

February

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O&M Matters:
The drainfield
Page 22

Steps in site evaluation
Page 16

The latest in mini-loaders
Page 28



**EXPO
ISSUE**

Embracing Alternatives

Ashco-A-Corporation thrives on advanced systems and service contracts

Page 10





COVER STORY

10 Embracing Alternatives

By Kathy Jesperson

ON THE COVER: The greatest challenge for Paul Ashburn and Ed Cogar (pictured), owners of Ashco-A-Corporation, is getting regulators to accept and approve innovative treatment technologies. Ashburn and Cogar have built their careers around being open to new technologies. (Photography by JB White)

6 Breaking Ground: Join the Roundtable

A special Saturday morning session at the 2011 Pumper & Cleaner Expo lets you share ideas and best practices with other industry professionals.

By Ted J. Rulseh, Editor

14 2011 Expo: Party With Dierks

Red-hot country performer — and one-time pumper — Dierks Bentley will rock the house in Louisville.

By Jim Kneiszal

16 Basic Training: The Key to Design

A thorough site evaluation provides the foundation for a sound system design and a roadmap for future service and maintenance.

By Jim Anderson, Ph.D., and David Gustafson, P.E.

18 Rules and Regs: California Proposes Tiered Regulations

By Scottie Dayton

20 System Profile: Simple Fix

A septic aerated batch reactor (SABRe) system helps a contractor remediate a drainfield in southwest Ohio and avoid a costly system replacement.

By Scottie Dayton

22 O&M Matters: Looking to the Soil

A careful, step-by-step evaluation is necessary when performing O&M service on a gravity drainfield.

By Kit Rosefield

24 2011 Expo: Learn to Be Outrageously Successful

Speaker and business coach Scott Hunter brings success secrets that can help owners transform their companies.

By Ted J. Rulseh

26 Notes from NOWRA: Looking Back, Looking Ahead

Contestants remember the 2010 Roe-D-Hoe and make plans to try again at the 2011 Pumper & Cleaner Expo in Louisville.

By Tom Fritts

28 Machine Matters: Muscle Up!

Brawny mini-loaders take the heavy lifting out of challenging projects too big for a shovel and too small for a skid-steer loader.

By Ed Wodalski

30 Industry News

32 Product News

38 Association News

News; Calendar of Events; Training and Education

Published monthly by



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CIRCULATION:

Circulation averages 21,421 copies per month. This figure includes both U.S. and International distribution.

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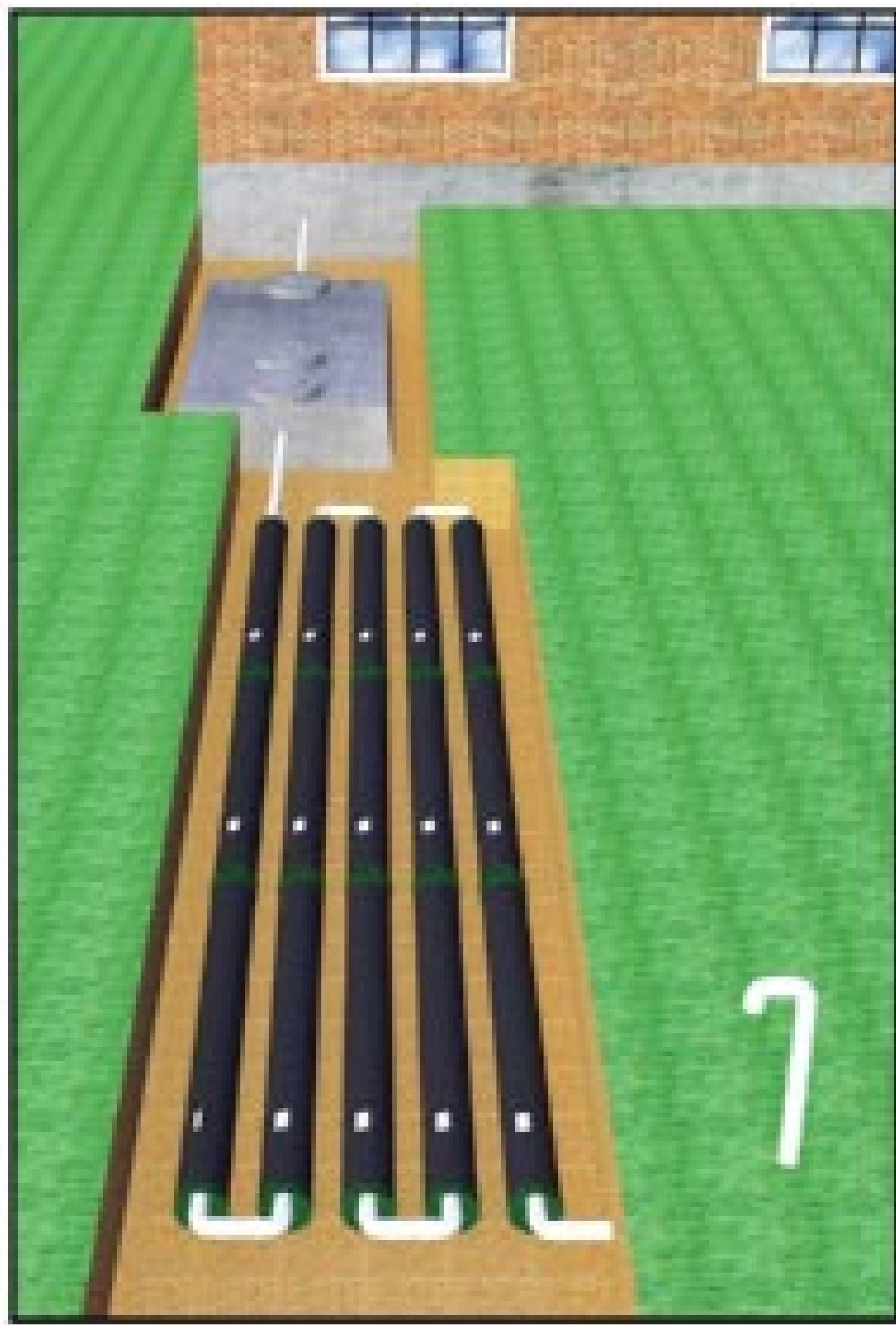
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ADVERTISER **index**

February 2011

COMPANY	PAGE
 Alderon Industries, Inc.	17
 Alita Industries, Inc.	24
 Bio-Microbics, Inc.	13
 Seal-R BrenLin Company, Inc.	23
 THE DIRTY BIRD Septic Vent Concealer BS Design Corp.	39
Champion Pump Company	30
 CLARUS ENVIRONMENTAL Clarus Environmental	27
Crest Precast, Inc.	31
Ecological Tanks, Inc.	29
 eljen Eljen Corporation	23

COMPANY	PAGE
 Fergus Power Pump, Inc.	26
Hydro-Action Manufacturing	7
IHI Compact Excavator Sales LLC ..	31
 INFILTRATOR systems, inc. Infiltrator Systems, Inc.	25
 JET INC. Jet, Inc.	8
Miller Environmental Inc.	39
Netafim USA	15
 Orenco Orenco Systems, Inc.	3
 POLYLOK Polylok, Inc.	40
Premier Tech Aqua	15
Presby Environmental, Inc.	4

COMPANY	PAGE
 Roto Solutions RotoSolutions, Inc.	9
 Salcor Inc. Salcor, Inc.	18
Sanitation Insurance Services	33
 Septic Services Inc. Septic Services, Inc.	32
 Septronics, Inc. Septronics, Inc.	13
SIM/TECH FILTER, Inc.	17
 SJE Rhombus SJE-Rhombus	8
SludgeHammer Group, Ltd.	5
 SPI SPI - Septic Products, Inc.	30
 T & T TOOLS T & T Tools, Inc.	33

COMPANY	PAGE
The Pagoda Vent Company	39
The Shaddix Company, Inc.	39
 TUF-TITE Tuf-Tite, Inc.	19
Waterloo Biofilter Systems, Inc.	6
 WIESER Wieser Concrete Products, Inc.	33

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Join the Roundtable

A special Saturday morning session at the 2011 Pumper & Cleaner Expo lets you share ideas and best practices with other industry professionals

By Ted J. Rulseh, Editor

King Arthur had his Knights of the Round Table. The life insurance industry has its Million Dollar Roundtable.

And now you can join an industry Roundtable during the 31st Annual Pumper & Cleaner Environmental Expo in Louisville March 2-5. On Saturday, March 5, COLE Publishing will hold a Roundtable Discussion and Pancake Breakfast from 8 to 10 a.m.

It's a chance to spend time with professionals in the onsite and other environmental service industries and share ideas and best practices as they relate to pressing issues facing the industry.

Part of the network

A big reason to attend the Expo (or any industry trade show) is to network with your peers from around the country. The Roundtable event is designed to bring a tighter focus to networking by putting you in a group with others who have con-

cerns and questions similar to yours.

Choose your group carefully and you're likely to come away with a couple of profit-boosting ideas, or a solution to a persistent problem, or an approach that can help you run your business and lead your people more effectively.

The beauty of a trade show is that you get to talk with others in the business who are *not your competitors*, and so are willing to share ideas freely. You are unlikely to experience that kind of sharing back home.

Here's how it works

We've set up this event to maximize sharing. While you'll be asked to select just one Roundtable group in which to take part, each group will report to the entire room at the end of the discussion, so you get insights on a variety of important issues.

