. Once, a Hill and Hill crew installed a system under the careful direction of the friend of an absentee landowner.

"Sometime after the installation and use of this seasonal home, the neighboring landowner took issue with the system's location," installer Dale Jenkins says. To prove his argument, the neighbor hired a surveyor. "When the surveyor proved the neighbor's contention that the system was indeed partly on the neighbor's property, things got interesting," Hill says.

The courts have not yet rendered a decision in the civil suit. Hill knows he is in the clear because he explicitly followed the agent's instructions. Nevertheless, he has changed his ways, adding language to his installation contracts requiring the client have a surveyor delineate property lines taking into account the system's proposed footprint.

Hill believes he is a better businessman because of the experience. County regulators are now looking at a new permit requirement that all property lines be professionally delineated.

care of basics like filter cleaning and pump monitoring proves this point.

And both men agree that the prior absence of a robust installer credential enabled "anybody with a backhoe to sell their services as an installer." Hill says, "Our company is building its ongoing service contract clientele one trouble call at a time." The company is willing to take on service agreements for systems others have installed.

RAISING THE BAR

Jenkins and Hill agree that the Missouri Smallflows Organization's education program has had a huge impact on the onsite program in Missouri. They credit state and county health department basic and continuing education requirements for raising the bar. "We see college pros, county regulators and Department of Natural Resources' staff teaching the courses," Hill says. This shows a strong commitment to more rigorous basic training and reasonable continuing education standards.

Hill's employees participate in basic annual training as appropriate for their respective duties and credentials, generally 10-15 hours more than required, he estimates.

(continued)

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Because of the company's experience with new technology, it's common for its work to be presented in Missouri training. Often they are the go-to guys when installers have questions outside the formal training environment, according to Hill. He does not resist this, saying all parties benefit from better-informed installers.

"New installation of conventional box-and-rocks systems are few and far between. They are just 10 percent of all systems we install. This is partly because of the shallow soils and partly because there's not much flat ground available."

Dale Jenkins

CREW & EQUIPMENT

Additional crew members include Lorraine Brauer, office manager; Tony Merritt and Steve Campbell, technicians; Steve Loflin, equipment operator; Gene Hill, truck driver; and Chance Sherfy and Cody Durossette, laborers.

Established with his brother, the company was first named Hill and Hill. When his brother left, Jeff Hill retained the name – his son worked with him and it made things simple. Hill's son left to start a directional boring company, but father and son continue to work together on many jobs.

Equipment for onsite projects is purposefully selected to make work flow smoother and enhance the completed projects. "The machines we use on or near the absorption areas are all tracked," Jenkins says. "Our goal is to have a compaction loading of less than 7 pounds per square inch. This is also a threshold that our regulators believe is appropriate for the systems and soils we work with."

(continued)



Workers use a Hitachi 50 mini-excavator with a Kent (Furukawa Rock Drill USA) attachment to excavate for a septic tank installation project.

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ABOVE: Dale Jenkins performs an inspection of a AdvanTex Treatment System manufactured by Orenco.

RIGHT: Dale Jenkins, left, and Chance Sherfy use a Spectra Precision Laser Model LL300 to take measurements at a job site.



A variety of equipment includes a Bobcat T300, John Deere 200 and Hitachi 50 excavators with Kent (Furukawa Rock Drill USA) hammer attachments, and a New Holland D100 dozer. Four service trucks move men and materials while a Freightliner dump truck with a box from Davis Dump Bodies moves soil from the screening plant or other aggregates to job sites. Most of the mechanical prep work is completed in a 60- by 90-foot fabrication and maintenance shop.

“Our company is building its ongoing service contract clientele one trouble call at a time.”

Jeff Hill

A FINISHED PRODUCT

Hill takes pride in offering a service that includes putting the landscaping in good condition before his crew leaves the job site.

“When a job is complete and after we leave the site, all the new owner will have to do is mow the grass,” comments Hill. Every job is sodded or hydro-seeded and mulched to preserve the installation and to provide erosion control. A finished product and well-matched distribution systems bring both homeowner and Hill a good feeling.

Hill and Jenkins say they will not install any component they wouldn’t put in their own backyards. If they have concerns about performance, they do not want to let themselves or their clients down. So Hill and Jenkins have learned how to install, manage, troubleshoot and repair each advanced treatment unit type that can be permitted in their service area.

“When we installed the first ATUs, tank precasters did not have a good idea of how to meet our needs. Before pumps were common, float trees were not known to be a viable system component,” Jenkins says.

“We learned by doing; we did the best we could on every job site and we still do,” Hill says. □

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Jim Anderson, Ph.D., and David Gustafson, P.E., are connected with the University of Minnesota onsite wastewater treatment education program. David is extension onsite sewage treatment educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor, as well as education program coordinator for the National Association of Wastewater Technicians. Readers are welcome to submit questions or article suggestions to Jim and David. Write to ander045@umn.edu.

Soil Sampling Tools

An accurate site evaluation starts with a soil profile. Here are several ways to properly dig up the dirt.

By Jim Anderson and David Gustafson

In previous columns, we discussed soil characteristics that are important to evaluate or determine the size and location of the soil treatment area. Based on recent questions, we thought now would be a good time to explore how the observations and descriptions can be obtained. Information about soil descriptions is available through a number of sources, including ASTM standard 5921 *Subsurface Site Characterization of Test Pits For On-Site Septic Systems* and the *USDA-NRCS Field Book for Describing and Sampling Soils*.

A few qualifiers before we continue: There are a couple of errors in the ASTM standard, so be cautious in terms of the structure descriptions, and while the *NRCS Field Book* can be downloaded from the agency's website, it takes some time and effort to get it to print properly due to the small page format. Also, additional general soil information can be gained from published soil survey reports. They can provide good background information on soils and soil properties present in a proposed system location. Remember, there is no substitute for direct observation in the field.

