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Older systems need updating Page 8

Identifying soil texture Page 18

SEPTIC

New Jersey installer barges in a system Page 22

TRENGTH Master Plumbers and Septic branches out into multiple services and cooperative relationships with complementary businesses Page 12



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COVER STORY

12 Strength in Diversity By Scottie Dayton

ON THE COVER: Glenn Martin of Master Plumbers and Septic, Bradenton, Fla., has a central goal in boosting his business: "To provide wow-level service, enabling us to build relationships with Realtors, bankers, property managers and contractors preparing properties for sale." Here he is shown on a work site where a septic tank was converted into a cistern for watering landscape plants with a lid and riser from Tuf-Tite, Inc. (Photo by Brian Blanco)

8 Editor's Notebook: Raising the Grade

As our nation's infrastructure is aging, we can act to ensure a bright future for the onsite industry. By Jim Kneiszel

10 Editor's Choice

18 Basic Training: Reading the Soil

Installers who know and practice the basics of soil and texture study can help ensure the onsite system design is correct and construction is done under optimal conditions. By Jim Anderson, Ph.D., and David Gustafson, P.E.

20 State of the State: Georgia on Our Minds

Two state associations concentrate on growing membership and improving the regulatory climate for installers and pumpers. By Scottie Dayton

22 System Profile: Riding the Waves

As winter closes in, New Jersey's Septic Experts uses barges to transport components and fill materials to a tricky island home installation. By Scottie Dayton

- 26 Septic Tank Directory
- 28 **Rules and Regs** By Doug Day and Scottie Dayton
- 30 Expo Spotlight: Expo visitors get early look at SJE-Rhombus easy-access alarm By Ed Wodalski
- 32 Product Focus: Septic Tanks and Components By Craig Mandli
- 34 Product News
- 35 **Case Study: Septic Tanks and Components** By Craig Mandli
- 36 Association News News; Calendar of Events; Training and Education
- 37 Industry News
- 38 Notes from NOWRA: Ensuring Quality Concrete Tanks To get the longest, most effective life out of a concrete septic tank, remember the mix, the mold and your good, reliable manpower to get the job done right. By Eric Hudberg

Coming Next Month: July 2013

ISSUE FOCUS: Alarms, Controls and Monitor Systems

- Cover Story: Arizona educator makes her mark
- State of the State: Visit the Show-Me state association
- Basic Training: Site evaluation: Taking the percolation test

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COMPANY	PAGE					
Alderon Industries, Inc						
ALIP						
Alita Industries, Inc						
Axiall, Inc./ACCU-TAB.	5					
BIO MICROBICS						
Bio-Microbics, Inc						
Seal-R						
BrenLin Company, Inc						
DIATY SIRD						
BS Design Corp. (The Di	rty Bird) 39					
CREST Precast, Inc.						
Crest Precast, Inc.						
GSI controls						
CSI Controls						
Dalmaray						
Dalmaray Concrete Pro	ducts Inc 39					
Den Hartog Industries,	Inc27					
Eliminite, Inc						

COMPANY	PAGE				
eljen					
Eljen Corporation Flo-Rite Solutions					
Flygt - a Xylem Brand Hausner's Limited					
Hedstrom					
Hedstrom Plastics	23				
Infiltrator Systems, Inc					
Jet Inc					
NAWT, Inc					
Netafim USA					
Oranco Systems Inc	3				

COMPANY	PAGE
1	
Pagoda Vent Company	
POLYOK.	
Polylok	
Premier Tech Aqua	
Presby Environment	al, Inc.
Presby Environmental RCS II, Inc Both Global Plastics	
RolpSolutions	
RotoSolutions, Inc	
Salcor, Inc	
See Water Inc.	
Septic Services, Inc Septronics, Inc.	
Septronics, Inc	

JUNE 2013

COMPANY	PAGE				
ASIM/TSCH					
Sim/Tech Filter Inc					
Simple Solutions					
Simple Solutions LLC					
Rhombus.					
SJE-Rhombus®					
Snyder Industries, Inc					
SPI - Septic Products, Ir	ıc37				
FST TOOLS					
T&T Tools, Inc					
The Shaddix Company,	lnc				
Trimble - Spectra Precisio	n Division25				
A TUFTITE					
Tuf-Tite Inc					
WIESER					
Wieser Concrete Produc	cts, Inc27				
Xerxes Corporation					

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Raising the Grade

As our nation's infrastructure is aging, we can act to ensure a bright future for the onsite industry By Jim Kneiszel



nsite system installers will be in the thick of some of the most important challenges to ensuring the continued health and prosperity of people across North America. I know that sounds pretty dramatic, but clean water and effective wastewater treatment are basic necessities for societies to advance.

Many millions of people in the U.S., Canada and Central America rely on decentralized wastewater systems to process waste and ensure our shared drinking supplies are not contaminated. We know these systems – many built in the first decades after World War II – continue to operate beyond their expected lifespan. That so many onsite systems chug along well past their projected expiration date is a testament to the ingenuity of the designers and installers of the past.

But we should be prepared for an onslaught of work as these older systems will fail in greater numbers. We're at the crossroads where components are crumbling and government clean-water regulations are strengthening. If we look for more evidence of a looming system replacement boom, a recent report from the American Society of Civil Engineers sounds a warning.

The ASCE recently released its "2013 Report Card for America's Infrastructure," which, while confined to the state of public water and wastewater facilities, certainly reflects the state of private infrastructure as well. The report gives American drinking water and wastewater systems a poor grade of D. When combined with other infrastructure including dams, roads and bridges, the overall grade rises to D+.

Investments needed

"A D+ is simply unacceptable for anyone serious about strengthening our nation's economy; however, the 2013 Report Card shows that this problem can be solved. If we want to create jobs, increase trade, and assure the safety of our children, then infrastructure investment is the answer," ASCE President Gregory E. DiLoreto said in the report summary.

"We must commit today to investing in modern, efficient infrastructure systems to position the U.S. for economic prosperity," he added. "Infrastructure can either be the engine for long-term economic growth and employment, or it can jeopardize our nation's standing if poor roads, deficient bridges, and failing waterways continue to hurt our economy."

As for public wastewater infrastructure, many of the 700,000 to 800,000 miles of U.S. public sewer lines were installed right after World War II, so they are about 75 years old and failing fast. The inadequate system is responsible

A trouble-free septic system at installation isn't enough to ensure your continued great reputation. You have to follow up the install by offering to keep that new system in tip-top operating condition for its entire life.

for the discharge of an estimated 900 billion gallons of untreated raw sewage annually, the report states. Further, 85 percent of all money spent on the wastewater system today is to restore these pipes.

There must be a strong correlation between the aging of public and private wastewater systems. We know many conventional septic systems were built with less durable materials than are available today, and that many simple gravity systems designed 30, 40 or 50 years ago certainly wouldn't pass muster with regulators today. When you think of plat after plat of suburban neighborhoods across the country that were built with septic systems, the potential for upgrades will be immense for decades to come.

Sending a message

What can installers do to help ensure these upgrades are made and housing and commercial development can continue where decentralized systems are the best wastewater answer? Here are a few starting points:

Help drive better regulations

Don't think of the onsite industry as an individual sport where you duke it out with county health and environment officials. Think of it as a team sport, where when all parties work together, everyone wins. When there's a discussion of expanding the reach of the big pipe or in some way restricting property owners from building, get involved and propose ways to make a decentralized system work. Join a committee or task force considering expansion of rural development and be the expert groups turn to when wastewater issues are discussed. Be proactive and extend your influence when new system codes are considered.

Stress the importance of routine inspections

Extend your role in the industry beyond installing new and replacement onsite systems. Ride the O&M wave to new revenue for your business and strongly promote routine inspections. A trouble-free septic system at

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installation isn't enough to ensure your continued great reputation. You have to follow up the install by offering to keep that new system in tip-top operating condition for its entire life. After all, your value as an installer is determined by the long-term performance of the system, not just the first few years it's in the ground.

Work with manufacturers to advance treatment technologies

Industry manufacturers are your partners in providing the best solutions for customers' most challenging situations. Keep in regular contact with sales reps for companies that supply your system components and consider any training or demonstrations that are offered. Look to embrace new technologies that improve treatment quality or help you make better system repairs. Ways to keep on top of the latest advances are to network with other contractors in your state trade association, attend the Pumper & Cleaner Environmental Expo International, and visit the websites of industry manufacturers in search of new product offerings. Reach out to your local, county or state regulators and inform them about new systems that might contribute to positive development in your area.