We'll start by selecting, by show of hands, several topics for discus-

sion. Then we'll devote a group of tables to each topic and ask those present to choose the topic of greatest interest and go to that area of the room.

advance. Go to www.pumpershow.com/roundtable.

2. Suggest a topic for discussion. We'll be looking for discussion topics from now until the start

The beauty of a trade show is that you get to talk with others in the business who are *not your competitors*, and so are willing to share ideas freely. You are unlikely to experience that kind of sharing back home.

After around-the-table introduction of group members, each group will select a leader who will guide the discussion, record comments on the flip chart, and give the report at the end of the session.

The discussion will be free-flowing, with just a few basic ground rules, such as: no criticizing of anyone's ideas, keep comments short and concise, stay on topic, and give everyone a chance to speak.

The discussion will last about 30 minutes, after which each group will summarize the items discussed and decide what to present to the larger audience. Each group leader will then have about five minutes to give a report.

Get involved

That's the basic format — we'll provide all the instructions and materials to make the experience easy for everyone. In return, here's what we ask of you:

1. Register. To help us plan for the event and set up the room, we need participants to register in

of the Expo on March 2. We will consider all ideas carefully before selecting those to present to the group. Suggest your topic at the Web address above.

3. Come to the event ready to learn and share. The more focused the group members are, the more everyone will get out of this event.

The breakfast price is \$10 and includes fresh fruit salad, butter-milk and blueberry pancakes, link sausage, maple syrup and butter, orange juice and coffee. I'll be the master of ceremonies for the Roundtable, and I look forward to seeing you there. ■

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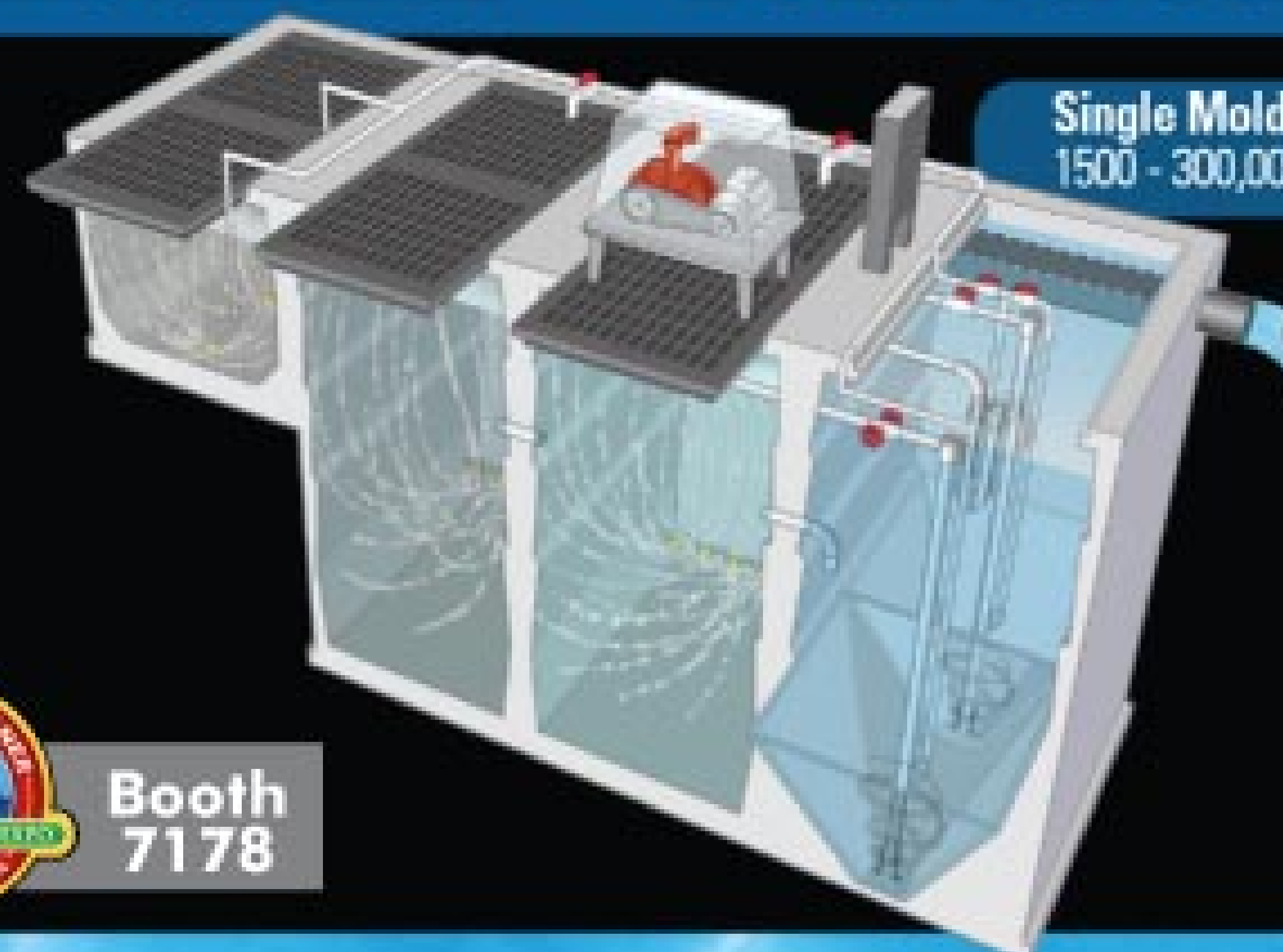
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Ashco-A-Corporation owners Ed Cogar (left) and Paul Ashburn discuss the design of a system before getting to work on a site. (Photography by JB White)

Embracing Alternatives

Ashco-A-Corporation has helped to drive progress in advanced onsite treatment systems while building a strong business in service contracts

By Kathy Jespersion

Ashco-A-Corporation, Morgantown, W.Va.

OWNERS:
Paul Ashburn and Ed Cogar

YEARS IN BUSINESS:
38

SPECIALTIES:
Alternative onsite systems, service contracts

MARKET AREA:
West Virginia, Pennsylvania, Indiana, Massachusetts

EMPLOYEES:
15

AFFILIATIONS:
NOWRA, West Virginia Water Environment Association

WEBSITE:
www.ashco-a.com



The greatest challenge Paul Ashburn and Ed Cogar faced in their nearly 40-year career wasn't figuring out which onsite system would work best under which tricky site conditions. To them, that was the fun part.

The most challenging part for the two owners of Ashco-A-Corporation was getting regulators to accept and approve innovative treatment technologies. Ashburn and Cogar built their careers around being open to new technologies. At times that has taken some finesse.

The two friends didn't set out to open an onsite installation business. In the end, starting Ashco-A-Corporation in Morgantown, W.Va., turned out to be the best idea they had since they left college.

After serving in Vietnam, the two ex-Marines wanted to find more than a job — they were looking for a career. So one day over a couple of beers, they launched a plan to create Ashco, a name that

uses the first few letters of their last names.

Relying on the help of a brother-in-law already in the onsite installation business, the partners bought a truck and outfitted it to carry septic tanks. Then, while juggling full-time jobs, they would pour and set tanks at night.

was, 'Do you want a septic tank or not?' Now there are so many other options," says Ashburn. He regards the 1980s as the dawn of alternative systems and an alternative way of thinking.

In fact, he was sure the new way of thinking would propel the industry to new heights, and he was right.

"We've developed a whale of a relationship with the health department. It does no good to think you're above these organizations. You're in it together. These relationships develop over time."

Paul Ashburn

"We worked part-time for about a year and half," says Ashburn. "Then we got too busy. Ed worked full-time at Ashco first, and I continued to work elsewhere to help support the business. But it wasn't long until we were both full-time at Ashco."

Beyond the tank

"Back then it was different. It

Today, Ashco regularly installs alternative systems that address specific site conditions. They include the company's own RFS II recirculating sand filter, which they developed for commercial systems that can treat up to 100,000 gpd.

They use it in subdivisions, commercial establishments, state parks, training facilities, and highway rest



Service technician Ryan Bucklew rakes sand in a recirculating sand filter.

areas. Two other systems they developed are the RFS III for small residential systems of 600 gpd or less with nitrogen reduction; and the RFS III-T, developed as an add-on to the secondary process to achieve tertiary-quality effluent.

"West Virginia, like most other states, has its challenges, with high water tables, steep slopes, high bedrock, shallow soil or no soil," says Ashburn. "The trick is to stay within the design standards for the state you're working in." Ashco installs a variety of systems to meet unique challenges. They include:

- Drip irrigation systems with GeoFlow drip tubing.
- The Ecoflo peat system from Premier Tech Aqua.
- The Residential Home Aeration Unit (HAU), commercial aeration systems, and extended

aeration systems from Jet Inc.

- In-Drain system (pod system) from Eljen Corp.
- Treatment units from Orenco Systems.

Only yesterday

Since Ashburn and Cogar can remember a day when alternative systems wouldn't have been considered, they believe in building solid working relationships with health departments and county, state and federal environmental agencies.

"We've developed a whale of a relationship with the health departments," Ashburn says. "It does no good to think you're above these organizations. You're in it together. These relationships develop over time. It took 10 years to develop a relationship with Pennsylvania's reg-



Service manager Jim Bagwell sets the PLC controller (Siemens) on a drip irrigation field.

ulators. I've been working on projects there since the 1990s.

"Know the regulators — who they are; what their names are. Become almost friends with them. Honesty is essential when working with regulators. Be honest about what you're trying to do and the kinds of systems you want to install. Then convince them that the industry has to be involved in making decisions. There's no use in developing technology that can never be used."