Each of the soil horizons or layers that make up the soil profile should be described in terms of their color, texture, structure and consistence. Horizons should be evaluated for their suitability for treatment and acceptance rate of septic tank effluent. Evaluation of the soil should be in its natural and undisturbed form.

THREE WAYS TO MEET GOAL

Three methods can be used to obtain soil samples that retain their form for evaluation. These are use of a soil probe, a soil auger and excavation of shallow pits. Each method has advantages and disadvantages. A soil probe is a hollow tube pushed into the soil. When extracted it provides an undisturbed soil column.

Soil scientists make use of hand probes, usually an inch in diameter, for routine soil survey investigations. They can probe to a depth of approximately 4 feet to provide a way to quickly assess the soils on site. To get a better look at the soil profile, a hydraulic probe mounted on a pickup truck is used. The probe is usually 3 inches in diameter and, depending on the soil conditions, can probe to a depth of 18 feet.

A soil auger, typically a hand-operated 3-inch-diameter bucket auger, provides a closer look at the soil than the 1-inch probes. The bucket has cutting tips that cut soil to fill the hollow bucket as the handle is turned. This method disturbs the soil, but the middle of the sample usually provides

a natural look at the soil properties. Sometimes it can be difficult to get an accurate reading on the soil structure. Having firsthand knowledge of the soils in the area and the soil survey information can help make this determination.

Excavating a shallow soil pit is the best choice for evaluation ... This gives the best chance for a broader view of soil characteristics and the opportunity to get up close and personal with the soil profile.

Depending on the type of soil being evaluated, buckets with different types of teeth can be used to get the best sample. A bucket for cutting through sand has teeth closer together to hold the soil when the auger is removed. A bucket for clay soils will have the teeth farther apart to make sample extraction easier. Bucket augers typically obtain samples to a depth of 5-8 feet. In some cases, they can be used to deeper depths by adding 3-foot extensions to the 5-foot bucket auger. There are limitations to an operator's ability to extract samples when wielding an 8- to 12-foot auger.

DIGGING A PIT

One major limitation for both the probe and soil auger is the presence of rocks in the soil material. We are reminded of this when conducting classes in the Northeast or Southwest. Some engineers are prone to using a truck-mounted flight auger to overcome this limitation. This is not an acceptable method because it destroys the soil structure, mixes soil colors and makes it hard to determine exact depths for changes in characteristics.

Excavating a shallow soil pit is the best choice for evaluation. A soil pit can be dug by hand or with a small excavator. This gives the best chance for a broader view of soil characteristics and the opportunity to get up close and personal with the soil profile. The chief drawbacks to pits include the potential to damage the soil treatment area, limitation of site access during installation and some safety concerns. So it is important to choose pit locations carefully to prevent damage and preserve site access, while ensuring the soil at the site is well represented. It is also important to maintain excavation safety when creating pits.

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To write the soil description, the soil from a boring or auger should be laid out on the ground or in a tray (a 6-foot section of rain gutter is good for this), with the depth of the excavated soil corresponding to the depth of the hole. A tape measure can be laid out alongside the tray for easy reference. It is not a good practice to take an auger-full bucket at a time and try to write the description. In a soil pit, the tape measure can run next to the pit face where the description will be written.

Most soil characteristics, texture, color and consistence are described in a moist state. So have a water bottle mister handy to moisten, but do not saturate the soil. Descriptions should be done with adequate sunlight. If using trays, move them to ensure adequate lighting. If pits are dug, orientation should take lighting into account.

PROPER REPORTING A MUST

Forms are available to record these observations using the correct terminology. Most states that require soil investigations have unique forms that must be used. Make sure to use those forms, or if you have your own form, it should include the same information as the state form. Make sure all descriptions are complete and filed with other information about the site and installation. □

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Watching the Wattage

The owner of a super-energy-efficient home goes against recommendations for an ATU or low-pressure pipe system in favor of a new gravity design

By Scottie Dayton

A homeowner building an energy-efficient, three-bedroom house in Riverton, Ill., researched options for a conventional gravity onsite system using no electrical components. He selected sand filter modules from Eljen Corp.

The Illinois Department of Public Health had approved the technology in 2012, but contractors had yet to use it. They preferred aerobic treatment units or low-pressure pipe systems and suggested them to the homeowner. With his mind set on conserving energy, the homeowner kept looking and ran into Rick Maguire of Maguire Backhoe Co. in Virden, Ill. “The soils at the site were so poor that we won’t install in them,” he says. “I jumped at the opportunity to test the modules in those conditions.”

Because this was the first installation of its kind in the state, Maguire turned it into a Field Day approved by the health department



Jim King from Eljen Corp. explains how sand filter modules function.

for continuing education units. The 95-percent electric, 1,900-square-foot house uses 350 kWh per month at a cost of less than \$50.

SITE CONDITIONS

Soils are Illinois till paleosol with an acceptance rate of 0.27 gpd per square foot. A floodplain is 150 feet from the wooded acre lot and a stream is 30 feet away. The site has no limiting layer.

SYSTEM COMPONENTS

Maguire worked with Jim King, strategic initiatives manager for Eljen Corp., to design the 600 gpd system. Major components are:

- IM 1,060-gallon single-compartment plastic septic tank (Infiltrator Systems) with EF-4 effluent filter (Tuf-Tite)
- Six-hole distribution box (Tuf-Tite)
- 36 A-42 sand filter modules (Eljen)

SYSTEM OPERATION

The drop in elevation from the house to the toe of the 2,200-square-foot drainfield is 18 inches. Wastewater flows 15 feet through a 4-inch PVC lateral to the septic tank, then out to the distribution box. It feeds a 4-inch perforated



ABOVE: Maguire Backhoe places 6 inches of sand with a Caterpillar 259 rubber-track skid loader to create a sand bed with 1 percent slope.

BELOW: Curtis Cluckey from Infiltrator Systems explains how to fasten the tank halves with plastic alignment dowels and locking seam clips.