Enhance professionalism to promote the industry

Look sharp, use clean and modern equipment at the job site, and put your best foot forward with customers every day. Professional installers are wellrespected partners in a movement to promote a clean environment. The more knowledge you can share with regulators, legislators and the general public, the more likely onsite systems will gain acceptance as a good, solid alternative to extending municipal sewer service. We know onsite systems play an important role in the overall wastewater system ... we just have to keep spreading the word!

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By Jim Kneiszel

ot a few minutes between appointments for septic system work? Is your smartphone or tablet handy on the road, or are you sitting near your desktop computer in the office? Then we have a bonus for you – additional *Onsite Installer* content is available online. Find more of the latest wastewater industry news – from product releases to videos and podcasts to my editor's blog – at www.onsiteinstaller.com. Here's just a sampling of the latest content you can find online:

SEPTIC SYSTEM EDUCATION GROWS BUSINESS

Just ask Jerry Scarborough, owner of Hall's Septic Service, in Street, Md., and he'll tell you continuing education is the key to growing your small business in the wastewater industry. Scarborough shares his tips and advice for obtaining training that will help you stand out as a service provider ... and how you can share what you've learned, and in so doing, build your business. Scarborough has developed and presented his Septic 101 course for homebuyers and real estate agents countless times, building good will and showcasing his expertise.

7 TIPS FOR STARTUP BUSINESS OWNERS

If you're starting an onsite installing business from scratch, take a moment to learn a few things from someone who's been there and done that. Kim K. Lewis, chairman and CEO of LiquiForce Services in Kingsville, Ontario, Canada, shares tips from 25 years spent in the sewer rehabilitation industry. Among the important reminders about small business success are: Everyone in our business is a salesperson; spend ample time planning for the future; your word is your promise; and business is not about technology ... it's about people.

EDITOR'S BLOG: ARE YOUR CUSTOMERS LISTENING?

After you install a new onsite system and you're explaining its limitations to the homeowners, do you ever wonder how well they're is listening? The customers are often city folk who are used to the bottomless pit of wastewater that is the sewer system. They think nothing of inviting 100 guests over for a backyard party where toilets in all four bathrooms are receiving flush after flush. I share an example of one newer neighborhood with multiple failing septic systems, and talk about the importance of homeowner education for the installer.

TROUBLESHOOTING:

EXCESSIVE CORROSION AROUND THE OUTLET BAFFLE

Onsite Installer's Basic Training writer Jim Anderson explains a problem being uncovered in tanks across the country: eroding concrete. Hydrogen sulfide gas, heavier than air, has a tendency to settle to the lowest part in the tank over the top of the effluent. It combines with water vapor to form sulfuric acid, which, over time, eats away at concrete at the surface of the liquid in the tank, breaking down the concrete and the baffle. Jim shares solutions.

Check these out at www.onsiteinstaller.com/ec/2013/June.



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RENGE

Master Plumbers and Septic branches out into multiple services and cooperative relationships with complementary businesses

By Scottie Dayton

ough times require complex solutions. "Everybody was doing what was rational, and I didn't see it working," says Glenn Martin, owner of Master Plumbers and Septic in Bradenton, Fla. His solution was to do the opposite.

In 2009, 90 percent of Florida onsite companies were in some state of distress, but Martin opened his onsite, plumbing and gas business anyway. He began by purchasing 250 aerobic treatment unit maintenance contracts from another business.

Master Plumbers and Septic, Bradenton, Fla.

OWNER:	Glenn Martin				
YEARS IN BUSINESS	: 4				
EMPLOYEES:	7				
MARKET AREA:	125-mile radius				
SPECIALTY:	System repairs and maintenance				
WEBSITE:	www.masterplumbersandseptic.com				

The slow economy provided opportunities to buy quality equipment very inexpensively, for cash, from companies that had gone out of business. The strategy enabled Martin to add one used service van per year and hire another technician.

Instead of branching into pumping to complement onsite inspections and repairs, Martin added gas work: maintaining and repairing large boiler systems, and residential and commercial LP and natural gas products and systems. "Diversification is a survival tool, as it maintains revenue flow if one source goes soft or dries up," he says.

Since he entered the onsite treatment industry at age 17 in 1980, Martin's goal was to run his own company. "Master Plumbers and Septic has been in the black and growing since its first year," he says. "I'm truly blessed to be living the American dream."

Gaining experience

With his focus on the future, Martin went to night school for six years to earn his MBA degree from Richard Stockton College while working for Mr. John-Russell Reid portable restroom and septic service firm in Keasbey, N.J.

After graduating in 2003, Martin itched for bigger opportunities and found them as the Florida division manager for United Site Services, another

<<p>Clenn Martin inspects a project to convert a septic tank into a cistern for watering landscaping. Key features of the conversion include color-coded components. Purple is for reclaimed water, not for consumption. Other features include a self-made customized pressure control box and overflow return on the drip irrigation. (Photos by Brian Blanco)

portable restroom company. "They were on an acquisitions campaign, and I helped with due diligence and integration," he says. "Each of the 17 acquired companies had something special that I hadn't seen before, whether it was a truck design, marketing, or how they handled drivers. It taught me to look closely for details that would enhance the whole."

Martin left United in 2005, one year before Florida's economy began to decline. Subsequently, he looked for onsite companies for sale. After buying the ATU service contracts,

"My goal was to provide wow-level service, enabling us to build relationships with Realtors, bankers, property managers and contractors preparing properties for sale." Glenn Martin

he renamed his company Master Plumbers and Septic and began certifying to maintain ATUs from Norweco, Hoot Aerobic Systems, Acquired Wastewater Technologies, and Ecological Tanks. Instead of buying a new service van, he cleaned up and painted a used one, for which he paid \$5,000 cash.

Martin also uses Tuf-Tite Inc. and Sim/Tech Filter lids and risers and Infiltrator Systems products for repairs and upgrades. for sale," says Martin. The company enjoys an 80 percent referral rate.

Onsite work includes septic system installation and maintenance, plumbing, well inspections, changing out pumps and control panels, and replacing or rebuilding air compressors for ATUs. Martin's policy of documenting the work with photographs boosted referrals and helped grow the business rapidly.

"Many Florida homeowners are not year-round residents," he says. "They're from northern states or international. When we send electronic invoices or estimates for repair, they contain digital images of the problems. No matter who, every customer loves it because there is no confusion about what is going on."



ABOVE: To determine a pumping schedule, Glenn Martin uses a sludge sampler gauge to measure sludge levels in the last chamber of an aerobic treatment tank. (Lids and risers are from Sim/Tech Filter.) BELOW: Drip tubing from a Hoot Aerobic Systems ATU is used to distribute reclaimed roof water to ornamental landscaping. There are drip emitters every 12 inches buried just under the mulch to keep the landscape moist.

Martin also earned a master plumber's license for a second revenue stream and went to work replacing complete water systems, detecting and repairing leaks, and inspecting piping and backflow preventers. Today, plumbing accounts for two-thirds of annual revenue. In four years, Martin grew gas work to 10 percent by installing new gas lines or repairing old ones, hooking up home appliances, and maintaining commercial boilers.

Whatever equipment he needed, Martin never bought on credit. "I can't emphasize enough how important it is to pay as you go these days," he says. "It keeps you focused on your receivables. I've seen too many people struggling because of too much equipment they couldn't afford."

Full steam ahead

Many homes in the ATU contract bundle were in foreclosure. "My goal was to provide wow-level service, enabling us to build relationships with Realtors, bankers, property managers and contractors preparing properties





To gain entrance to homeowner associations and gated communities, Martin advertised in their newsletters. "That's the only advertising I do," he says. "My five technicians service subdivisions with up to 500 homes, and their visibility increases referrals as well." The company services Manatee, Sarasota, Charlotte and Lee counties, and septic system work accounts for one-third of annual revenue.

Combining forces

Among Martin's innovative measures was building a network of service providers. Business acquaintances often had excess, idle equipment and were afraid to expand. Martin needed a vacuum truck but didn't want to buy one. He approached an associate with a vacuum truck and suggested opening an operations center, then splitting the rent and sharing equipment.

(continued)

Finding a Niche

An environmentally conscious homeowner, forced to hook to the sewer system in North Port, Fla., wanted to convert his septic tank to a cistern. He discussed the idea with Glenn Martin of Master Plumbers and Septic.