Ashburn and Cogar say regulators began to respond to them out of respect. It's through such respect that they've been invited to sit on state regulatory boards. They are members of the West Virginia Sewerage Advisory Board and attend its annual conference, where they can make recommendations to state regulators and find an audience for industry concerns.

"We're part of the founding fathers of NOWRA," says Ashburn. "We were there for one of the first meetings they ever had in Atlanta. I think we've had an impact on the onsite industry, especially in helping get industry and regulators on the same page."

Networking pays

Knowing how to develop good

It's No Secret

Paul Ashburn and Ed Cogar built their onsite installation business with hard work and honest service. They say the secret to a successful business isn't really a secret at all.

Ashburn describes it in one word: Diligence. "Staying at it," he says. "That's the key to success — that and time. We keep after the industry and stay on top of new technology. We put in the time it takes. It's long hours. It's exhausting."

The rewards of their diligence show in sound construction and dependable system performance. They put in the time and built a reputation not because they wanted notoriety, but because they wanted the satisfaction that comes with a job well done.

industry relationships can pay off handsomely. Because of the partners' diligence in that area, Ashco now works in four states: West Virginia, Pennsylvania, Indiana and Massachusetts. Getting their foot in the door took time and dedication.

"Get a local contact," says Ashburn. "Someone who can help you develop the relationships you need in that state, someone who has some influence."

For example, Ashburn met Ralph Reed of Ralph Reed Excavating in

The Ashco-A-Corp team includes, front row, from left, installation technician Lee Conner, technician Ryan Bucklew, technician Carl Schell, production technician Roy Martin and maintenance manager Steve Bucklew; second row, accounting and payroll manager Michelle McGee, financial manager Barbara Ashburn, owner Paul Ashburn, owner Ed Cogar, permitting specialist Lisa Travis, CAD technician Lenny Giangiulio, and driver/mechanic Gary Wright; back row, laborer Brian Arnett, production manager Steven Wayne Bucklew, and service manager Jim Bagwell.



Indiana at a training seminar at Purdue University. That meeting gave him the opportunity to work with Reed, meet others in Indiana's onsite industry, and build relationships. Eventually, he was able to work in Indiana on his own.

Once the work comes in, taking care of the customer becomes the priority. Customer service begins with the telephone. "When someone calls in, that's your first opportunity to make a good impression," says Ashburn. "Treat people like you'd like to be treated. The customer knows little about wastewater; they come to you with trust.

"It's your responsibly to provide them with a system that meets

"It's not a nine-to-five job. We never stopped at eight hours."

Ed Cogar

their needs. Know your products. Once your customer pays for a system, they have to live with it for a long time. You don't want to put systems in and then have to go back. It's your reputation. I can't emphasize this enough: Make sure your products work like you say they will. And when you put a system in, follow up with it.

"If a system we install does have problems, we will take care of them. We tell our customers, 'If an aeration pump goes out, you don't have to worry about it. We'll install another one. If it's something else, we'll take care of that, too.'"

Ashburn also takes on all the "paperwork nightmares" to get the permits needed to install systems. "We became efficient at permitting," says Ashburn.

Management is key

Ashburn says a good management program is key to the onsite industry. The company has delivered that for years. The company's service contract is an integral part of the business plan. Prices start low for residential customers and get higher for more intricate sys-

Installation technician Lee Conner installs GeoFlow drip tubing using a vibratory plow.



Service manager Jim Bagwell checks the aerator in a residential treatment unit from Jet Inc.

tems. Commercial contract prices vary with system size, distance from the office, and whether the system uses surface or subsurface discharge.

"Our service department is self-supporting now," says Ashburn. "We don't have to take money from anywhere else in the business to keep it going. We manage the pumping, we check the tank, baffles, drainfield, and all the mechanical parts. We probably have 500 systems under our service program right now."

For new construction, the company has a large equipment fleet. It

includes two Hillside Industries monorail boom trucks, a National 17-ton truck crane, an International road tractor, and two 40-foot flat-deck trailers. Earth-moving equipment includes a Caterpillar dozer, a Cat 416 rubber-tired backhoe, a Kobelco 904 track excavator, and a John Deere Z35 mini-excavator.

Treating people well

While maintaining this equipment, the owners pay even more attention to their staff members, always letting them know how much they are appreciated. Ashco employs 15 people, and most have

been with the company for years. Ashburn attributes that longevity to good management policies.

In the office, Ashburn's wife Barbara, financial manager, has been there for 33 years. Michelle McGee, accounting and payroll, has been on board for 17 years, and Lisa Travis for seven. Jim Bagwell, service manager, has 15 years of service, and technician Lee Conner has been with the company for 22 years. Steven Wayne Bucklew, production manager, is another key player.

"We normally work year round," says Cogar. "We're pretty good at keeping staff through the winter, and the economic climate hasn't really affected us."

Ashco's customer service philosophy and quality products keep the company on top of an industry with multiple challenges. The partners have put in the time it takes to make the business stand out.

"It's not a nine-to-five job," says Cogar. "We never stopped at eight hours. Lots of things have changed. You need a lot more technical

expertise than you did 40 years ago. But the goal is customer service. And we think we do a good job at that." ■

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Party With Dierks

Red-hot country performer — and one-time pumper — Dierks Bentley will rock the house in Louisville

By Jim Kneiszel



How's this for the hottest ticket in town: The Pumper & Cleaner Environmental Expo International and Dierks Bentley.

The can't miss trade show for environmental services professionals collides with the can't miss country music performer of the past year. When Bentley takes the stage at Louisville's Freedom Hall March 5, he will have just learned the fate of his three nominations from the 2010 Grammy Awards.

Bentley, 35, has had numerous No. 1 country hits since his 2003 debut album, but last year's bluegrass-influenced *Up On The Ridge* took him to a new level. Recording with an ensemble of the hottest new stars — Punch Brothers, Miranda Lambert and Jamey Johnson — Bentley produced the contemporary country music that built his career, but used the acoustic sound that instilled his love of

country music in the first place.

"I had a blast making this record," Bentley said in an interview. "It was the most fun I've really ever had making a record. Bluegrass music is what really first got me turned on to country. I don't think I'm a traditionalist. I love country music and putting my own stamp on it. And using acoustic instruments is a big part of the formula; I want to push the boundaries of what you can do with them."

A pumping past

Beyond music, there's another reason the Expo crowd will enjoy this down-to-earth performer: He's been a pumper. One of the many jobs he had before landing a contract in Music City was pumping out holding tanks on houseboats at Lake Powell in his home state of Arizona.

"I loved the lake and I loved being up there," Bentley explains.

"It's important for us to have a high-energy show and a lot of fun. If it's a good night for us, everyone else will have a good time. This is one of the first shows we'll have for the year and everybody will be extra excited to be out there playing."

Dierks Bentley

"In the mornings, I'd go down and show the customers how to drive the boats — 35- to 60-foot houseboats. When the boats came back, we'd clean them from top to bottom, scrub the roofs and decks, pump out the tanks, and get them ready to go the next morning."

Boats typically had 250-gallon holding tanks, and that waste was pumped through a pipe system installed at the marina. Careful evacuation of the tanks and constant cleaning is vital because Lake Powell provides a freshwater supply for an expansive desert territory in the Southwest.

Bentley always enjoyed physical labor (he built decks for a time and retrieved golf balls at a driving range) and appreciates hard work. The jobs he didn't like were in Nashville offices while he paid his dues in the music business.

"I poured coffee all over this town and worked in every building in Nashville before I got a publishing deal," he recalls. "I like physical labor, but emotionally being in Nashville and working day jobs while trying to get a record deal was the toughest."

Quit the day job

In 2003, Bentley's first single, "What Was I Thinkin'" topped the country chart. His 2005 album, *Modern Day Drifter*, went platinum.

That year he became the youngest member of the Grand Ole Opry and received the Country Music Association's Horizon Award. He followed with the 2009 album, *Feel That Fire*, which included two No.1 hits, the title track and "Sideways."

Then Bentley had a thought. What if he returned to the bluegrass music he fell in love with when he arrived in Nashville years ago? So he called his friends in the band Nickel Creek and started planning *Up On The Ridge*.

"I've always been a big fan of Nickel Creek, and I knew (mandolin player and singer) Chris Thile from bounding around in the bluegrass circles," he says. "They were really out there with the progressive acoustic music and I really enjoyed what they did. I had moved here to do country music, and I walked into a bar and they were singing country songs using acoustic instruments. I really fell in love with that sound, and it gave me a foundation to start from."

Thile's new critically acclaimed band, Punch Brothers, recorded a number of tunes with Bentley, including a daring cover of the U2 hit, "Pride (In The Name Of Love)." Besides the Punch Brothers, the song features the high lonesome sound of bluegrass legend Del McCoury.

At first, friends didn't understand Bentley's choice to cover a

rock band like U2, but "Pride" became one of several hits from the record, which also features "Bad Angel" with Lambert and Johnson, and the title track. "Pride" and "Bad Angel" were nominated for Grammys, and *Up On The Ridge* for Best Country Album Grammy.

"It's a tough song to cover, but you know if you're going to cover a song by a group like that, pick a big one," Bentley says. "It was a little daunting. They're one of my favorite bands, and you knew going into that song that it's going to go one way or the other. Either it's going to get a Grammy nomination or it's going to be a disaster."

Electric and loud

For the Expo, Bentley will perform an acoustic set from *Up On The Ridge*, but mostly he and his five bandmates will be plugged in and rowdy for Freedom Hall, where he has played numerous times. "The shows tend to be electric and loud," he says. "We like to have a good party atmosphere going. But we'll break it down and get the

upright bass and banjo out and do some things from this record.