PVC pipe on top of two rows of 18 48- by 24- by 7-inch-high treatment modules, each with an interwoven plastic corrugated core and 64 square feet of geofabric.

Left and right alternating half-inch holes spaced every 12 inches in the pipes drip effluent onto the modules. Liquid seeping through the units discharges into 6 inches of ASTM C-33 washed sand atop native soil. “Compared to conventional absorption systems, the media has approximately eight times more surface area per square foot,” says King.

SYSTEM PROFILE

Location:	Riverton, Ill.
Facility served:	Three-bedroom home
Designers:	Jim King, Eljen Corp., East Hartford, Conn.; Rick Maguire, Maguire Backhoe Co., Virden, Ill.
Installer:	Maguire Backhoe Co.
Site conditions:	Illinois till paleosol soil with acceptance rate of 0.27 gpd per square foot
Type of system:	GSF sand filter system from Eljen Corp.
Hydraulic capacity:	600 gpd

INSTALLATION

Sangamon County Public Health Department publicized the September 2014 Field Day, which attracted 29 installers, pumpers and regulators. Presenters were King and Curtis Cluckey, an area salesman from Infiltrator Systems. Bob Crawford, a representative from Bradford Supply Co. in Bloomington, Ill., provided the septic tank and treatment modules. Maguire supplied the effluent filter and distribution box. All components were purchased.

The day before the event, Maguire stockpiled 120 tons of sand on site. “Sand filter systems cost twice as much as ATUs or LPP systems because of the medium,” he says. “Fortunately, the quarry was nearby, as our semi-tractor trailer made five trips.”



Attendees watch as others carefully place sand to stabilize the geofabric.

His crew excavated the 22-foot, 6-inch by 90-foot-wide sand bed using a Caterpillar 305 rubber-track mini-excavator. “The soil was slick and smearing because it was hard and dry,” he says. “We had to scarify the bottom with a tooth bucket.”

Workers placed 6 inches of sand with a Caterpillar 259 rubber-track skid-loader then drove over it to compact it. The bed has a 1 percent slope. “We shaved off a corner to avoid setting the modules deeper than 18 inches,” says Maguire.

“The soils at the site were so poor that we won’t install in them. I jumped at the opportunity to test the modules in those conditions.”

Rick Maguire

ATTENTION CLASS

On Field Day, Maguire’s crew excavated the 8- by 12- by 6-foot-deep tank hole. Meanwhile, Cluckey acquainted the contractors with tank assembly, placement, backfill and riser installation.

“He showed how to position the reinforced watertight mid-seam rubber gasket on the 160-pound injection-molded halves to retain the tank’s waterproof warranty,” says Maguire. “Then Curtis let attendees fasten the halves with plastic alignment dowels and locking seam clips.”

After Maguire set the tank, helpers filled it half full with water. His crew compressed the backfill to remove voids that could allow internal tank pressure to distort the plastic.

Cluckey emphasized how to ensure the risers were watertight, then how to lock and screw the lids securely. He noted effluent screens must have 1/16-inch filtration to trap as many particles as possible to prevent clogging of module pores.

Maguire’s crew set the distribution box on the edge of the bed, squaring and leveling it with a sand ballast. Meanwhile, others laid the 4-inch supply line in the 12-inch-deep trench from the tank outlet to the box.

ACT II

Then attendees gathered around the pile of modules to hear King discuss bed designs, the importance of a porous bottom, and how to mount the perforated pipes. Everyone helped carry the units to the sand bed as King placed them in two rows on 36-inch centers. It was hands-on for those who volunteered to lay the distribution pipes and cover the rows with geotextile fabric. They ran it down the sides of modules, flaring it at the bottom to keep out sand and protect the units’ pores.

“Jim said to anchor the sheets by shoveling sand on them, but never to throw it,” says Maguire. “Sand is placed so as not to shift the fabric.” Once the seams were secured, King told them to deposit more sand with a skid-loader, then walk it in around the modules to prevent any fabric movement during backfill.

While Maguire installed a monitoring well at the toe of each row, others plumbed the modules to the distribution box, then the crew covered the bed with 6 to 18 inches of sand.

The next day they added topsoil and grass seed. “A system like this installs easily in seven to eight hours,” he says. “I’m very interested in keeping track of how it performs because the technology will benefit many areas.”

MAINTENANCE

Maguire Backhoe holds the 12-month service contract. A technician will clean the effluent filter, measure sludge in the septic tank and pump it when necessary.



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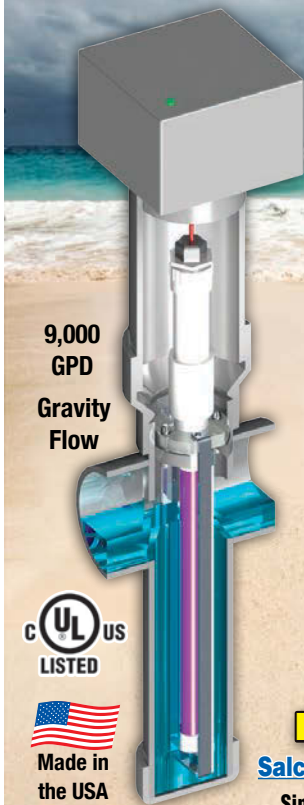
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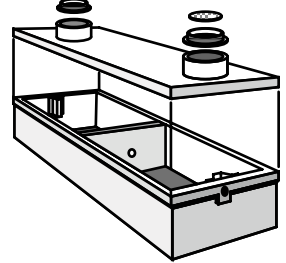
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County ban on land application overturned in Washington state

By Doug Day

A Washington state appeals court has struck down a county's ban on the land application of Class B biosolids. The state Legislature approved land application in 1992, but Wahkiakum County banned it in 2011 after neighbors objected to a farmer's plan to spread biosolids from a local septic tank pumping company to help grow grass for his cattle.