"At first, I thought it was a joke," says Martin. "The individual, however, was catching runoff in rain barrels. He wanted it to drain to a cistern, then use the water to irrigate his ornamental landscaping."

Martin searched online for a conversion kit, but found none. Using ingenuity and his experience with drip dispersal, he designed a solution approved by the state Department of Health. "The residence was in front of the Atwater Elementary School," says Marin. "When teachers saw what we were doing, they wanted to bring the kids."

Over two days, Martin showed five fifth-grade classes how a converted septic tank can capture rain, then pump the water through perforated lines to water lawns. "Septic tanks don't have to be crushed and filled," he says. "Installers can recycle them." Martin checked with the state, and of the 17 tanks converted to cisterns, his was the first to use drip irrigation.



The "yard-friendly" home in North Port, Fla., catches as much rainwater as possible for irrigation. The septic tank was converted to a cistern. Roof gutters flow into the tank to recharge the reclaimed water supply. A customized flow and pressure control box adjusts drip rates.

Glenn Martin performs visual and audio alarm tests on the electrical panel for an A-1 Best aerobic treatment system, ensuring timers are set correctly. Each control panel is tagged with the date of service.

With increased business comes a need for workers. Martin never hires anyone with a job in case his work slows – he doesn't want to take someone away from a job and then have to let the person go. "The company is growing, but I'm nervous about the future," he says. "In addition, unemployed people who have found jobs are energetic, anxious to learn, and so happy that they have better experiences with customers."

While Martin occasionally hires inexperienced people – he finds training them easier than correcting bad habits – he never hires someone who doesn't know how to email, text or send pictures, and who doesn't have a computer and printer at home. "If our technicians encounter a problem on a job, they snap a picture and send it to someone, who calls and walks them through the solution," he says.

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The Master Plumbers and Septic team includes (from left) Robert Palmer, Albert LaRocque, Pete Mallucci, Glenn Martin, Howard Hughes, Johnny Neilsen and Joe Crowell. The crew is shown with the company's fleet of six service vehicles in Venice, Fla.

With the offer accepted, they found an office and double-bay deep-storage garage in an office park. "He pays rent one month; I pay it the next," says Martin. "Lowering our individual rent by 50 percent enabled us to afford a larger office, and he handles my substantial pumping work."

As the sharing idea prospered, they accepted friends into what Martin calls The Circle. Today, it comprises two septic tank pumping companies, four plumbers, one gas contractor and a garage mechanic. "Combining resources enables us to bid on large jobs, then subcontract the extra work to other members," says Martin. "We never say no to customers. If the person receiving the call can't handle the work or is unavailable, he refers the request to someone in The Circle."

"I don't want to be the biggest on the block, just the best." Glenn Martin

Last year, one of the septic service companies wanted to bid on rehabilitating a pump station, but the contractor lacked the necessary plumber's license. He called Martin, who knew nothing about the work. "We learned together, completed the job, and satisfied the customer," says Martin.

Before the mechanic joined the group, he had no work. Now he fixes members' vehicles quickly and economically. Last winter, Martin added a 4,000-square-foot storage garage to accommodate more shared equipment. "New opportunities arrive all the time to different members," he says. "As their trust in each other develops, they're willing to take some risks. They're also gaining confidence tackling projects they've never done before."

Clearing the lines

Running the company from his home office (he uses the office at the operations center for meetings) left Martin struggling with how to keep regular customers from calling for septic and plumbing services generated by inspections. He wanted the phone free for new business. "I trained them to email the work orders," Martin says. "Now I shoot back a message when we'll be there, then forward the requests to drivers on their smartphones."

Information on the company's Web pages reduced feeler calls substantially. Martin meets with the webmaster monthly to add new information, change photos and keep the pages fresh. "We're focusing now on adding more videos and tutorials for homeowners and nonresidential customers," he says. "The most unorthodox thing I did was post testimonials from vendors and competitors. Those endorsements have clout."

With the market for new installations nonexistent, suffocated by thousands of vacant properties or those in foreclosure, Martin continues to focus on inspections, repairs and maintenance. "I've had some success getting phone companies to assign numbers from out-of-business companies to me," he says.

Martin would like to acquire another small company, enabling him to double revenue and run eight to 10 vans. "I've managed hundreds of people in large companies and would rather keep it simple," he says. "I don't want to be the biggest on the block, just the best."

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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.

Reading the Soil

Installers who know and practice the basics of soil and texture study can help ensure the onsite system design is correct and construction is done under optimal conditions By Im Anderson, Ph.D., and Dave Gustafson, PE.

s discussed last month, the two major soil characteristics determining the required size of the soil treatment area are soil texture and structure. They impact the size of the system and are important in providing treatment. It also bears repeating that other system sizing factors are daily sewage flow and composition of the wastewater. So, recognize in this discussion that the size of the system is impacted by other factors.

Soil texture is simply based on the size of the individual soil particles. The USDA classification system designates 12 texture classes of sand, silt and clay particle sizes. It is important to note that soil particles are 2 millimeters or less; anything larger than that size is considered rock.

Surface area

There have been a lot of examples to describe the impact of texture on permeability and treatment capability of soils. One measure of the potential for treatment is how much surface area is in a given amount of soil that sewage contacts as effluent moves through the soil. If you take a pound of sandy soil versus a pound of loamy soil, the sand has 3 acres of surface area for treatment and the loam 15 acres. So, from a treatment standpoint, the loam will do a much better job. On the other hand, sand will accept water faster than loam soil. So we like to talk about a balancing act where we want the

soil to accept the water we put in while providing the treatment needed. This is the reason we sometimes need to provide some additional treatment for effluent applied to sandy soils versus soils with higher clay content.

There are two ways to determine particle size and soil texture class. One is through a laboratory test that involves a settling cylinder and hydrometer. The other is through the standardized texture-by-feel method conducted in the field as a part of the site evaluation. This is particularly useful since trying to remember the size ranges by their particle diameter range is not really helpful in the field. One of the best ways to determine texture is by recalling how each of the separates feels. Sand – gritty; silt – smooth, velvety like baking flour; clay – slick, sticky.

ABOVE: Opening a soil pit gives the best look at depth to limiting layers, and the ability to analyze soil color, structure and texture. RIGHT: A soil sample from a precise depth gives a good look at soil texture and structure. Here is a coarse textured sandy soil.





Having a working knowledge of separating textures into general classes such as sandy, loamy and clayey can help the installer field-check that system sizing is in the right ballpark. For instance, a medium sand would have a loading rate of 1.2 gallons per day per square foot while a clay loam has a loading rate of 0.2 gallons per day per square foot, which obviously makes for a much

An installer can affect soil structure and reduce the capacity of soils to accept septic tank effluent. If structure is damaged or destroyed by smearing or compaction during installation, permeability is drastically reduced.

larger system with the same amount of effluent. Of course these loading rates also take into account soil structure and development of the biomat at the infiltrative surface. This does demonstrate the difference in acceptance rates between soils.

Shapes and structure

What about soil structure? There are four major structure shapes to recognize: granular, platy, blocky and prismatic. How the soil is glued together can

improve the amount of pore space (porosity), increase the pore size, connect the soil pores, and increase the percolation rate. When a soil lacks any structure and it is not single-grain, it is termed massive. From a water acceptance perspective, granular, blocky and prismatic improve water acceptance for a given texture material. Platy and massive reduce the ability of water to move through soils. This is reflected in loading rates with a sandy loam and massive structure of 0.2 gallons per day per square foot versus 0.6 gallons per day per square foot with a moderate structure. The size and grade of the structure, along with the consistence – or how well the soil is held together – will also adjust the loading rates.

If the installer keeps general summaries in mind of the impact soil texture and structure have on movement of water into and through the soil, they can anticipate potential problems as they excavate the system. The finer textures, such as loams and clay loams have fine pores, high porosity and good treatment capability, but low permeability. Coarse textured sands and loamy sands have large pores, low porosity, low treatment capability and high permeability.

Fine structure will have high porosity and good treatment, coarse structure low porosity and low treatment. Strong structure will have high porosity and high treatment, weak structure low porosity and low treatment.

Sound a warning

One last comment on structure: An installer can affect soil structure and reduce the capacity of soils to accept septic tank effluent. If structure is damaged or destroyed by smearing or compaction during installation, permeability is drastically reduced. Remember if a handful of soil can be worked and rolled into a ribbon 1/8-inch thick, the soil is too wet for the installation to take place. This test can easily be done in the field.