"It's important for us to have a high-energy show and a lot of fun. If it's a good night for us, everyone else will have a good time. This is one of the first shows we'll have for the year and everybody will be extra excited to be out there playing."

It might be hard for Bentley to pry himself away from his family in Nashville to start touring again. He, wife Cassidy, and daughter Evie welcomed the birth of their second daughter, Jordan Catherine, a month ago on Christmas morning. But he's looking forward to meeting Expo fans and might bring some photos from his pumping past to share. "These are the folks I hang out with at shows," he says. "The hardworking people."

At-the-door registration for the Pumper & Cleaner Environmental Expo is \$60 for the full program, including the Saturday Evening Jam featuring Dierks Bentley. To find out more, visit www.pumpershow.com or call 866/933-2653. ■

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Jim Anderson and Dave Gustafson are connected with the University of Minnesota onsite wastewater treatment education program. Dave 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 Transporters. Readers are welcome to submit questions or article suggestions to Jim and Dave. Write to ander045@umn.edu.

The Key to Design

A thorough site evaluation provides the foundation for a sound system design and a roadmap for future service and maintenance

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

Last month in this column we talked about planning and gathering preliminary information from the homeowner and others as a prelude to onsite system installation. This month we move into the field and examine the key issues in evaluating the site to prepare for system design.

A field-based site evaluation is the only way to determine accurately the conditions present at the site. When possible, all interested parties should meet at the site and discuss what will occur during the evaluation. Here is where the homeowners can detail their specific needs and views.

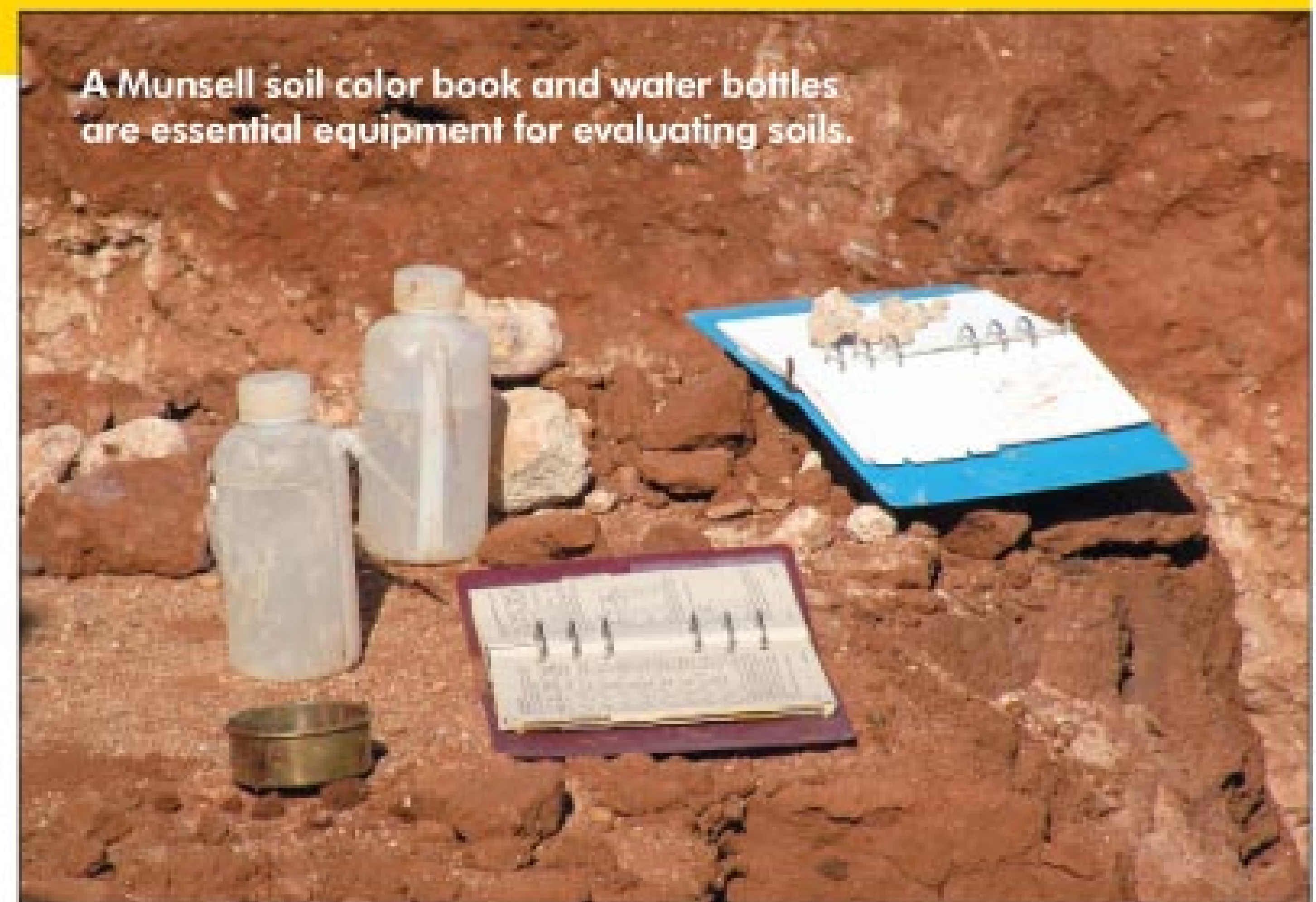
Knowing the boundaries

Before any soil boring or excavation of soil pits, a call should be made to the state locating system to identify any underground utilities in the area. This generally needs to be done at least 48 hours in advance.

Lot lines should be established to the satisfaction of the owners or

their agents. Any lot improvements, required setbacks and easements should be identified and clearly marked. These should have been discovered in the preliminary planning stages, but if there are any questions about exact locations, now is the time to resolve them. These lot surface features should be recorded and located on the site plan map as appropriate:

- The percent and direction of the slope in the area of the system (based on actual measurements and not the contour map referred to last month).
- Vegetation types as they relate to potential limiting soil conditions.
- Any evidence of disturbed soil conditions, such as cut-and-fill or compacted areas.
- A general notation of where on the landscape the system will be located.
- The potential for flooding, ponding or runoff over the area.



A Munsell soil color book and water bottles are essential equipment for evaluating soils.

(This relates to the potential for excess water to collect on the site and interfere with system functions.)

These first observations should help rule out or rule in any sites deemed unsuitable based on the preliminary evaluation that relied on the contour map of the area. In addition, bedrock outcrops, wetlands and other features can be identified.

Checking the soils

The soil treatment part of the system should be installed in original, naturally occurring mineral soil. Original means soil that has not been cut, filled, moved, smeared, compacted or manipulated to the degree that the soil loading rate will be different from natural soil conditions.

Requirements vary from state to state for the number of soil obser-

vations that need to be made and the means to obtain the data. Be sure to follow your state requirements. When we are asked how many, our answer (and we are not trying to be funny) is: as many as it takes to adequately evaluate the soil.

If you are in an extremely variable area, it will take more effort to evaluate the soils. In Minnesota, we use soil borings, and at least three are required — but we always recommend at least five to adequately characterize the site.

When we move into other areas of the country, specifically the mountainous areas of the southwest, we move away from hand boring tools and use small excavating equipment to dig small soil pits. Since the soil observations need to be done with tools that maintain the integrity of the soil structure and color characteristics, pits are becoming the norm.



In many localities, soil pits are used instead of perc tests for evaluating soil suitability.

A field-based site evaluation is the only way to determine accurately the conditions present at the site. When possible, all interested parties should meet at the site and discuss what will occur during the field phase of the site evaluation.

Going deep enough

The depths of borings or excavations also vary according to state code, but they always need to be conducted to below the proposed operating depth to ensure adequate treatment. The proper depth is usually between three and five feet, depending on the code. This means no limiting layer such as saturated soil, bedrock or dense soil occurs within the required depth. The presence of any of these characteristics will affect the depth at which the system can be placed, and other design parameters.

Each soil observation should record several items that can be used in your design or submitted to the designer:

- Depth of each soil horizon.
- Soil color and the presence of soil mottles (if you do not remember these soil characteristics, see our articles in this magazine from September and October 2009).
- Soil texture and consistence.
- Depth to bedrock.
- Depth to periodically saturated soil.
- Depth to standing water.

- Any other characteristics that can affect the design.

In each state code, there is a sizing table or formula that relates the soil sizing factors to the soil texture, structure and consistence. Based on the information listed above, this sizing value can be calculated and used to size the area of the soil treatment system.

Think of the future

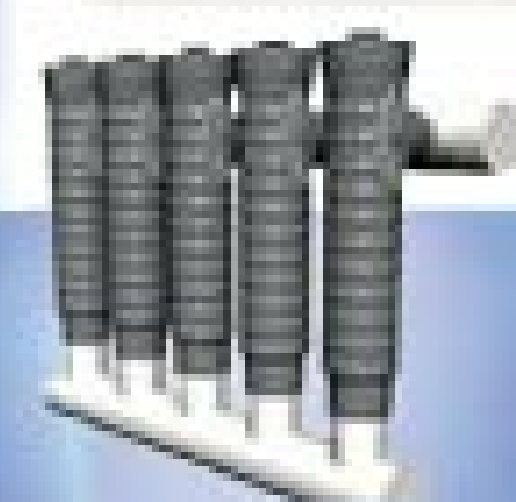
The area of the system should be protected from disturbance by way of fencing, staking or some other method. Both the owner and the designer should have a written plan outlining uses and future plans for the property. This is the time to make sure these plans will not affect the primary or alternative drainfield sites. It is easier to move things around now than to scramble to find a new site because of where the owner wants to place some structure or amenity.