The court ruled in favor of the Washington Department of Ecology that the county did not have the authority to ban something allowed by state law. The county plans to appeal the case to the Washington Supreme Court. Many farmers and sewer districts in Washington filed "friend of the court" briefs urging the court to overturn the ban. One of those was the county's largest township, which currently pays to have its biosolids shipped outside the county for land application and hopes to save money by doing it locally.

More than 80,000 tons of Class B biosolids were land-applied in Washington in 2013, according to the Department of Ecology.

HAWAII

A ban on cesspools is one change proposed by the Hawaii Department of Health in planned revisions to its onsite wastewater rules. Hawaii has about 90,000 cesspools and approves an average of 800 new installations every year. Hawaii is the only state that still allows new cesspools. The proposed ban would prevent any new installations and require existing cesspools to be upgraded or the home be connected to a sewer system within 180 days of the property being sold. Among other proposed changes:

- Dewatering of sludge for new facilities with flows of more than 100,000 gpd.
- Prohibition on individual wastewater systems in developments with more than 15 subdivided lots.
- Restrictions on the use of seepage pits as soil-absorption systems.
- Requirement to bring tank access to grade and secure lids.
- Minimum maintenance contract requirements for aerobic treatment units.
- Prevention of direct discharge of effluent from an aerobic unit to groundwater.
- Deletion of requirement for quarterly reports from pumpers.
- Revised spill-reporting requirements.

The revision process began Sept. 1.

MAINE

A referendum in the Town of York that would have required septic system inspections at the time of sale failed in November. The controversial measure calling for inspection by a licensed site evaluator or septic inspector failed 3,683 to 3,052 after spirited campaigning from opponents and

supporters. The law would have required repair or replacement of failing systems.

WISCONSIN

The state Department of Natural Resources has added language to regulate the separation of private well waterlines from onsite wastewater treatment systems. The issue was not covered by regulations in the past. The new provisions became effective last October and are as follows:

The waterline may not be installed in, under or above a septic or holding tank, or any inground, at-grade or mound soil-absorption unit, and the waterline must be separated at least 10 feet horizontally from components of an onsite treatment system.

RHODE ISLAND

A \$2 million house built on the wrong lot must be moved, a Superior Court judge in Rhode Island has ruled. The septic system and driveway must also be relocated. The 2,400-square-foot, three-story home in Narragansett was built on parkland by mistake, apparently because an official survey was never conducted. The court order requires the home to be moved to the correct adjacent lot or be demolished, and the parkland be restored.

ILLINOIS

The owner of an Illinois sewer and water company was taken into federal custody for failing to correct serious trenching hazards and pay Occupational Safety and Health Administration (OSHA) penalties. The Seventh Circuit Court of Appeals granted a state Department of Labor motion last October, citing a history of failing to comply with OSHA standards and orders from the Occupational Safety and Health Review Commission. Mike Neri Sewer & Water Contractor Inc., of Elk Grove Village, was held in contempt of court last summer for failing to comply with a 2013 enforcement order. After failing to respond to the court, the U.S. Marshal was ordered to take him into custody.

The company had been issued several citations over five years, including serious, repeat and willful violations of trenching regulations, failing to train workers, and not having a safety and health program. The company was placed into OSHA's Severe Violator Enforcement Program. The court ruled that he remain in federal custody until he either complied with the enforcement order or proved that he could not. □

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Handy, Helpful Tools

Ever use a split-rim tire iron to pry loose a tailgate pin or a hand pump to extract oil from your engine? Next to duct tape and a hammer, here are a few tools you might wonder how you ever did without.

By Ed Wodalski

What unique tool or gadget do you have around the shop that you just can't do without?

Jim Hanna, owner of J. D. Hanna Excavating in Warner, N.H., says next to duct tape, WD-40, vise grips and a hammer, his go-to gadget is a split-rim tire iron.

Even though Hanna has never used the tool to separate rims, he says it has just the right angle and length to serve as an effective pry bar.

"We have one in every truck and we've probably given a dozen to good friends over the years," he says. "It's not something we made, it's something we buy. We sure would be at a loss without it."

HANDY PRY BAR

Officially known as the Ken-Tool T23A 30-inch truck lock ring remover, the tool is available online or from auto supply stores.

"We use it almost every other day for something," Hanna says. "If we don't have one in every truck we feel naked. We're so fond of using it that we try to turn other people on to it. The hook angle is perfect for tailgate pins and/or pulling other pins or bushings, and the compact length still provides good leverage. It's just a wonderful tool."

Mark Green, owner of Green Construction Management in Waterbury, Conn., keeps his tools in a utility trailer he custom built about three years ago. Green likes it so much he's in the process of building another.

"It's pretty unique the way we have the trailer set up and organized," he says. "Lasers, cut-off saws, walk-behind saws, compactors, toolboxes, generators – everything is in that trailer. It's 14 feet long but it's organized nice and neat. You can walk in it and back it up almost anywhere. A lot of guys will put all their tools in a pickup; unfortunately, a lot of the jobs we're on are more than a week long, so we want to keep everything safe, secure and locked in."

Green plans to trick out his new trailer with an auxiliary fuel tank. "A lot of the jobs we do, even being in septic, you can't get a truck behind someone's house or in the back over a hill to fill the machines, but we can walk the machines up to the trailer to refuel."

OIL EXTRACTOR

Tom Canfield, owner of Earth Construction in Rochester, N.H., also believes in keeping everything neatly organized and considers his work van a must for the job site, but for handy gadgets nothing beats his cordless tools.



TOP DOWN:

- The Dog Box rolling tool chest from Snap-On Industrial is available in three sizes.
- The Ken-Tool T23A 30-inch truck lock ring remover has just the right angle and length for prying loose tailgate pins and/or pulling bushings.
- The ProGear 2760 LED headlight from Pelican Products pivots 45 degrees to put light exactly where you need it.
- The Pela Pro Oil Extractor for Pela Products holds about 14 quarts, enough capacity to remove engine oil or hydraulic fluid from your skid-steer or mini-excavator.