A technician carefully removes a soil sample from a pit.

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Georgia on Our Minds

Two state associations concentrate on growing membership and improving the regulatory climate for installers and pumpers By Scottle Dayton

Ithough the onsite industry in Georgia has lost half its certified installers over the past five years, the Georgia Onsite Wastewater Association remains strong and involved in addressing industry concerns with the state. According to President John Ford, membership averages 400 to 450 people with 40 sponsors, but to remain strong requires an involved base.

"The association's primary focus is how to maintain existing members and stimulate membership," says Ford. "Everyone who has survived thus far understands that the market isn't going to return to what it was five or 10 years ago. The economy is not bouncing back in Georgia. Until everyone has a good feel for what the pace of that new market will eventually be, they are very tight with finances. Our challenge is how to present a strong enough case for membership that contractors will pay dues."

Value for dollars

Enhancing the benefits of the association's annual conference was one goal. "Everyone in the state is feeling the same monetary crunch that we are," he says. "They understand, as we do, the importance of working together."

Ford approached different state health district managers about piggybacking their Georgia Environmental Health Association conference with GOWA's conference. "GEHA's membership is falling off, and the organization is looking for ways to attract more officials to their conference," says Ford, a GEHA board member. "GOWA would love to have environmental health officials at the conference and joining the association."

GEHA's conference is June 6-7 at the Oceanside Hotel, and GOWA's is June 7-8 at nearby Villas by the Sea Resort and Conference Center on Jekyll Island. In the future, the groups hope to share a conference venue. "The best press we could have is if GEHA officials returned to their counties and told installers that the conference was worthwhile and they ought to go," says Ford.

Georgia code requires eight hours of continuing education every two years, and the GOWA conference committee works with the state to provide it. "Our membership numbers get a bump every recertification year, which is 2013," says Ford. "Earning CEUs is a big draw."

Communication goals

Within the last seven years, GOWA representatives and Chris G. Kumnick, program director, land use, Environmental Health Branch, Georgia Department of Public Health, have worked closely to create a regulatory

climate favorable to installers and pumpers. "Dialogue has enabled Chris to better understand our needs and us to better understand his position," says Ford. "Instead of the state thrusting regulations on the industry as in the past, working with Chris has helped us to identify the protocol, the direction from which it is coming, and why it is coming from that direction.

"When we can explain the reasoning behind legislation to members, we prevent what may be a minor bump in the road from being spun into a major ordeal with serious conflict. With more information, we make better decisions and communicate more succinctly with all parties."

Ford has no reservations about asking Kumnick what he thinks about an issue. "He gives an honest answer about how the department will react to certain events if they happened," he says. "Then he'll propose looking at the situation from another direction, enabling him to possibly do something differently."

"Most companies don't market routine maintenance because they don't know what to charge for pump-outs or if they will have somewhere to take the septage next week." Dart Kendall

Legislative curve ball

Like many states, Georgia faces rising tipping fees and diminishing disposal options (15 approved application sites serve 159 counties). In 2011 and without GOWA participation, the state Environmental Protection Division (EPD) passed new Guidelines for Land Application, effective July 2012. The expensive and restrictive regulations prompted 898 of 1,682 licensed pumpers to surrender their permits by March 2012.

Past-president Dart Kendall, GOWA lobbyist Bruce Widener, and assistant EPD director Jim Ussery worked to draft an amendment that delayed implementing the rules until July 2014. It passed, giving stakeholders time to rewrite the legislation. Some proposed changes are reducing monitoring and reporting, lowering disposal fees, and establishing stable disposal sites. "Most companies don't market routine maintenance because they don't know what to charge for pump-outs or if they will have somewhere to take the septage next week," says Kendall.



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"We also proposed a bill that would allow pumpers to dewater septage, then dispose of the liquid in a dedicated onsite system on their property," says Kendall. "The Department of Community Health successfully opposed it, arguing that they needed to hire staff with the expertise to regulate dewatering."

The association has proposed sending itemized invoices listing service call, fuel, tipping fee, and at which plant to help customers understand how companies determine a fair price. Kendall also includes the county commissioner's phone number. Another suggestion was letting the private sector operate land-applied sites.

The crisis has increased the temptation to dispose of septage illegally. With pump-outs averaging \$350, GOWA members report finding pumps in septic tanks with hoses running to the woods or creeks.



Riding the Waves

As winter closes in, New Jersey's Septic Experts uses barges to transport components and fill materials to a tricky island home installation By Scottie Dayton

wners of a 147- by 126-footwide lot on Raccoon Island in Lake Hopatcong, N.J., wanted to renovate their two-bedroom seasonal home and needed to upgrade the onsite system. The general contractor recommended Joe Mayers, proprietor of Septic Experts in Sussex, N.J. He worked with Howard Bach, P.E., of Sparta, N.J., to design the system.

"Besides limited space, the lot was accessible only by boat and the elevation rose 20 feet in the 56 feet from the beach to the house," says Mayers. "Shallow soils, an exposed ledge, and distances to structures ruled out a drainfield."

Bach chose the Puraflo peat fiber biofilter with subsurface disposal from Anua. "These systems produce Class 1 effluent, allowing



Using a Kubota 121 excavator, Bill Post of Septic Experts places screened fill in a 14- by 7- by 2-foot-high containment pan on a barge for transport to Raccoon Island. (Photos courtesy of Septic Experts)

us to obtain a reduction in the disposal area and meet the property's physical constraints," Mayers says. "Furthermore, when the home is vacant for extended periods, microorganisms living on the media go dormant, but they reactivate to optimal performance levels shortly after the owners return."

Mayers raced against winter, gambling that he could finish the installation before his barge and equipment became locked in ice.

Site conditions

Soils are 6 to 30 inches of sandy loam with percolation rates of 2 to 6 inches per hour. The island, 200 yards from the mainland, has a seawall.

System components

- Bach designed the system to handle 350 gpd. Major components are:
- 1,000-gallon single-compartment IM Series polypropylene septic tank with ML3-932 effluent filter (Bear Onsite). Tanks are made by Infiltrator Systems.

SYSTEM PROFILE

Location:	Lake Hopatcong, N.J.				
Facility served:	Seasonal home on Raccoon Island				
System designer:	Howard Bach, P.E., Sparta, N.J.				
Installer:	Joe Mayers, Septic Experts, Sussex, N.J.				
Site conditions:	Sandy loam with percolation rates of 2 to 6 inches per hour				
Type of system:	Peat fiber biofilters with subsurface disposal				
Hydraulic capacity:	350 gpd				



- 1,000-gallon single-compartment polypropylene dose tank with two Goulds 3885 WE0511H 1/2 hp submersible effluent pumps
- Two 150 gpd Puraflo modules with the right unit 12 inches higher than the left
- Dual simplex timer-based control panel with autodialer from American Manufacturing Co.

System operation

Wastewater flows by gravity through a 4-inch Schedule 40 PVC lateral 45 feet to the septic tank, then to the dose tank. Every 90 minutes, the alternating pumps send 8 gallons through a 2-inch Schedule 40 PVC force main to the tops of the biofilters. Pump 1 runs for 70 seconds at 14 gpm, sending liquid 48 feet to the right module (Bed No. 1). Pump 2 runs for 59 seconds at 15 gpm, sending effluent 40 feet to the left module (Bed No. 2). "The dose tank will store peak flows until the pumps time-dose them," says Mayers.



Avery Jinks of Septic Experts prepares to spread 3/4-inch crushed stone over the sand for the absorption bed. Some 20 feet below him is the barge with a portable sanitation unit.

In the modules, effluent trickles through 30 inches of packed peat fiber with a retention time of 48 hours, then drains through 1-inch weep holes along the bottom of the sides into 6 inches of 3/4-inch crushed stone above 10- by 8-foot-wide bank run (sand and gravel mixture) absorption beds.

"Peat fiber has a high lignin content that doubles its life expectancy," says Mayers. "It also polishes effluent to an average of less than 10 mg/L TSS and BOD, less than 5 mg/L ammonia, and reduces 99 percent of fecal coliforms with no pathogens."

Installation

Bill Post and Avery Jinks of Septic Experts drove the rubber-tracked equipment over 14-foot-long, 700-pound steel ramps onto a 30- by 16- by



Avery Jinks of Septic Experts eases the IHI 1.3-cubic-yard IC30 crawler carrier up the steep slope past the septic tank and control panel to deliver another load of bank run.