Future landscaping plans should be considered to ensure site access for installation and for required operation and maintenance. On newly platted lots, it is a good practice to identify two or more potential sites for a system. Doing this with the property owners on location enables you to show them what is needed for installation and servicing of the system.

That's a brief rundown of a thorough site evaluation. There is obviously much more detail to address, but this is the framework within which the detail can be added. This year, our goal is to walk through from start to finish what happens with system installation, and the field site evaluation was the second step in that process. ■

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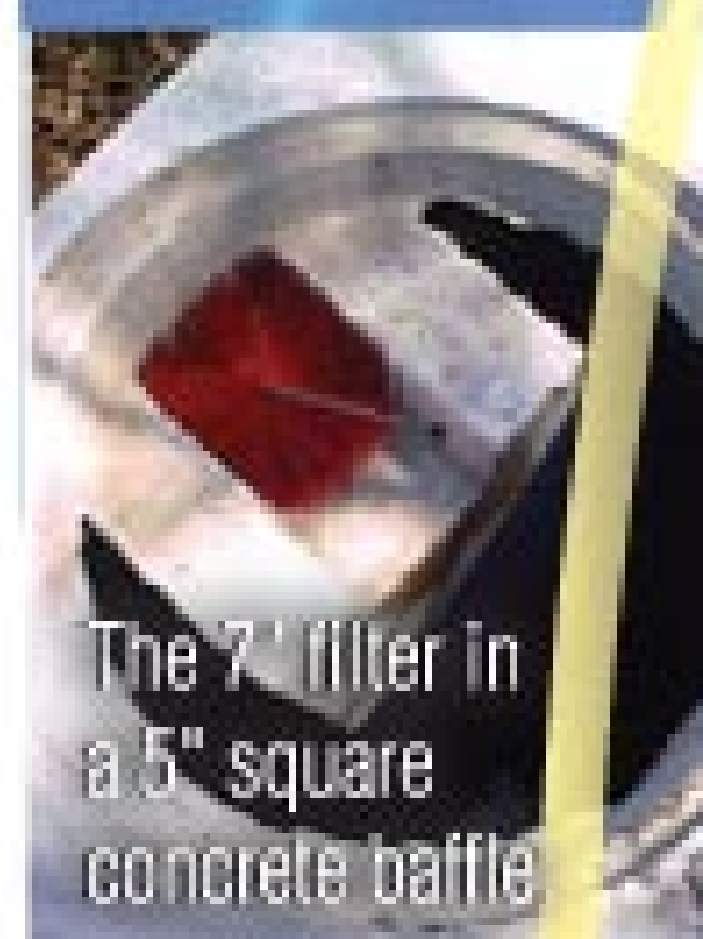


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"Rules and Regs" is a monthly feature in Onsite Installer. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to editor@onsiteinstaller.com.

California Proposes Tiered Regulations

By **Scottie Dayton**

A new version of a State Water Resources Control Board proposal to regulate septic systems in rural areas recognizes that not all installations are identical and systems should not all be lumped together in a single, restrictive regulation.

In preliminary form, the proposed regulations would divide installations into Tier 1 (low risk), Tier 2 (greater risk), and Tier 3 (impacted area). Tier 3 systems would have to meet a total maximum daily load (TMDL) requirement for bacteria or nitrates, depending on which is causing problems, within five years.

Routine system monitoring would also be required. In many cases,

the TMDL would first have to be developed by the regional water board. The draft regulations will be unveiled in spring for public comment. The water board could adopt the regulations by late summer 2011.

Florida

The Orange County commission became the 15th such organization to introduce a resolution calling for state lawmakers to repeal newly passed septic tank rules. The law requires septic tanks to be inspected every five years and replaced if they do not meet new state standards that are still being drafted by the Florida Department of Health.

Sen. Don Gaetz and Rep. Marti Coley planned to introduce legislation to repeal the mandates during the 2011 legislature session. Sen. Evelyn Lynn filed her version of a new septic system bill. While inspections started in January, the bill becomes fully operational by January 2016.

Delaware

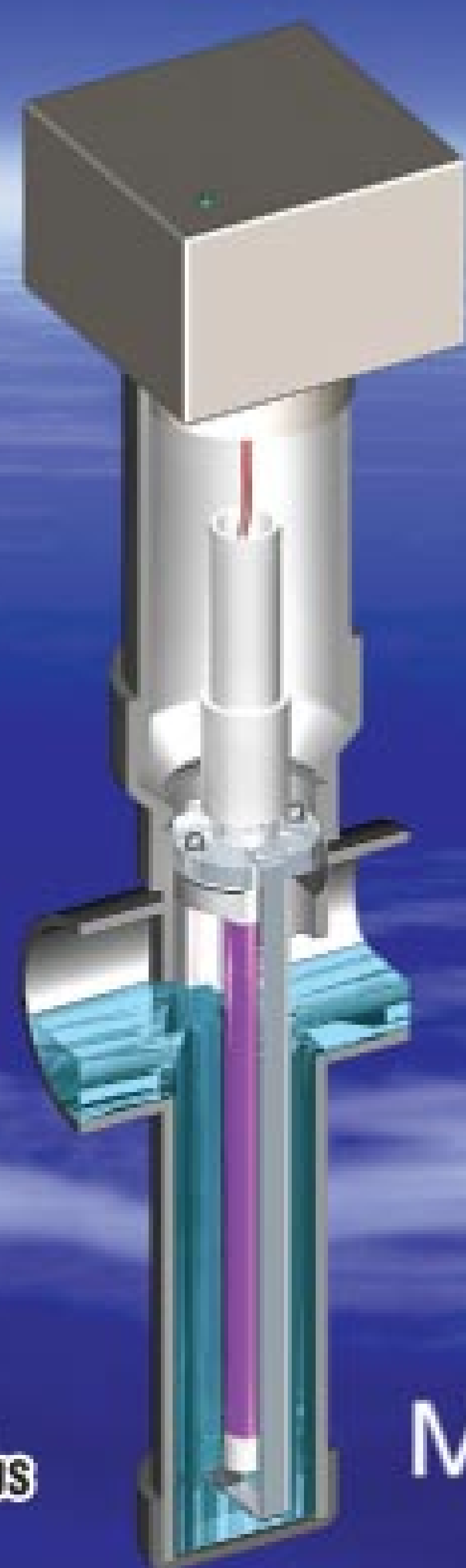
A makeover of rules for onsite wastewater systems is in the works in Delaware after a series of workshops that began in 2009. The Department of Natural Resources says key changes include new language to separate small systems (under 2,500 gpd) from large sys-

tems and incorporate spray irrigation guidance as an option for land treatment of wastewater. There will be other changes in requirement for licensing, nonhazardous liquid waste transportation, and regional systems.

The proposed regulations were scheduled for publication by January. They include minor revisions to the sections covering small systems, since those regulations were updated in 2005. "With demand for larger, more regionalized projects, the department is trying to keep pace and be proactive in providing up-to-date and technologically advanced regulatory guidance," says a DNR notice of the proposed changes. ■