"I was glad to finally find a DeWalt grease gun. This reduces my battery needs and means the reliable, long-lasting DeWalt batteries I have can do another duty."

In the world of unique and handy tools, the Oil Extractor from Pela Products might be one to include in your shop. Rather than contorting your body to wrestle loose a drain plug, the extractor enables you to simply pump oil out from the filler tube.



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Available in several sizes, the Pela Pro holds about 14 quarts. When used with a 7/16-inch O.D. tube it can remove engine oil or hydraulic fluid from your work trucks, skid-steer or mini-excavator.

“As an engine distributor, we learned that when you have equipment and you have people responsible for maintaining the equipment, if the procedure is difficult or messy, they’re inclined to not perform that procedure on a regular basis,” says Richard Rumley, product support for Pela Products. “With the Oil Extractor it’s a clean operation. Once you use it, you wonder how you were able to live without it.”

Here are a couple more tools you might find helpful around the shop:

CORRAL THOSE TOOLS

Like a puppy on a leash, the Dog Box rolling tool chest from Snap-On Industrial follows you around the shop. Available in three sizes (the large model comes with five or nine drawers), the toolbox is available with either an interchangeable hard steel wagon-style handle that keeps it from nipping at your heels or a soft nylon leash to keep the box from wandering away.

No more fumbling for a flashlight with the ProGear 2760 LED headlight from Pelican Products. The water- and weather-resistant light has a cloth band with battery-life indicator that is comfortably worn around the head. The light weighs about 3 ounces, pivots to 45 degrees and provides up to three hours, 30 minutes of light at low beam (90 lumens) or two hours, 15 minutes on high (133 lumens). Batteries are included. □

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Moving Ahead on Long Island

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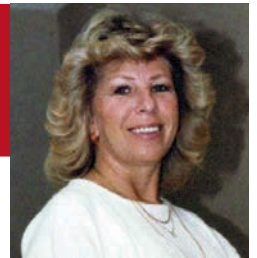
By Doug Day

It's the most populated island in the nation and one of the most populated in the world. It may be surprising to learn that about half the people on Long Island, N.Y., the bustling suburb of New York City, are served by onsite wastewater systems.

While it technically includes Brooklyn and Queens, two boroughs of NYC, the common definition of Long Island is the area covered by Nassau and Suffolk counties; nearly 3 million people packed into 1,200 square miles.

Most of Nassau County (population 1.3 million) is sewered, but infrastructure growth didn't keep up with population growth over the last few decades in Suffolk County. With 1.5 million people, it has more than 360,000 residential onsite wastewater systems, according to the county's Department of Health Services. Studies have shown that it would cost

Linda Perlow,
of the Long Island Liquid Waste Association Inc.,
at www.lilwa.org or by calling 631/585-0448.
LILWA



billions of dollars to provide sewer service to everyone in the county.

So there is a large onsite industry, represented by the Long Island Liquid Waste Association. Started in 1974, its 75 members represent about 95 percent of the septic companies on Long Island, according to Executive Director Linda Perlow, who has held the post since 1992.

Long Island Liquid Waste Association Certification Program

The voluntary certification offered by LILWA is good for three years. Besides training and a two-hour test, Service Contractor Certification requires:

- A county consumer affairs license.
- No open complaints with a consumer affairs department.
- Letters of endorsement from three customers.
- Documentation of proper waste disposal.
- Minimum of \$1 million liability insurance.
- At least one supervisor responsible for ensuring compliance with standards.
- Use of certified service people and subcontractors.
- Five years' experience in the liquid waste industry.

Along with training and testing by LILWA, the Service Technician Qualification requires:

- Application through a compliant member company.
- Certification of five years' experience or a minimum of three months under the direct supervision of a service technician having at least five years' experience.
- Screening for substance abuse.
- Completion of a driver's safety training program recognized by LILWA.
- Attendance at all classes, seminars and meetings as required by the association.

An association for just two counties seems unusual. So the obvious question is why?

Perlow: Long Island is different than the rest of New York; it's almost like its own body. We don't have the same geography; we have sandy soil so our septic systems are different, and we have a lot of onsite systems. There is a need for the large number of onsite professionals we have; they are busy.

While most of Nassau County is sewered, about 70 percent of Suffolk County uses onsite systems. We all know many systems are not serviced on a regular basis or are in need of upgrading. As responsible business people in our industry, we would like to change this for the better. The county is analyzing on a house-by-house basis which homes should be sewered, which need improved onsite systems and which can be a part of neighborhood-cluster projects.

Long Island is also very vulnerable to nitrogen intrusion. So these are things we're discussing with our local communities and organizations to find common ground.

How is LILWA contributing to finding solutions?

Perlow: Our members live on Long Island, so not only are we concerned about our businesses, we're concerned about the well-being of our families. We have to come to grips with the fact that our infrastructure is not adequate to deal with the rapid growth of eastern Long Island and adopt rational policies to deal with it.

We are cooperating with local groups that have received grant funding. The Coordinated Environmental Solutions for Septic Problems Occurring on Long Island project [CESSPOOL] was funded by a Local Waterfront Revitalization Program grant from the New York Department of State. The goal is to raise public awareness of the importance of regular inspections, maintenance and repairing and/or upgrading residential onsite systems.

The Long Island Sound Study Futures Fund, a partnership of 32 municipalities, sponsored a conference for local officials to raise their awareness. And it sponsored free field training certification for onsite professionals, local government staff, consultants, engineers, planners and state officials.

You look back 30 years ago, we didn't have the kind of fantastic relationship we have now between government and the onsite industry. It used to be rallying the troops and circling the wagons. Now we work well together; they come to us to sit down and talk about what we have to do.