4-foot-high barge weighing 18 tons and powered by two four-stroke 25 hp outboard motors. They loaded a 6-foot-wide, 6.5-ton Kubota 057 excavator, a 5-foot-wide Yanmar 1.15-cubic-yard C30 mini dump truck, and an IHI 1.3-cubic-yard IC30 crawler carrier.

"Beside limited space, the lot was accessible only by boat and the elevation rose 20 feet in the 56 feet from the beach to the house. Shallow soils, an exposed ledge and distances to structures ruled out a drainfield." Joe Mayers

After motoring across the lake, the crew moored by the seawall alongside the homeowners' dock and reversed the loading procedure. The original design located the tanks on the left side of the house with the two modules in series by the right front corner of the home. As Post lowered the excavator bucket into the soil to excavate the holes, the teeth hit ledge rock at 6 inches. "We were in serious trouble," Mayers says. "Ledge rock is a type of granite: very hard, smooth and unrippable."

Bach and Mayers resolved the situation by scrapping the original plan and starting over. They set the modules one on either side of the house and moved the septic tank, dose tank, and control panel 12 feet down the slope toward the lake and centered with the home. Shifting the components also changed the pump requirements.

Post stockpiled the multiple boulders he found while excavating the holes. "Our code requires replacing existing soils with select fill," says Mayers. "Besides building the absorption beds, we needed additional backfill to replace the space occupied by boulders. Every scoop came by barge. It was a time-consuming process."

A standard dump truck offloaded into a 14- by 7- by 2-foot-high containment pan on the mainland dock. Using a Kubota 121 excavator, Post filled the



Bill Post of Septic Experts rolls up the rigging strap used to lift components and materials.

bucket, drove along the ramps onto the barge, and placed the material in an identical pan on deck, loading from the stern forward.

Back at the island, Post used the Kubota 057 to offload into the bed of the IHI crawler carrier (the Yanmar was for backup). Jinks drove the carrier up the hill and dumped the material where needed. "The carriers go up and down steep grades and traverse soft or swampy land with minimal damage to the terrain," says Mayers. Gravel and bank run were transported in bags.

The men covered the ends of the module excavations facing the house with 20 mil medium-density polyethylene pond liner to prevent effluent from migrating back to the basement. Then they placed and compacted the select fill and gravel, set the units, covered the gravel with filter fabric, and connected the manifolds. Before backfilling, they terraced the areas and built 2-foot-high retaining walls around the beds using the stockpiled boulders.

The 2-inch supply lines from the pump tank to the modules lay in 2-foot-deep trenches. "Water drains back to the tank at the end of a dose cycle, so there is never any liquid in the lines to freeze," says Mayers.

Except for working on a steep slope, setting the tanks and installing the control panel was straightforward. This area also was terraced and enclosed by a retaining wall. Because the lot didn't have enough soil to backfill around the house and system, Mayers ferried in four tandem loads of screened fill. He got his equipment off the island and barges out of the lake just days ahead of an Arctic air mass that froze the surface of the lake solid.

Maintenance

Tri-State Pump and Septic Supply in Franklin, N.J., holds the service contract. State code requires a maintenance inspection every six months for the life of the system.

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Store ad page 15	Snyder Industries, Inc. 4700 Fremont St., Lincoln, NE 68504 402-467-5221 Fax 402-465-1220 sales@snydernet.com www.snydernet.com	Nuconsept Dominator Nuconsept	Polyethylene Polyethylene Polyethylene	300 - 500 750 - 1,500 1,050 - 1,500	48"/60" Sphere 96"-191" x 60"w x 51"h 100"-140" x 64"w x 62"h		1 1 or 2 1 or 2			

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Court finds EPA went too far in Clean Water Act enforcement in Virginia

By Doug Day and Scottie Dayton

Federal District Court in Alexandria, Va., found the U.S. Environmental Protection Agency guilty of exceeding its authority to enforce the Clean Water Act by trying to regulate water as a pollutant. In 2011, EPA's Region III assigned a total maximum daily load for Fairfax County, Va.'s Accotink Creek, reducing the amount of stormwater allowed into the stream by nearly half. The Fairfax County Board of Supervisors and state Department of Transportation sued the agency on the grounds that water is not a pollutant, and that the Clean Water Act does not count surrogates of pollutants as pollutants. Since stormwater is ubiquitous, every homeowner, business and decentralized wastewater system with a National Pollutant Discharge Elimination System discharge permit would have been regulated on how to deal with it.

ALABAMA

Residents in Cherokee County, Ala., have been ignoring a new county ordinance covering sewage holding tanks, so authorities began issuing fines. As of July 2012, residents around Weiss Lake have been required to hook up to a sewage system if available, or to have their holding tanks permitted. Only 100 permits have been issued, and about 1,000 violation notices have been sent. After a final warning to violators, officials began issuing citations on March 1. The fine is \$150 per day, up to a total of \$5,000.

HAWAII

After a trial period, the Hawaii Department of Health is rolling out its new online permitting system this year. Its e-Permitting Portal is intended to make it easer to apply for permits, pay fees, and stay updated on the status of permit applications. "The e-Permitting Portal benefits both DOH staff and the regulated community," Gary Gill, deputy director for environmental



health, said in a news release. "We hope to reduce the average permit processing time by about 30 percent. Making wise use of technology will keep our work efficient and transparent to the industry and the public. It helps us do our job better."

Last year, the system received more than 700 online permit applications during the trial period. Nearly 30 permit applications are now available electronically, including septic system permits. The rest of the paper-based permits will be converted by the end of 2013.

The information is also available to the public through the Environmental Health Warehouse, including maps of all permitted septic systems in the state. Go to http://hawaii.gov/health/about/pr/2013/13-008.pdf.

IDAHO

The Idaho Department of Environmental Quality is revising guidance on designing, building and operating subsurface sewage systems. The changes will address the use of holding tanks, seepage pits and beds; design of pressure distribution systems and recreational vehicle dump stations; and other disposal system procedures.

OHIO

A survey of the state's 130 county and city health departments by the state Department of Health found 194,000 onsite systems experiencing some degree of failure. The failure rate in 2012 was 31 percent, up from 23 percent in 2008. The report is compiled every four years. Newly proposed changes in the septic code would require evaluations of the property and available soil, establish minimum soil depths needed to treat sewage, and specify alternative technology to treat sewage when soils are insufficient.

OREGON

Last November, Oregon voters passed Ballot Measure 79 prohibiting the Department of Environmental Quality from charging a tax, fee or other assessment for filing time-of-transfer inspection reports. The agency planned to use the revenue to fund a staff position to implement the inspection program.

PENNSYLVANIA

The Pennsylvania Department of Environmental Protection proposed best management practices with denitrification for onsite systems and large setbacks from streams and rivers. In most cases, ditches would be considered streams, forcing lot sizes up to 11 acres to establish permanent riparian buffers.

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Expo visitors get early look at SJE-Rhombus easy-access alarm

By Ed Wodalski

xpo visitors seeking an easyto-install indoor/outdoor alarm were offered an early look at the Tank Alert EZ from SJE-Rhombus at the Pumper & Cleaner Environmental Expo International. The two-color, molded enclosure features a removable cover for field wiring and external tabs for easy installation.

"The nice thing about this is it doesn't require a seal. Seals can wear down and deteriorate over time. This seals in and screws tight." Tim Callander

"You don't have to take the cover off to mount it on a piece of wood or wall," says Tim Callander, regional sales manager for SJE-Rhombus, who expected the early Expo buzz would generate interest in the product that was scheduled for release in April.

"We had a lot of activity," he says. Questions primarily focused on the pros of the product. "One was that you could mount it with-



Tim Callander (right), regional sales manager for SJE-Rhombus, shows the new Tank Alert EZ to a visitor at the Pumper & Cleaner Environmental Expo International in Indianapolis.

out having to take the cover off because of the way it's molded with the plastic case. That was one of the attributes they liked for sure."

The self-sealing unit has an integrated LED beacon that illuminates the upper translucent half of the unit. Other features include an alarm test/ silence switch, green power-on LED indicator, automatic alarm reset and auxiliary contacts for remote devices. The plug-and-play alarm also has a distinctly audible alarm.

Made for lift pump chambers, sump pump basins, holding tanks and

other waste applications, the enclosure meets Type 3R watertight standards. Marks on the bottom of the unit indicate wiring entry locations. Model 1036589 has a 15-foot SignalMaster control switch and model 1036591 has a high- or low-level float alarm.