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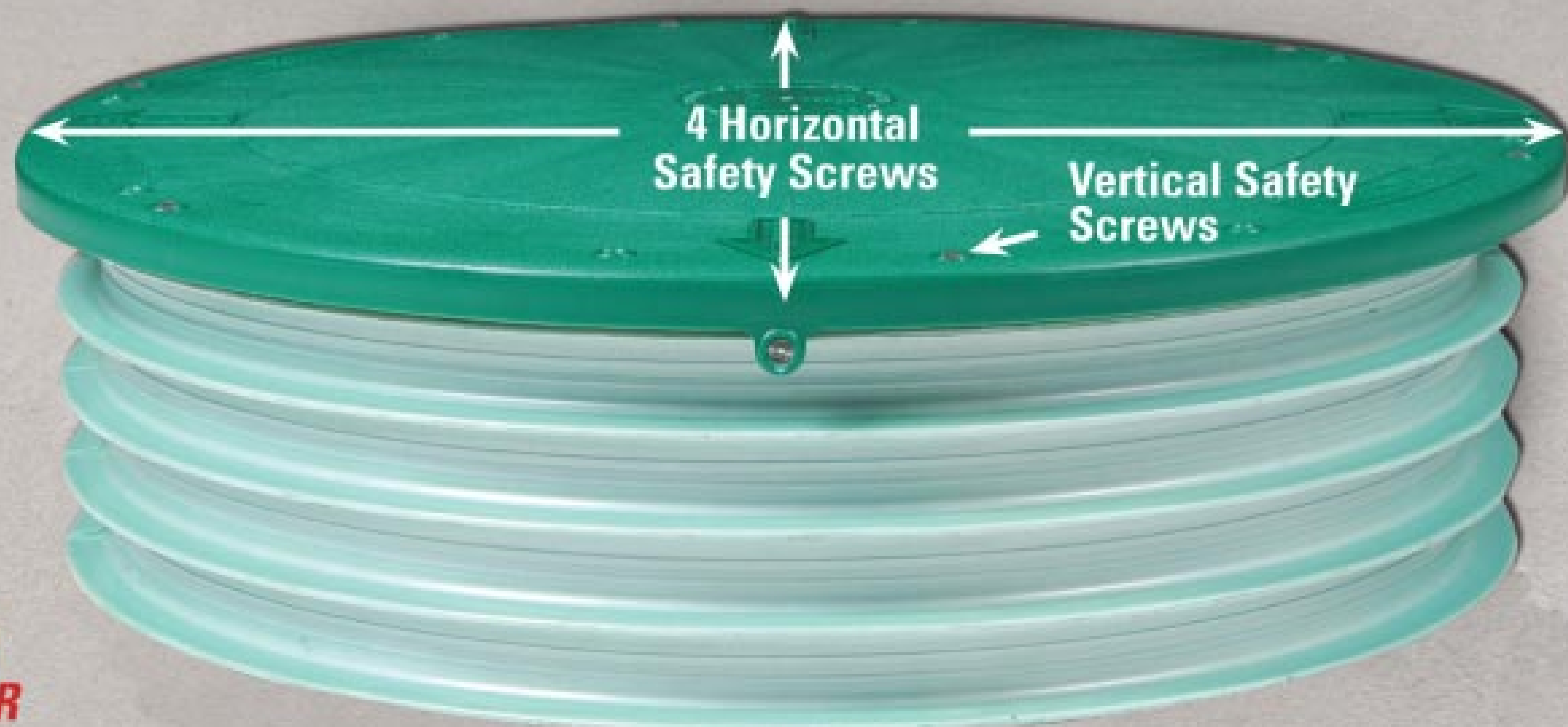
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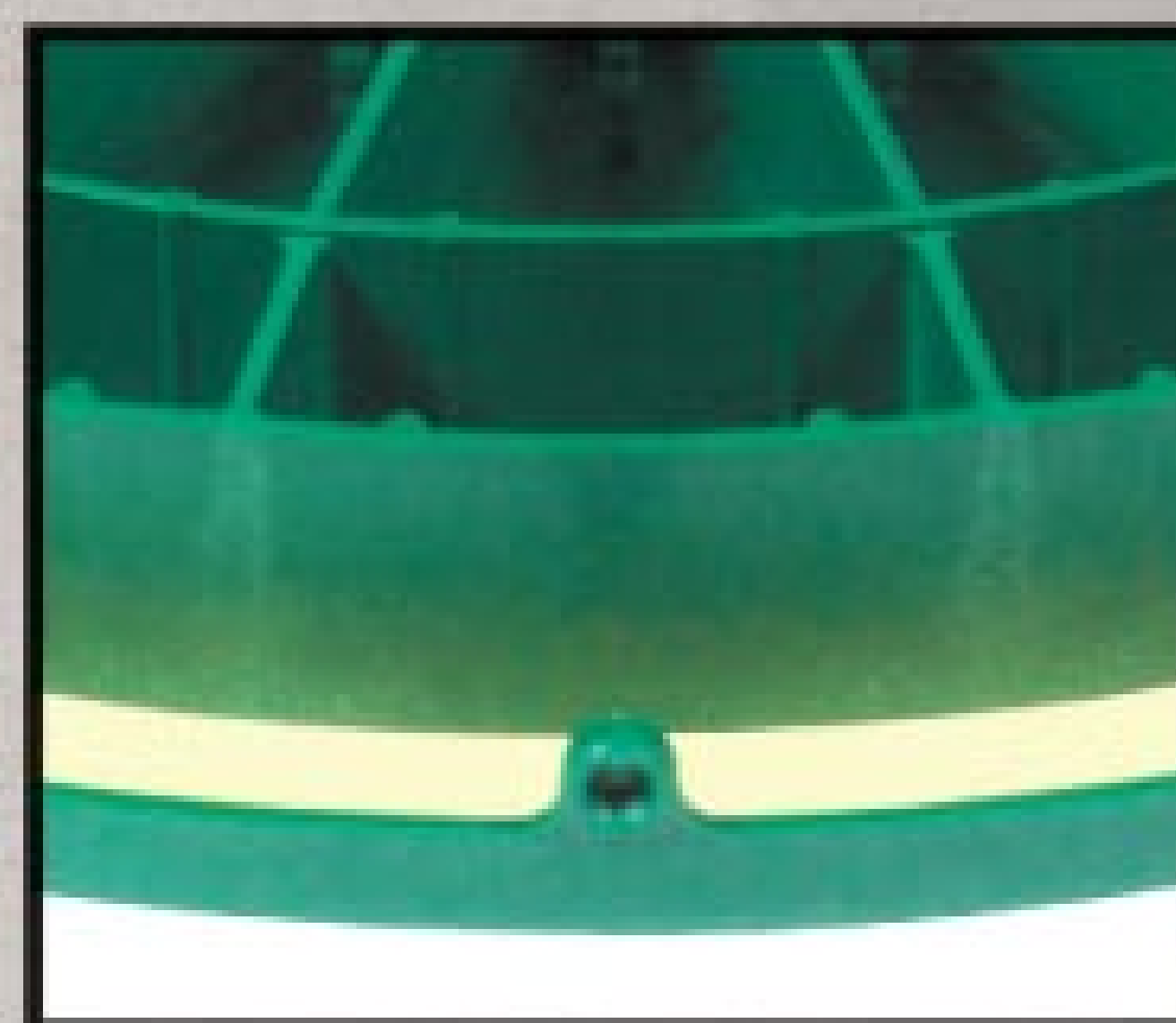
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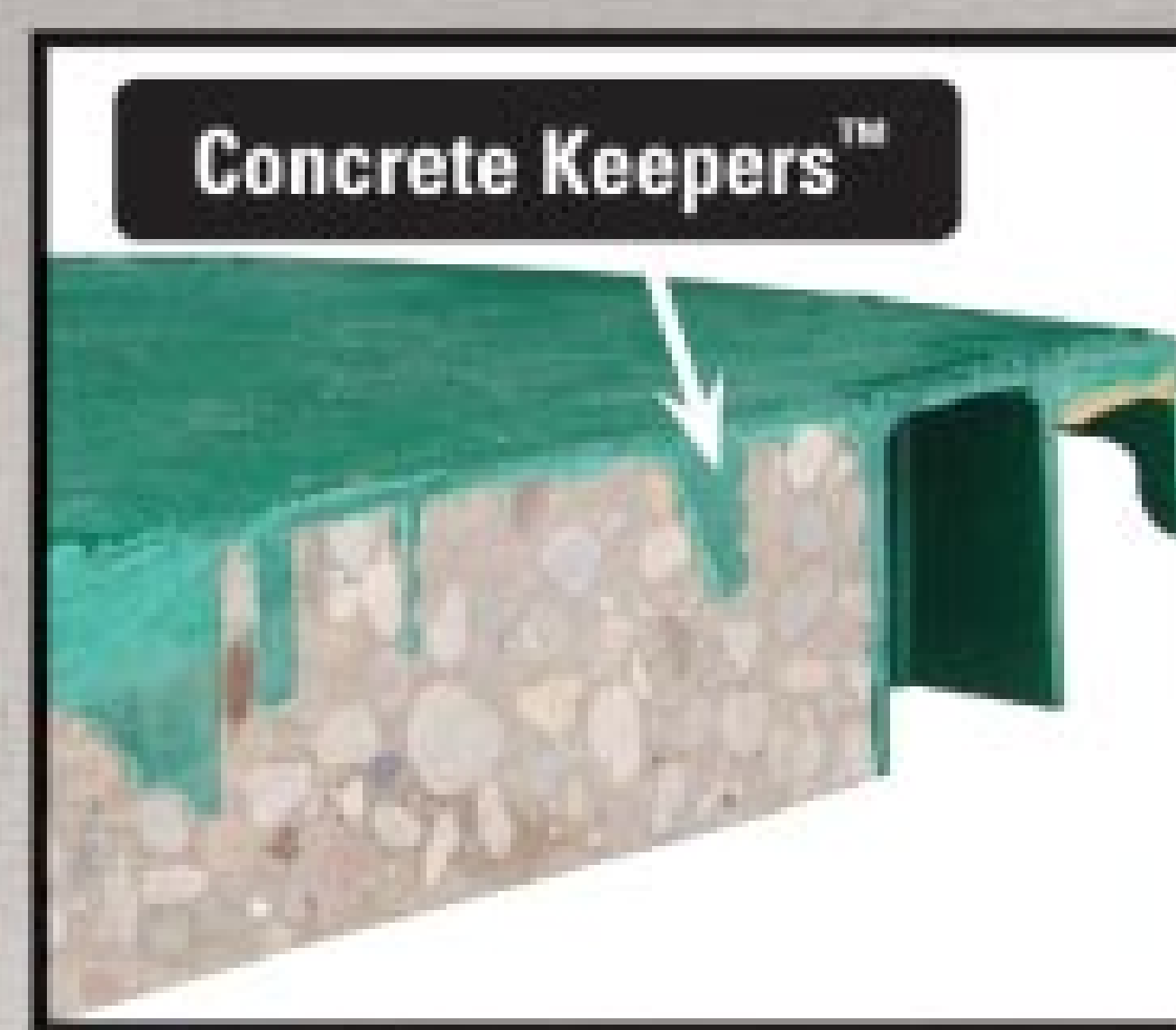
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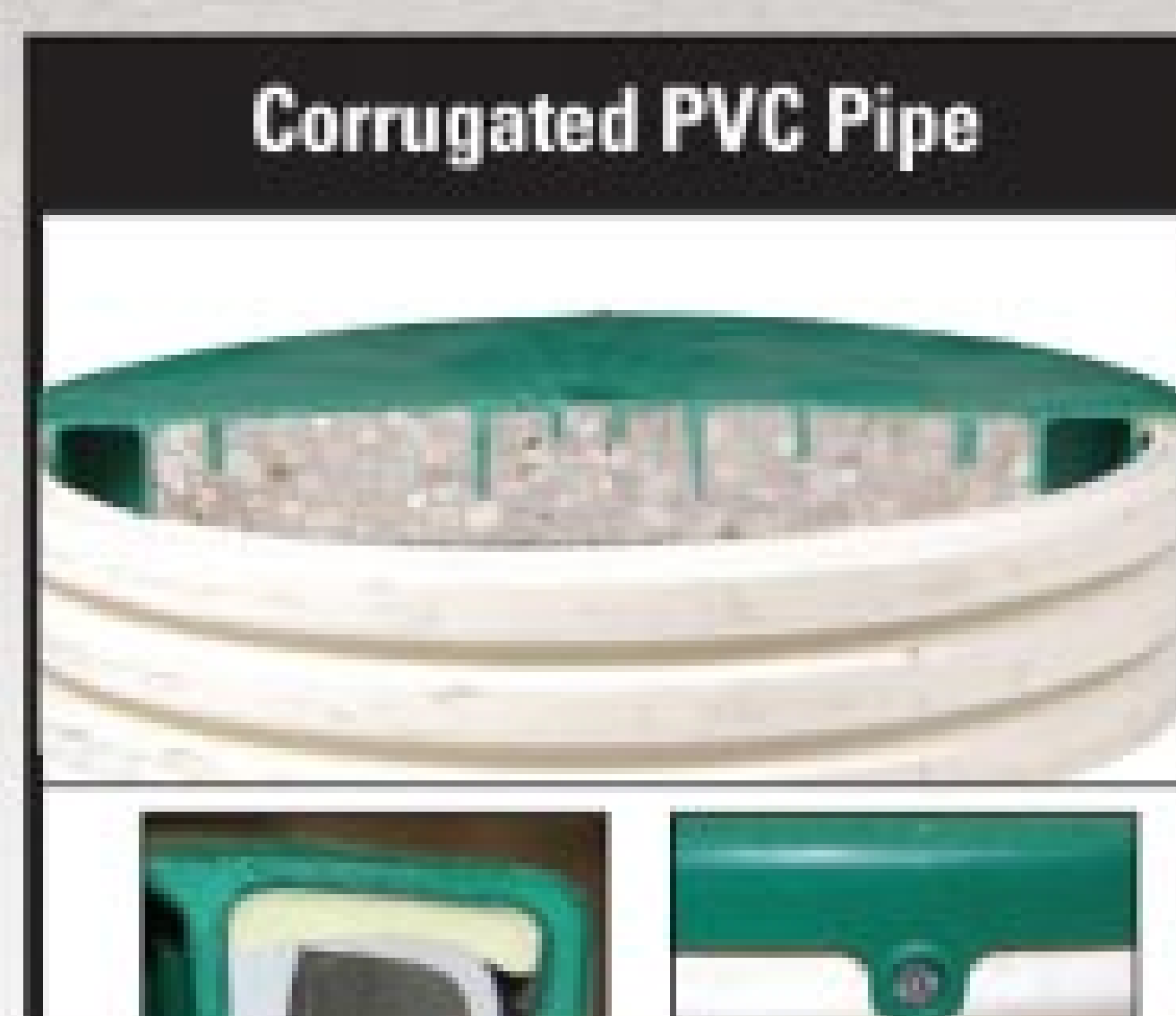
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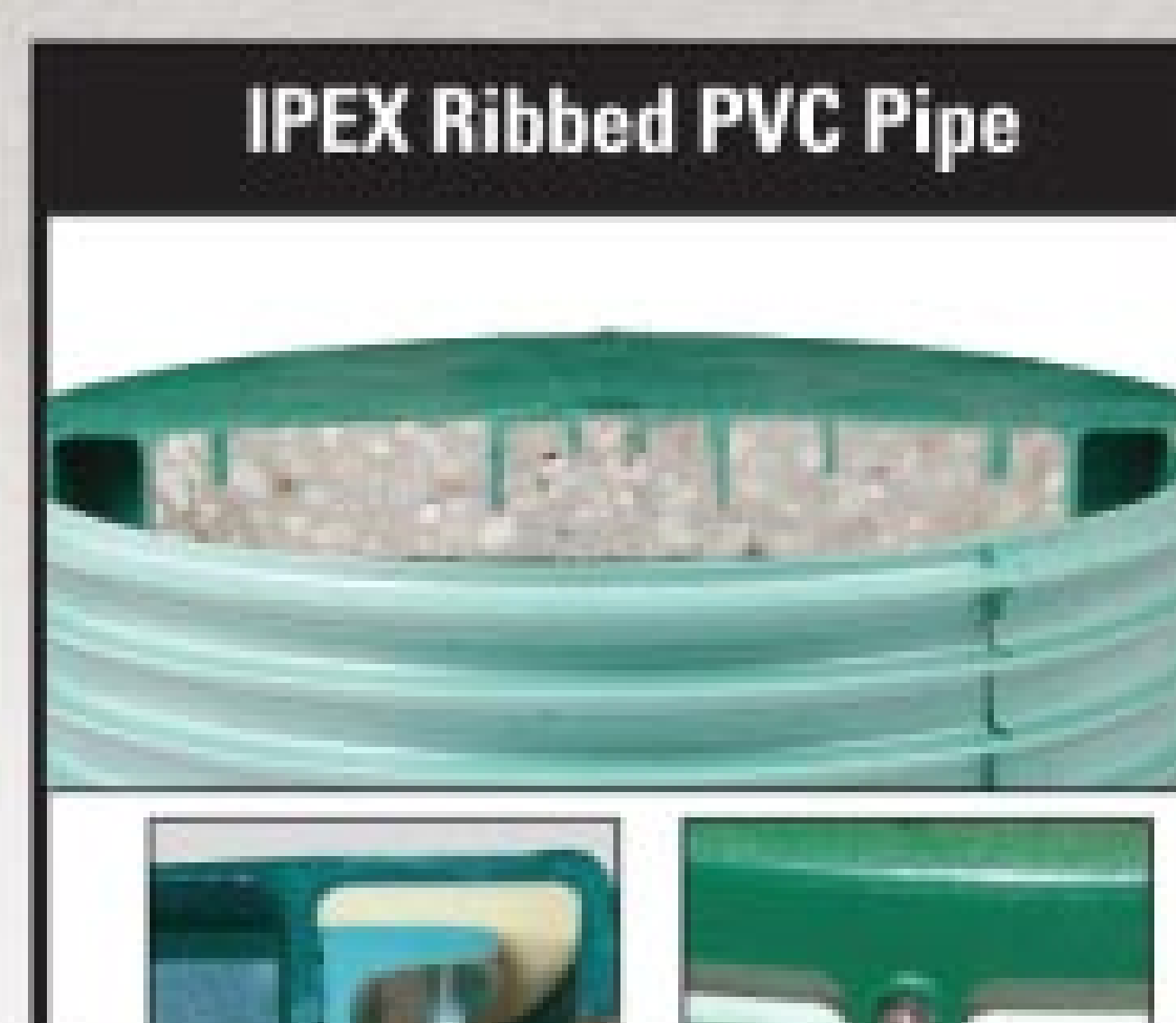
Horizontal Safety Screws