"You look back 30 years ago, we didn't have the kind of fantastic relationship we have now between government and the onsite industry. It used to be rallying the troops and circling the wagons. Now we work well together."

Linda Perlow

What has LILWA done to improve the industry?

Perlow: LILWA was very involved in getting our own septic license for Suffolk County, which is very important. Contractors who do work on septic systems have to be licensed through the county. At one point, they were covered by a home improvement license. Onsite wastewater is a whole different ballgame than things like kitchens, bathrooms and roofs. Nassau County still does it that way [installers must also be licensed plumbers], but onsite systems aren't as prevalent there.

We have LILWA board members who sit on the advisory committee for Suffolk County, which meets once a month. We are now trying to evolve their license into one that is more specific to what people do, such as pumping or installing.

We also have had our own voluntary certification for more than 20 years. LILWA certification is good for three years. It started with pumpers and maintenance technicians and has expanded to include installers. Suffolk County is starting to look at the feasibility of using our certification for their licensing. That would be down the road, but we don't know how far.

Many of the systems we have on Long Island were built 40-plus years ago. A lot of them are septic with block cesspools serving as the leachfield, and we are starting to have problems with the cesspools collapsing. We are working with the civic and government organizations on an onsite inspection requirement, probably at the time of the sale of a house. It has to be addressed, but you can't have everyone replacing their cesspools; the cost would be astronomical. Doing it as houses are sold would be more affordable.

What other issues are on your radar?

Perlow: Our latest is grease. There is no place to dispose of grease on Long Island. It is being trucked to plants in northern Virginia and upstate New York, on the Canadian border. The cost of shipping it hundreds of miles is adding substantial cost and is becoming prohibitive. If it continues, companies will simply stop servicing the grease traps, leaving their customers with no alternative but to turn to the illegal dumpers.

Lottery to give away 19 septic systems in Suffolk County

Improving onsite wastewater management in Suffolk County on Long Island, N.Y., was the focus of two developments last fall. Within days, the county announced it would be giving away 19 septic systems and the state pledged funding for a septic research project.

Selected Suffolk County homeowners will get free septic systems along with five years of monitoring and maintenance through a lottery being conducted by the county's Reclaim Our Water initiative. The systems and maintenance, worth about \$15,000 each, have been donated by four national manufacturers: BUSSE Green Technologies, Norweco, Orenco Systems and Hydro-Action Industries. The companies were selected through a Request for Proposals process issued by the county.

According to Suffolk County, the four firms will also work with the county's Department of Labor, Licensing and Consumer Affairs to develop an extensive job training program to bring more septic and wastewater employment opportunities and help to create a homeowner awareness program to provide information on proper septic system maintenance.

"This initiative is a giant step toward improving the handling of Suffolk County's unique septic system issues," says Joe Garbarino, president of the Long Island Liquid Waste Association. "Upgrading and replacing failing onsite systems in Suffolk County is long overdue."

Homeowners were invited to register for the lottery through the county's website or by mail. The free septic systems do come with some strings attached. Winners must agree to allow site visits on their property for group tours twice a month for the first six months for educational purposes, and less frequent visits after that. Sampling will also be conducted monthly for the first six months, then quarterly for two years. Due to access requirements, the systems must be installed in front yards. Homeowners will also have to file a covenant on the property requiring a septic maintenance contract after the free service expires. The covenant will remain in place even if the home is sold.

There are also restrictions dealing with the property, which must be owner-occupied. They include family size (three to nine people), depth to groundwater (at least 10 or 17 feet depending on the system to be installed) and being located at least 100 feet from wetlands and surface water.

"Advanced wastewater treatment systems for homeowners are a vital part of the solution to our water-quality crisis," says County Executive Steve Bellone. "While this is not the single solution, this is one of the initiatives we are doing to reclaim our water here in Suffolk County."

Gov. Andrew Cuomo also announced the state is providing \$2 million in seed money to establish a research project in Suffolk County in 2015. Stony Brook University will run the program aimed at developing and commercializing septic systems that do a better job of reducing nitrogen from getting into the groundwater and tidal estuaries of Long Island.

What do you see as the future of the onsite industry on Long Island?

Perlow: Much of Long Island uses onsite systems and due to economic constraints, it will be that way for some time to come. It would be economically unfeasible to try to sewer all of Suffolk County. As time goes by, hopefully people will replace their systems. The septic industry on Long Island will be here a lot longer than me, and that's why professionalism is so important. ■

Pumps

By Craig Mandli

The pumps used in onsite treatment systems perform a variety of tasks, including grinding biosolids, conveying effluent or sewage, and providing aeration. Here are several pumps designed to perform in onsite systems.

EFFLUENT PUMPS

Ashland Pump EP50

The EP50 effluent pump from Ashland Pump has a continuous-duty rated, energy-efficient 1/2 hp PSC motor with performances reaching 105 gpm and 53 feet of head pressure. It is constructed of heavy-duty cast iron with a cast iron impeller capable of passing 3/4-inch solids. It is available in 115-volt, with a wide-angle piggyback switch and also in 230-volt manual versions. 855/281-6830, www.ashlandpump.com.



Champion Pump Company CPEH5

The CPEH5 from Champion Pump Company is designed to pump through a long run of pipe or high static heads. The cast iron 3/4-inch solids-handling effluent pump has a 65-foot shut-off head. It will pump effluent through the equivalent of 5,200 feet of 2-inch pipe (based on a 5-foot static head). The 35-pound unit has an internal seal and secondary V-cup exclusion seal. The rotating components of the seal are located in the motor housing and lubricated by the effluent. The high-efficiency 115-volt (or optional 230-volt) PSC motor with upper and lower ball bearings is protected by a thermal overload switch. Power cords are available up to 100 feet. 800/659-4491; www.championpump.com.