"The nice thing about this is it doesn't require a seal," Callander says of the enclosure's two-piece design. "Seals can wear down and deteriorate over time. This seals in and screws tight." An optional terminal block and 240-volt models are available. **888/342-5753; www.sjerhombus.com.**



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Septic Tanks and Components

By Craig Mandli

Trapezoidal Septic Tank

Septic tanks from Ace Roto-Mold, a Division of Den Hartog Industries, feature a trapezoidal, deep rib design and interior baffle system. A custom-molded gasket system locks for a watertight seal. The tank and access covers are manufactured from high-density



polyethylene with UV stabilizers, while tank outlet gaskets are vulcanized rubber and access cover gaskets are extruded nitrile rubber. Tanks come with two 24-inch double-wall access covers, which interlock with the tank using three bayonet keys. Covers can be secured with nylon wire ties and do not require metal fasteners for retention. 800/342-3408; www. denhartogindustries.com.

Uni-Tee Baffle

The Uni-Tee Baffle from Bear Onsite allows upgrading of the effluent filter to higher-capacity, higher-performing filters in any septic system using the polyurethane uni-tee from builder-grade 4-inch screens. This is accomplished by disengaging the locking mechanism, removing the screen and housing, then locking on any available larger-sized effluent filter. This upgrade is possible from finished grade, without confined-space entry, because of the

PVC pipe lever attachment on the side of the housing that is used to unlock and remove the smaller housing, then allowing it to be replaced with the new larger one. 877/653-4583; www.bearonsite.com.

Septic Tank Lid

Seal-r septic tank lids from BrenLin Company create a strong seal between the septic tank and the riser, effectively eliminating water infiltration between the riser and the tank. They are made of durable materials, range from 12 to 42 inches, and can be personalized with a company's information. The 42-inch lid meets growing demand for bigger risers to



accommodate new technology equipment. 888/606-1998; www.seal-r.com.

Water Storage Tank

Flowtite water storage tanks from Containment Solutions feature a watertight fiberglass design between the access collar and the access riser. A watertight enclosure protecting an access opening is the only way to



eliminate infiltration and exfiltration contamination, as the access opening is the most vulnerable entry point for contaminants into a water storage system. They are designed to meet AWWA D120, NFPA 22, NSF 61 and IAPMO standards for water/wastewater storage tanks. Tanks are available in various sizes up to 12 feet in diameter, and include fiberglass baffles and other accessories. 877/274-8265; www.containmentsolutions.com.

Lightweight Septic Tank

Plastic septic tanks from Coon Mfg. are available in three sizes – 500, 1,000 and 1,500 gallons. They are made of lightweight high-density polyethylene. The 1,000- and



1,500-gallon tanks are available with or without a divider. The 4-inch inlet and outlet holes are designed for a 4-inch Schedule 40 pipe. Lids, Ts and grommets come standard. The 500-gallon tank measures 60 inches by 52 inches by 59 inches; the 1,000-gallon measures 120 inches by 52 inches by 59 inches, but is also available in a low-profile design that measures 121 inches by 61 inches by 50 inches and is equipped with a cable hook for ease in lowering during installation. The 1,500-gallon tank measures 123 inches by 59 inches by 69 inches. 800/843-1532; www.coonmfginc.com.

Concrete Distribution Box

Concrete distribution boxes from Dalmaray Concrete Products have been revamped to a round 2-inch ID distribution box to create a stronger external and internal structure. The box weighs approximately 400 pounds, features one inlet and five outlet ports, and may be sealed with an



environmentally friendly, antimicrobial sealer that kills corrosion-causing bacteria. All covers have the option of a 4-inch-diameter vent pipe or regular manhole handle. 608/752-6507; www.dalmarayconcreteproducts.com.

Polyethylene Septic Tank Cover

Septic tank covers from Hedstrom Plastics are made of a strong, lightweight heavy-wall polyethylene. The covers fit standard 18-inch and 24-inch double-wall corrugated pipe. A safety net is available upon request, and gaskets and safety hardware are included with all covers. They can be filled with sand for added weight, or come foam-filled on request. They can also be



customized with a company name. Infiltration can be stopped with a tank adapter that's available in 18- and 24-inch sizes. 888/434-5891; www. hedstromplastics.com.

Two-Piece Plastic Tank

IM Tanks from Infiltrator Systems are lightweight, durable and watertight. The two-piece design made for septic, pump and non-potable rainwa-



ter harvesting applications. They offer a wide range of installation possibilities including shallow installations and serial configurations. The line currently includes the IM-1060 and will soon include the IM-540 and the IM-1500. The design allows the tank halves to nest, which reduces freight costs. They feature heavy-duty lids and structurally reinforced access ports, reinforced structural ribbing and fiberglass support posts. No special installation, backfill or water filling is required. 800/221-4436; www.infiltratorsystems.com.

Foam-Core Fiberglass Lid

The 24-inch Foam-Core Fiberglass Lid from Orenco Systems features molded-in insulation. Light yet stiff, it has a selfaligning feature on the underside that simplifies installation and helps keep it in



position while unbolted. It comes with flanged hex-bolt attachment hardware, as well as urethane gaskets for watertight installations. It also features a standard non-skid surface design, and supports 2,500 pounds. It is available as a landscape lid in three patterns designed to blend into the surroundings – grass, river rock and bark mulch. 800/348-9843; www.orenco.com.

Effluent Filter

The PL-122 effluent filter from Polylok/Zabel Environmental features an automatic shut-off ball installed with every filter. When the filter is removed for servicing, the ball prevents any solids from leaving the tank. It is easy to install, clean and service, and extends the life of a drainfield. It offers 122 linear feet of 1/16-inch filter slots, significantly extending time between cleaning. Its modular design also allows for increased filtration. Filter alarms are available to notify the owner when servicing is required. 877/765-9565; www.polylok.com.



Polyethylene Water Tanks

Polyethylene water tanks from Romotech feature gallon indicators and translucent walls for level viewing. Larger rounded tanks are equipped with molded-in legs for tank support. Tank sizes available are 8 to 125 gallons, 325 gallons and 525 gallons. They are made from



FDA-approved natural polyethylene material that is UV-stabilized for outdoor storage. All tanks have slots for tie-down straps (straps not included), and are equipped with a 3/4-inch bulkhead fitting. All 8- to 125-gallon tanks are equipped with a 5-inch lid, while 325- and 525-gallon tanks are equipped with a 12-inch lid. 574/831-6450; www.romotek.com.

Septic Tank Forms

Septic tank forms from The Shaddix Company are tapered, air release-type forms. They can be fabricated to a particular state's specifications, with many different



sizes available. They include the outside form, inside forms with a built-in pouring pan, one pick-up bar, and a lid form, with two 18-inch square pouring plugs. The company also offers pre-owned reconditioned forms. 256/338-4987; www.theshaddixcompany.com.

Locking Riser Lid

Locking riser lids from Sim/Tech Filter are mainly for use on frequent-access systems. Instead of screws, a six-point locking web is engaged and disengaged with a push release



tool. The web locks and holds the lid in place in the same motion. The lid eliminates the problems of missing screws and worn out screw holes. It is also faster and easier to access the tank, while impossible for young children to remove. The lid is currently designed to fit 24-inch-diameter Sim/Tech risers or double-wall corrugated pipe or ultra-rib pipe. 888/999-3290; www.simtechfilter.com.

Low-Profile Septic Tank

The Dominator low-profile septic tank from Snyder Industries features a monolithic structural design for superior top load



strength. Its manway isolation design keeps manholes from distorting during backfill and pump-outs. It is available in single- and double-compartment tanks, in 750-, 1,000-, 1,250- and 1,500-gallon sizes (900 and 1,050-gallon sizes for the Florida market), and can be used in both septic and pump tank applications. It doesn't require water filling during backfill. Tees and gaskets are pre-installed. Water cisterns in 1,200- and 1,700-gallon sizes are also available. 402/467-5221; www.snydernet.com.

Septic Tank Covers

Septic tank covers from TOPP Industries are available in polyethylene and fiberglass models for sump, sewage and wastewater applications. The covers fit septic tank risers, extensions and Ultra-Rib, spiral and poly tubes. They can be customized with a company



name and logo. Fiberglass basins and covers are also available for sewage lift stations in 18- through 120-inch inside diameters with all lengths. Covers fit without extra accessories. Extensions are also available. 800/354-4534; www.toppindustries.com.