Corrugated PVC Pipe

Water-TITE Joint

Horizontal Safety Screws



IPEX Ribbed PVC Pipe

Water-TITE Joint

Horizontal Safety Screws



Plastic Riser

Water-TITE Joint

Horizontal Safety Screws

Simple Fix

A septic aerated batch reactor (SABRe) system helps a contractor remediate a drainfield in southwest Ohio and avoid a costly system replacement

By **Scottie Dayton**

A technician doing basic system assessments for the Clermont County (Ohio) General Health District discovered sewage ponding in the backyard of a three-bedroom home in Amelia.

As part of the district's Sewage Nuisance Abatement and Remediation Plan program, environmental health sanitarian Ralph Benson, R.S., met with the homeowner's installer. They developed a plan to diminish the nuisance and improve the system.

"We look at each case and try to find the most cost-effective solution to the problem," says Benson. "Phase 1 includes checking the septic tank for watertightness and setting a family water budget to control overloading. If that doesn't work, successive phases add flow control, pretreatment or both. The final phase is a full replacement."

Benson knew Kevin Chaffee, P.E., and Patrick Hanlon, co-owners



Left, the drainfield before installation of the new system: There is ponding as the field was plugged. Right, after installation, all ponding has disappeared.

of Advanced Wastewater Systems in Batesville, Ind. They were looking for an appropriate site to install Chaffee's septic aerated batch reactor (SABRe) system, which consolidates aeration, mixing, and settling in one tank.

"Kevin's invention combines pretreatment and flow control, thereby improving the chances of success in Phase 1," says Benson. "The sys-

tem doesn't require special approvals and has effective remediation elements."

The system is producing effluent with less than 20 mg/l BOD and TSS. As long as it passes assessment inspections, the home can stay in remediation program Phase 1.

Site conditions

Soils are moderately well-drained silt loam with a high seasonally perched water table of 18 to 20 inches. A creek is 15 feet from the system.

System components

Chaffee worked with the system's original 450 gpd design. Major components of the new system include:

- Existing 925-gallon, single-compartment block septic tank with two 24-inch square access openings, precast risers and lids.
- SABRe kit with 40 liter/minute air pump, fine-bubble diffuser, time-based control panel, and MDC33V1 1/3 hp Myers effluent pump.
- Existing drainfield of undetermined size with two 4-inch clay tile leach lines.