Clarus Environmental effluent turbine pump

Effluent turbine pumps from Clarus Environmental are available in capacities from 11 to 85 gpm, with heads up to 500 feet. Pumps range from 1/2 to 3 hp. The 1/2 hp pumps are available in 115 or 230 volts, and are powered by Franklin Electric motors. They feature discharges of 1 1/4 inches for 11, 19 and 27 gpm models, and 2 inches for 35, 55 and 85 gpm models. Starting boxes are not required for pumps 1 1/2 hp and below, but are included with 2 and 3 hp models. They come standard with a 10-inch jacketed cord, but cord lengths up to 100 inches are available. It is recommended that all Clarus pumps are installed in a filtered STEP vault or in a pump tank receiving filtered effluent from a septic tank filter. 800/928-7867 www.clarusenvironmental.com.



Orenco Systems Biotube ProPak

Biotube ProPak ready-to-install pump packages from Orenco Systems can be used for filtering and pumping effluent from single- or dual-compartment septic tanks to gravity or pressurized discharge points without a pump tank. All components designed for quick installation, reliable operation and easy maintenance. The filter cartridge filters up to two-thirds of solids, and only liquid from the tank or basin's clear zone is pumped. It's easy to remove and clean without pulling the pump vault, according to the maker. The PF Series high-head effluent pump is field-serviceable and repairable, and pump controls are custom designed. Free ProPak Select software provides fast, error-free hydraulic calculations and generates system curves. 800/348-9843; www.orenco.com.



AERATION PUMPS

Blue Diamond Pumps Envir-o

Envir-o aeration pumps from Blue Diamond Pumps use an electromagnetically operated diaphragm, eliminating sliding parts to limit wear and tear. They incorporate energy-efficient motors and a weatherproof compact alloy casing. A range of CE- and UL-approved models are available in steps from 7.9 to 52.8 gpm. The ETA Series includes a built-in alarm system to detect low pressure in the line via a loud buzzer and LED warning light. 855/450-7867; www.bluediamondpumps.com.



Jet Inc. 700++ Aerator

The flood-resistant Jet 700++ Aerator from Jet Inc. is the only mechanical component in the 1500 Series BAT Media Plant and works in tandem with the BAT Media to provide complete biological processing. The aerator shaft spins and combines fresh outside air with the wastewater in the jet tank treatment compartment. Air travels through the aerator and into the tank, providing oxygen for the treatment process. Foam is controlled by a foam restrictor, and aerator operation is nearly silent. The 1500 Series BAT Media Plant uses a sealed aerator that is protected from water damage. It is not designed to operate underwater for extended periods of time. 800/321-6960; www.jetincorp.com.



Norweco Singlair Model 206C

The Singlair Model 206C aerator from Norweco includes special alloy and molded plastic parts to prolong aerator life. With watertight integrity ball bearings, radial air intake openings, NEMA 6-rated waterproof electrical connections and a UL recognized fractional horsepower motor, it combines advanced electromechanical components with energy efficiency. It is UL listed and CSA certified. 800/667-9326; www.norweco.com.



Septic Services Retro-Air

The Retro-Air Rejuvenator System from Septic Services can be used in new or existing septic systems and can be installed in single- or multiple-compartment septic tanks. It is designed to eliminate clogged drainfield biomat as well as other secondary treatment systems and is recommended in aeration systems that are prone to backup. It aerobically restores failed anaerobic installations or prevents failures in new systems by delivering a constant flow of air to the diffuser, according to the maker. Over time, aerobic bacteria consume the biomat, allowing the soil to absorb effluent once again. It is quick and easy to install and requires minimal maintenance. 800/536-5564; www.retro-air.com.



Gorman-Rupp Company ReliaPrime

The ReliaPrime emergency bypass station from Gorman-Rupp Company has a 6-inch Super T Series pump capable of passing 3-inch spherical solids. A soundproof, lightweight aluminum enclosure has lockable door panels that can be removed for maintenance. The unit is a complete backup package ready for hook-up. 419/755-1011; www.grpumps.com.



Goulds Water Technology 3SD

The submersible 3SD non-clog dual seal with seal sensor probe sewage pump from Goulds Water Technology, a Xylem brand, combines dual hard-face mechanical seals with a 300 Series stainless steel keyed shaft motor. It has a cast iron, two-vane, semiopen, non-clog impeller with pumpout vanes for mechanical seal protection. It is balanced for smooth operation and capable of running dry without damaging the inner components, according to the maker. It comes in single- and three-phase options with horsepower range of 1.5 to 5, supporting several hydraulic requirements. It is UL and CSA certified. 866/325-4210; www.goulds.com.



SEWAGE PUMPS

Franklin Electric FPS NC Series

Submersible centrifugal FPS NC Series non-clog pumps from Franklin Electric are available in 3- and 4-inch 125 ANSI flange discharge connections in 3, 5, 7.5 and 10 hp models with heads up to 66 feet and flows up to 610 gpm. They can pass up to 3-inch solids, retrofit to any standard rail system and contain replaceable internal components. Ductile-iron-casted impellers provide added corrosion resistance and handle rigid debris. A Fluoroelastomer motor enclosure sealing system improves chemical and temperature resistance, while a double-row ball lower bearing offers ideal loading and wear characteristics, according to the manufacturer. It has a field-adjustable wear plate. 800/701-7894; www.franklinengineered.com.



Septic Sewage Pumps DBMX 80

The DBMX 80 from Septic Sewage Pumps has a long-lasting, heavy-duty diaphragm. The unit runs cooler because its large housing dissipates the heat and the coil does not generate as much heat because the wattage is lower, the maker reports. It is able to use a lower wattage coil because it uses an efficient rare earth magnet in the activating arm. Heat is the main killer for air compressors, and using both the efficient rare earth magnet and a lower wattage coil decreases heat and extends life. 800/292-9087; www.septicsewagepumps.com.