Septic Safety Lid Riser

Watertight, stackable risers from Tuf-Tite are available in 12-, 16-, 20 and 24-inch diameters for septic tanks, advanced treatment plants and cisterns. Lids have a molded-in gasket that won't fall out and seals tight. All lids can be filled with concrete, padlocked and



secured with vertical and horizontal safety screws (included). Lids fit concrete, plastic or fiberglass tanks. 800/382-7009; www.tuf-tite.com.

productnews

Bell & Gossett System Syzer Android app

The System Syzer software program from Bell & Gossett, a xylem brand, is available as a mobile application for Android operating systems and can be downloaded from the Google Play store. The app calculates friction loss and velocity through various pipe types and sizes, as well as the relationship between fluid temperatures, system flow and heating/cooling load. 847/966-3700; http://completewatersystems. com/brands/bell-gossett.



Metabo carbide-tipped drill bit

The Ultra-X carbide-tipped SDS-Plus drill bit from Metabo Corp. is designed for use in a variety of concrete, masonry and stone applications. The bit has a 4by 90-degree solid carbide head that reduces vibration for precise drilling. The flute design prevents lockup when



rebar is encountered and removes dust through its short, wide channels. Bit diameters range from 3/16- to 9/16-inch with drilling depths from 2 to 16 inches. 800/638-2264; www.metabousa.com.



Water Cannon hot water diesel pressure washer

Diesel-powered hot water pressure washers from Water Cannon are customizable with psi ratings from 3,200 to 4,000 and deliver from 4 to 8 gpm. The V-beltdriven units are powered by Kohler diesel engines and have 15-gallon poly diesel fuel



tanks, a 12-volt battery encased in marine-duty battery box, and a 45-amp charging system. 321/800-5744; www.watercannon.com.

TorcUP industrial torque wrench

The Slimline Ratchet Link industrial torque wrench by TorcUP has a torque range of 395 ftlbs to 3,950 ft-lbs for use on fasteners from 1 to 3 1/8 inches. The wrench fits in areas less than 1 inch wide. Powered by an electrically or pneumatically driven hydraulic pump, torque can be applied by one operator. 610/250-5800; www. torcup.com.



Liberty Pumps ProVore grinders

ProVore PRG-Series 1 hp grinder pumps from Liberty Pumps are designed for residential applications where a bathroom or other fixtures below sewer lines require pumping. The pumps operate on 115 or 230 volts and can be plugged into a standard 20 amp circuit. Features include V-Slice cutter technology that shreds solids, including feminine products, rags and other debris. Factory-assembled, the systems are available in simplex and duplex versions. 800/543-2550; www.libertypumps.com.



Clarus wastewater treatment system

The Fusion Series "drop-in" wastewater treatment system from Clarus Environmental uses anaerobic and aerobic zones to produce secondary quality effluent. Polypropylene filter media are never removed or replaced. Features include constant recirculation of treated wastewater and twice-daily automatic backwash cycle



that returns residual sludge to the head of the system. NSF Standard 40 Class 1 systems include models ZF-450, ZF-600 and ZF-800. Larger units capable of treating 1,120, 1,440, 1,680, 2,000, 2,400 and 2,800 gpm are available. 877/244-9340; www.clarusenvironmental.com.

RIDGID ABS, foam-core PVC pipe cutters

FC-Cutters from RIDGID are designed to cut ABS and foam-core PVC pipe. Available in two options for cutting 1 1/2- and 2-inch-diameter pipe, the cutters feature an extended handle for leverage and one-rotation cuts that don't leave burrs. 800/769-7743; www.ridgid.com.



Septic Tanks and Components

By Craig Mandli

Failing laterals cause raw sewage odor issues

Problem

The community of Fulda, Ind., was experiencing failing laterals and direct discharge from older septic systems that sent sewage into ditches, creeks and storm drains. This created an unpleasant odor in the summer months, not to mention a potential health issue. Being a small community, the cost of a conventional sewer treatment system was a major concern.

Solution

Bernardin, Lochmueller & Associates, Inc., along with Natural Concepts Water Quality Engineering, LLC, a subsidiary of B.L. & A., Inc. provided a decentralized treatment system using pressure pipe to transport the sewage. Each of the 64 users would use a Filtered Septic Tank Effluent Pump (STEP) system from Clarus Environmental to move filtered effluent from the residence to the treatment area.

Result

Using the decentralized treatment system, pressure pipe, and the STEP system, Fulda tackled the sewage issue at a fraction of the cost of a conventional gravity sewer system. 877/244-9340; www.clarusenvironmental.com.

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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)

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associationnews

Onsite Installer[™] invites your state association to post notices and news items in this column. Send contributions to editor@onsiteinstaller.com.

IDAHO

Committee approves technology

Members of Idaho's Individual and Subsurface Sewage Disposal Technical Guidance Committee keep the state's Technical Guidance Manual current by providing oversight for alternative technologies. The committee approved adding the extra-depth sand mound to the manual and updated the list of piping materials to meet current standards. "The extra-depth sand mound, with at least 2 feet of sand below the drain-rock bed, has the potential to be a game changer," says committee member Joe Canning, P.E., and president of B & A Engineers in Boise. "If nutrient reduction is not a significant issue, this becomes an excellent option for developing more marginal sites without using more aggressive and expensive tools."

IOWA

Course for homeowners

Muscatine County Environmental Health officials held a free training session for residents interested in becoming qualified effluent samplers. Homeowners with sand filters, peat filters, aerobic treatment units, constructed wetlands and other biomedia filters are required to have effluent tested twice annually. According to the state Department of Natural Resources, only qualified samplers may collect effluent samples.

MICHIGAN

Serious about training

During the 2013 Michigan Septic Tank Association conference, more than 200 participants earned a total of 2,100 continuing education hours, equaling more than 1,400 certifications.

MISSOURI

Health officer honored

The Missouri Smallflows Organization honored Janet Murray, Randolph County Health Department environmental health supervisor, for her service over 10 years. She has been the president of the board of directors for six years, and prior to that served as secretary. Murray wrote the group's mission statement and implemented statewide traveling education programs for installers, engineers, service providers, soil evaluators and regulators. She imple-

Janet Murray

mented the Daryel Brock Scholarship for children of MSO members, and testified before the legislature on wastewater matters.

NOWRA Nuggets

The National Onsite Wastewater Recycling Association annual conference is Nov. 17-20 at the Millennium Maxwell House Hotel in Nashville, Tenn. A planning committee is developing the program and related activities. Topics under consideration are large commercial decentralized systems, high-strength wastewater, and innovations in treatment technologies. Sara Heger, MS, onsite sewage treatment program extension specialist at the University of Minnesota, is education chair, and Craig Gilbertson is conference chair.

Association members also met with the National Environmental Health Association to discuss updating the 2004 memorandum of understanding. "The revisions will better reflect our beneficial relationship concerning training, and NOWRA's support of NEHA's efforts to expand its Certified Installer of Onsite Wastewater Treatment Systems credentialing program," says executive director Eric Casey.

NOWRA members are working with the U.S. Environmental Protection Agency MOU group to develop a paper demonstrating the positive effects the onsite industry has on community and economic development. The document will provide reasons why cutting onsite budgets or passing regulations that obstruct system installations will increase hardships for low-income communities. "Installing and maintaining residential or commercial decentralized systems create jobs that benefit the economy," says Casey. "Once communities manage their wastewater, economic development follows."

As NOWRA continues to redesign its website, Septic Locator will become a separate website linked to www.nowra.org. "It will focus exclusively on educating consumers and helping them find qualified service providers," says Casey. The move enables Septic Locator to appear higher on Google searches and gives NOWRA the ability to accept practitioners who are not members.

NEW BRUNSWICK, CANADA

Provincial association formed

The New Brunswick Association of Onsite Wastewater Professionals held its first annual meeting and election of officers last November. President Mike Stairs of Fredericton, says the industry and government recognized the need for an association due to the lack of proper installations and inspections, leading to liability for the province, the contractors, and sometimes the product manufacturers. "While the province licenses installers and sets minimum installation standards, cut-rate contractors leave homeowners with huge financial expenses and enormous headaches," he says. "We hope the association will become self-policing and ostracize those who fail to deliver quality services." More stringent regulations are due this year. Contact Stairs at mike.stairs@nbaowp.ca.

CALENDAR OF EVENTS

June 7-8

Georgia Onsite Wastewater Association Conference, Sea Palms Resort, St. Simons. Call Bruce Widener at 678/646-0369 or visit www. onsitewastewater.org.

TRAINING AND EDUCATION

Alabama

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

- Aug. 8-9 Continuing Education, Guntersville
- Aug. 21-23 Basic Installer

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 http://aowatc.uwa.edu.

Iowa

The Iowa Onsite Waste Water Association has a Site Evaluations and Soils course July 24 in Toledo. Contact Alice Vinsand at 515/225-1051, execdir@iowwa.com, or visit www.iowwa.com.

Minnesota

The University of Minnesota Onsite Sewage Treatment Program has these classes:

- July 9-11 Soils, Brainerd
- Aug. 7 Soils Continuing Education, Two Harbors
- · Aug. 14 Soils Continuing Education, Winona
- · Aug. 20-23 Service Provider, St. Cloud

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

New England

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

- July 11 Microbiology for Wastewater Professionals
- July 18 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

The North Carolina Pumper Group and Portable Toilet Group will hold an educational seminar on septage management and land application Sept. 21 in Asheville. Call Joe McClees at 252/249-1097 or visit www.ncpumpergroup. org or www.ncportabletoiletgroup.org.

Oregon

The Chemeketa Community College in Salem has these classes on:

- Aug. 5-6 Maintenance Operator
- Aug. 6 Installer

Call 503/399-5181 or visit www.chemeketa.edu/busprofession/ccbi/ customizedtraining/deq/classes.html.

Pennsylvania

The Pennsylvania Septage Management Association is offering these courses:

- July 16-17 Basic Onlot Wastewater Treatment System Inspection, Bridgewater, N.J.
- July 23-24 Advanced Onlot Wastewater Treatment System Inspection, Exton, Pa.
- Call 717/763-7762 or visit www.psma.net.

Ontario, Canada

The Canadian Onsite Wastewater Institute develops onsite curriculum and training materials for colleges and provincial associations. Courses include an introduction to onsite systems, inspection, pumps and controls, soil analysis, system design, operations and maintenance, grease interceptors, residential and advanced installations, and building code updates. The courses can be tailored for U.S. colleges or associations interested in beginning or expanding training programs. Contact Denis Orendt at 905/372-2722; info-cowi@bell.net.

industrynews

Mazzei names director of analysis and VP of development

Mazzei Injector Co. named Dr. Sri Pathapati director of CFD analysis and engineering and Celia Cobar vice president of research and development.

Gorman-Rupp names district managers

Gorman-Rupp Pumps named Joe Price western district manager and Mike Retter southeast district manager. Price will cover Washington, Oregon, Idaho, Montana, Wyoming, California,

Joe Price

Nevada, Utah, Colorado, Arizona, New Mexico, Texas, Alaska and Hawaii. Retter will be responsible for North Carolina, South Carolina, Georgia, Florida, Tennessee, Kentucky, southern Ohio, Alabama, Mississippi, Arkansas and Louisiana.

Infiltrator installs energy monitoring system

Infiltrator Systems installed an energy monitoring system at its ISO-9002 certified manufacturing plant in Winchester, Ky. The UtilityRecon 2.0 by EnterScape is designed to better manage power usage and reduce costs. "Managing power usage in our manufacturing process is a natural evolution of our overall focus on the environment," says Ron Brochu, Infiltrator's vice president of manufacturing. "Not only is it good for the environment but we believe it will also reduce our energy costs substantially by allowing us to monitor total energy consumption in real time and reduce peak demand costs."

Expo guests win show passes, hotel lodging

Ryan Welander, representing the City of Tacoma, Wash.; John Straub of EAP Industrial Service; and John Thomson of Muskoka Septic Service won two complimentary passes to next year's Pumper & Cleaner Environmental Expo International, Feb. 24-27, 2014, in Indianapolis and a two-night stay at the Westin hotel as part of the COLE Publishing editors' booth drawing.

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Ensuring Quality Concrete Tanks

To get the longest, most effective life out of a concrete septic tank, remember the mix, the mold and your good, reliable manpower to get the job done right By Eric Hudberg

would be raised. Installations have so many variables that the odds of one going perfectly smooth are roughly a million to one. With proper installation being so crucial to the success of the system and ensuring a happy customer, wouldn't it be great to eliminate some of these variables?

Worry-free installations start with a quality tank. A quality concrete tank takes a great deal of care to consistently produce a quality casting, and several key components are required:

Mix

Just what is mix design? Mix design is more than simply coming up with the proportions of each mix component, it is everything that makes the concrete perform well for your application.

Three stages in concrete's life must be considered when developing the mix: fresh concrete, newly completed concrete, and long-term performance. The requirements for good performance in each of these three stages can actually conflict. A wet, easy-to-place concrete is not likely to be as durable, while an extremely durable concrete will often be difficult to place, causing a completely different set of problems.

One way to get the right mix for your application is to work with a National Precast Concrete Association member. The NPCA has a Plant Certification Program that assures a uniformly high degree of excellence in plant facilities, production, processes and quality control. This program holds members to a higher standard of quality in the proper concrete mix and final product.

Mold

The mold is used to create the final shape of the hardened concrete. People often give very little thought to the molds and are only concerned about the finished product. A quality mold is crucial to achieving a quality casting.

A quality mold will be made from at least 7-gauge steel, with the proper reinforcing to maintain straightness in the mold walls and therefore the casting. When a mold is not properly constructed, the quality of the casting will degrade as the mold gets older. A well-built mold will produce the same casting for many years.

The joint-forming material should be made from solid machined steel in the mold itself. Tongue and groove is preferred. This will create a straight, consistent joint easily sealed for watertightness. With a machined steel joint on the mold, you will get consistent quality for all your tanks. Finally, the method of releasing the concrete from the mold must be consistent and uniform. Without a consistent stripping method, cracks and microfractures can and will occur. Many times cracks will not even be noticed by visual inspection, but will show themselves in the form of a leaking tank months after installation. There are many different methods of stripping, but the most consistent method is hydraulic lifting of the tank.

Manpower

Employees are the most valuable asset of any company. It is our responsibility to treat them with respect and provide the proper training. Fortunately, organizations exist to help train wastewater professionals on industry best practices.

The National Onsite Wastewater Recycling Association is dedicated to educating and representing members in the onsite and decentralized wastewater industry. Our members include educators, regulators, engineers, contractors, manufacturers, suppliers, service providers and other parties dedicated to protecting water resources and the environment.

Your staff and suppliers can learn a great deal about best practices and new market opportunities through NOWRA. There are state affiliates throughout the U.S. onsite professionals can join. If your state does not have an onsite organization, you can join NOWRA directly by visiting our website, www.nowra.org. The long-term payoff is well worth it.

Much like life, installations will always come with their own frustrations. Working with quality products will always be better and safer than taking shortcuts. This results in higher customer satisfaction and larger profits for your company.

Our HD covers fit Polylok risers and corrugated or ribbed pipe. These covers are made of HDPE with the highest UV protection on the market today. Every cover comes with a factory-installed gasket. These covers will withstand normal residential.

EFFLUENT FILTERS (800 GPD - 10,000 GPD) We have manufactured Effluent Filters since the 1950's. With over 60 years experience, let us size the appropriate Effluent Filter for you.

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Designed to stop unwanted entry and provide protection against accidental entry by children or pets. Polylok's new Lid-Lok Safety Device completely covers all screw ports making it necessary to remove the device first, before being able to access the safety screws. Each device comes with solid aluminum, all weather construction, ring and a solid brass Master V-Line lock and two keys.

6" & 12" TALL RISERS We have combined all the best features of concrete and plastic risers to create our patented riser system. Our risers hold their shape, are stackable, screw together, and are water and airtight. Structural ribs inside

prevent frost from adhering to the riser in

frost prone areas.

12", 20" & 24" RISER SAFETY SCREEN

These bright yellow, heavy-duty ABS screens act as a secondary layer of protection if the riser cover is unknowingly damaged or removed. The Riser Safety Screen fits in the upper most riser stack of our Polylok risers and prevents entry into the tank. The Riser Safety Screen has been tested to 250 lbs. per sq. ft. and comes with a built in handle.

3", 4" & 6" EXTEND & LOK Our Extend & Lok™ is a simple, easy to use solution that can extend the inlet or outlet pipe and make filter and/or baffle installation a snap.