Vertiflo Pump Co. 1600

The 1600 vortex close-coupled horizontal-end suction pump from Vertiflo Pump Co. is available in cast iron, 316 stainless steel fitted, all 316 stainless steel, Alloy 20 and CD4MCu. Capacities range up to 1,600 gpm, heads of 170 feet TDH and temperatures of 250 degrees F. It has back pull-out construction, a fully recessed vortex impeller and external impeller adjustment. 513/530-0888; www.vertiflopump.com.



Godwin Dri-Prime NC150

The Dri-Prime NC150 sewage pump from Godwin, a Xylem brand, offers flows to 1,767 gpm and discharge heads to 195 feet. It has Flygt N-technology with a hard-iron (60 HRC) self-cleaning non-clog impeller and insert ring. The Dri-Prime automatic self-priming system primes and re-primers from dry to 28 feet without operator assistance. It has a dry-running high-pressure oil bath mechanical seal with highly abrasion-resistant silicon carbide faces. Its close-coupled centrifugal pump allows for easy pump end or engine/motor changeover in the field. It can be customized with a diesel engine or electric motor, highway trailer or skid-mounted, or quiet enclosure. It is available as a Godwin DBS for pump station backup. 800/247-8674; www.godwinpumps.com.



GRINDER PUMPS

Environment One Corporation Extreme

The Extreme grinder pump from Environment One Corporation has 185 feet TDH capability, corrosion protection and expanded communication capabilities. It requires no preventive maintenance, and is available in prepackaged wet well/dry well, wet well, indoor and Gatorgrinder stations. It is configured for aftermarket upgrades. The grinder pump station collects all of the wastewater from the home, grinds up any solids and then





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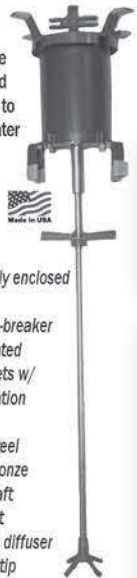
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moves the effluent through a 1 1/4- to 4-inch pipe to treatment. It can be used on geotechnically challenging sites such as rocky, hilly and wet terrain. 518/346-6161; www.eone.com.

Flygt progressing-cavity grinder pump

The progressing-cavity grinder pump from Flygt - a Xylem brand provides the high head needed for low-pressure sewer pumping. It is powered with a small, low-ampereage motor that runs from a standard domestic power supply. It is available in both single- and three-phase versions and has a robust, high-chrome steel grinding mechanism, according to the maker. It is built from cast iron to industrial specifications, with a Class F motor that produces a stable flow at high heads and low flow at high heads. It can be ordered as part of an all-in-one package including pump, prefabricated basin and pump controller. 855/995-4261; www.flygtus.com.



InviziQ Pressure Sewer System

The InviziQ Pressure Sewer System utilizes grinding and pumping to move sewage to treatment facilities no matter the terrain, slope, environmental sensitivity of the area or complex topography of the region. It has a dry well design to deliver clean access to the system motor and other working parts, increasing safety for contractors. Network monitoring and control is built into every system and gives users a host of diagnostic resources for system management. 281/854-0300; www.inviziq.com.



Liberty Pumps LSG-Series Omnivore

The LSG-Series Omnivore grinder pump from Liberty Pumps has V-Slice cutter technology with a hardened stainless steel cutting system to aggressively shred jeans, shop rags, sanitary napkins and other difficult solids into fine slurry with little jamming. It has a one-piece cast iron body, quick-disconnect power cord, stainless steel impeller and dual-shaft seals. Complete predesigned grinder systems are available in a variety of basin sizes. 800/543-2550; www.libertypumps.com.



Weber Industries WEBTROL MVPS-RE1

The WEBTROL MVPS-RE1 drop-in package for existing progressive cavity systems from Weber Industries includes a progressive cavity pump that provides nearly constant flow and is able to adjust for pressure variations in any system setting. The package is powered by a 1 1/2 hp motor, spinning at 1,750 rpm to provide grinding torque. With all package parts readily available and easily replaceable, it can quickly and easily be serviced in the field. 800/769-7867; www.webtrol.com. □



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E/One Sewer Systems remote pump control

The Iota OneBox telemetry system from E/One Sewer Systems delivers remote control and monitoring of individual grinder pumps from a desktop computer or smartphone. The system integrates into a SCADA network to provide data on tank storage capacities, power failures, blockages and faults. 518/579-3068; www.eone.com.



Gateway StarLite safety glasses

StarLite safety eyewear from Gateway Safety is available in 16 lens options, including antifog and IR filter shades, as well as foam-lined, colored temple and bifocal. The StarLite SM is 10 percent smaller than original glasses for smaller facial profiles. StarLite Gumballs come with 10 temple hues. StarLite Foam bridges the gap between glasses and goggles with an added foam ledge. StarLite Mag has a dual-purpose lens in five dioptic strengths. StarLite Squared features squared lenses and clear frame for a modern look. 800/822-5347; www.gateway-safety.com.



Gehl Z25 compact excavator

The Z25 compact excavator from Gehl has a canopy or cab operator's station, digging depth of 9 feet, 8 inches, 20.4 hp Yanmar Tier IV diesel engine and bucket breakout force of 4,079 pounds. The excavator is 4 feet, 11.1 inches wide and weighs 5,919 pounds with canopy or 6,216 pounds with cab. It has a hydraulic flow rate of 13.6 gpm paired with high-system pressure up to 2,987 psi. 800/628-0491; www.gehl.com.



Clarus Environmental centrifugal STEP system

The 5040 STEP system from Clarus Environmental Products enables septic tanks to be turned into pump tanks. Designed for low-head applications, the filtered system features a Zoeller pump and hanger pipes. Options include extended vault versions, stand-alone stand and multiple discharge assemblies. 800/928-7867; www.clarusenvironmental.com. □



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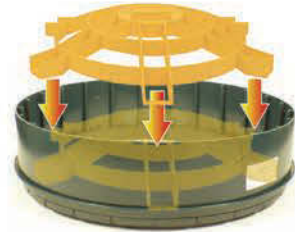


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