The air line and conduit are in the foreground. In the background, an air-vacuum valve (red circle) prevents air binding and water siphoning from the tank if the pipe should become surcharged. A disconnect union (gray fitting) allows the pump to be removed, and a check valve (red right) prevents backflow.

System operation

Wastewater flows from the 4-inch PVC lateral into the septic tank. The air pump, mounted inside the control panel on the side of the house, sends air through a 3/4-inch Schedule 40 PVC line to the diffuser suspended just above the bottom of the tank. The diffuser provides

System Profile

Location:	Amelia, Ohio
Facility served:	Three-bedroom home
System designer:	Kevin Chaffee, P.E., Advanced Wastewater Systems LLC, Batesville, Ind.
Installers:	Chaffee and Norb Mentzel, M & M Plumbing, Batavia, Ohio
Site conditions:	Silt loam with high seasonal water table at 18 to 20 inches
Type of system:	Septic aerated batch reactor, Advanced Wastewater Systems
Hydraulic capacity:	450 gpd

Cross-section view of the septic aerated batch reactor (SABRe) system.



The effluent pump, supported on three 1-inch PVC legs, sends clarified water from the top quarter of the tank to the drainfield.

oxygen for the aerobic treatment process and mixes the tank.

The control panel operates the system in batches. "A typical cycle is five hours on and one hour off," says Chaffee. "The system aerates from 5 to 10 a.m., then shuts off the air, allowing the wastewater to settle for 45 minutes. After that, the effluent pump sends up to 112 gallons of clarified water from the top quarter of the tank to the drainfield 10 feet away.

"The next cycle is from 11 a.m. to 4 p.m. Then it repeats two more times to schedule aeration and mixing during peak flow periods. The system is cost-effective because the air pump does not have to run continuously."

Low-level floats shut off the effluent pump. Timers and float switches ensure that the effluent pump does not run while the air pump is active. If the outlet pipe surcharges, an air-vacuum valve stops air binding and water siphoning from the tank. The pump has a

disconnect union for removal and a check valve to prevent backflow.

If tripped, a second float switch above the normal water level stops the air pump and triggers the pump cycle to avoid flooding the tank. Tripping the second float also activates an alarm light and buzzer.

A push switch on the control panel silences the buzzer, but the light stays on until the water level returns to normal. An air-pressure switch also monitors the air pump and activates an amber alarm light and buzzer if the pressure falls below the set point.

The control panel has Hand-Off-Auto switches for the air pump and effluent pump. In Hand, the pumps run for manual testing. In Auto, the pumps are controlled by the timers and float switches.

Installation

The 4-inch clay tile lateral from the house was sound and had a cleanout from a previous service call. The homeowner hired Michael Karos from J & M Septic Service in Amelia to pump the septic tank. As he did, sewage flowed in through a crack in the wall directly below the adjacent distribution box.

The soil around the tank was saturated, so Norb Mentzel from M & M Plumbing in Batavia, Ohio, excavated along the wall to find the cause. "The tank was in good shape, but the distribution box was leaking, causing ground saturation around the tank," says Chaffee. "We sealed the crack from the outside with fast-acting hydraulic cement and abandoned the distri-



The control panel has a 24-hour timer for the aeration cycle, a timer to delay the discharge pump operation until after the settling cycle, a pressure switch and alarm to monitor the air pump operation, a tank high-water alarm, an air pump and discharge cycle override, and a thermostatically controlled ventilation fan to cool the air pump.

bution box."

Chaffee never could verify the drainfield's footprint or the length of the drain tiles, which did not require jetting. While Mentzel excavated a 10-foot-long trench to bypass the distribution box and lay the 4-inch PVC discharge pipe, Chaffee bored a hole in the inlet concrete riser and inserted the air line.

"As with most kits, minor assembly is required," says Chaffee. "I glued on the diffuser's down leg pipe, then glued the disconnect union and ball valve that adjusts the airflow to the pipe connected to the air line."

After Chaffee and son Joe assembled and fastened the effluent pump's three 1-inch PVC legs, they used a rope to lower the unit into the tank. The rope remains with the pump so it can be removed for service as needed. Chaffee then glued the outlet pipe to the pump and discharge line. Mentzel teed the outlet line to the leach lines, and Chaffee installed an observation port in one of them.

"Installing the kit takes about

eight man-hours," says Chaffee. "Normally, the only excavation required is from the control panel to the septic tank for the conduit and air line. The wiring procedure is simply four float wires and three pump wires."

Maintenance

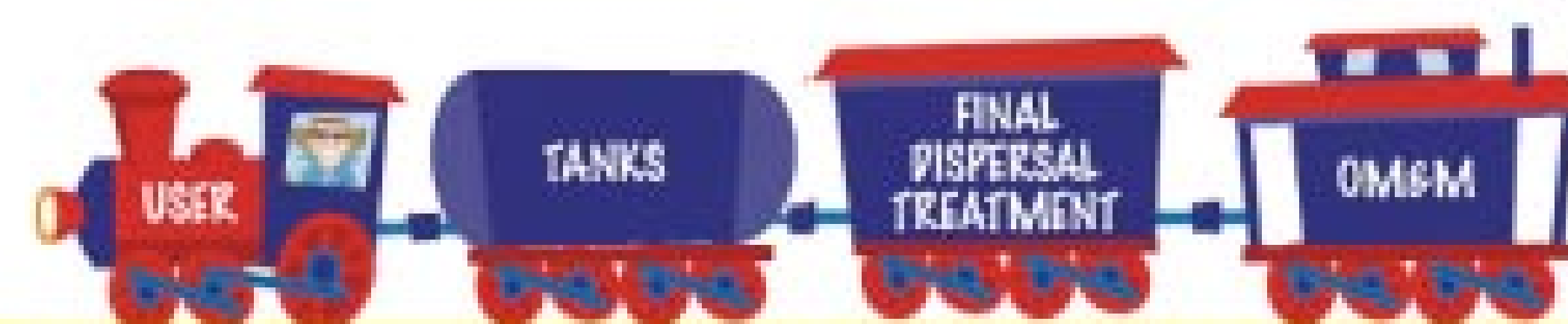
Advanced Wastewater Systems monitors the system and reports to Benson. Once a year, the company or the homeowner removes and hoses down the air diffuser. District technicians inspect the system every 19 months, checking the water level in the observation port to determine the biomat's restrictive capacity. ■

MORE INFO:

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Looking to the Soil



A careful, step-by-step evaluation is necessary when performing O&M service on a gravity drainfield

By Kit Rosefield

As we move ahead with discussing the various components of an onsite wastewater treatment system, I want to emphasize the importance of a systematic approach of review and evaluation.

In the past two articles we discussed the source of the wastewater and the pretreatment septic tank. Now we'll cover the final treatment and dispersal component of a standard system: the gravity soil treatment area (drainfield).

The gravity drainfield is possibly the most critical of all final treatment and dispersal options. With only the assistance of a septic tank for primary treatment, the natural soil bacteria have to do the balance of the work in reducing nutrients and harmful pathogens and viruses.

These bacteria depend on the best of conditions to perform their

job. The key factors are plenty of oxygen in the soil environment — meaning relatively shallow, unsaturated conditions — and adequate detention time in the active soil zone. For this to happen, a well-developed but not restrictive biomat at the bottom of the media is important. So, how is this all determined, monitored and maintained?

What is underground

First off, service providers must know what type of drainfield is in the ground. There are a number of options: seepage pits, rock-filled beds or trenches, recycled media, gravel-less systems, chambers and others. Next we should know the flow configuration: Parallel or serial? With distribution boxes, drop boxes, or overflow lines?

All this information should be available from the plan drawings of the system and will help us understand what's happening underground.

For older systems with no documentation available, a bit of exploratory work may be required. It's necessary to determine the configuration and current condition of the drainfield. Identification methods include electronic location, probing and augering.

Tracking with an electronic locator from the septic tank outlet, we can determine where the dispersal component begins. Probing from there will help determine the perimeter dimensions and whether it is a pit, bed or series of trenches. Probing will also reveal the cover soil depth.

Augering next to the perimeter of a bed or at the ends of trenches will enable us to determine depth of the media: We can probe the

auger hole to find the bottom of the media. Documentation of the system and installation of inspection ports in the auger holes will be useful for future service.

Newer systems will typically have inspection ports and access covers for the distribution points already installed. These additions to the system will make routine O&M easy and effective.

Documenting conditions

Assuming inspection ports are present, we first want to record liquid level measurements. By determining the type of inspection port (trench-end, in-field, upper gradient, lower gradient, groundwater) and comparing the total depth of the inspection port to the depth to liquid, we can determine separation to groundwater or the saturation of the permeable mate-



Trench-end inspection port/cleanout. By determining the type of inspection port (trench-end, in-field, upper gradient, lower gradient, groundwater) and comparing the total depth of the inspection port to the depth to liquid, inspectors can determine separation to groundwater or the saturation of the permeable material (media) in a trench or bed.

Service providers should advise system owners on proper vegetation to avoid root intrusion into the soil treatment area, and on the need to avoid encroachment on a designated reserve or expansion area.

rial (media) in a trench or bed.

If measurements reveal excessive saturation in a bed or trench, a hydraulic load test should not be performed and further investigation is recommended. Is the problem due to high groundwater, excessive water use, or solids carryover to the drainfield? In any case, remediation measures should be considered.

If distribution boxes are accessible, they should be inspected for solids and cleaned if necessary.

Access to distribution boxes also allows hydrocleaning of distribution laterals. To prevent contamination, it is important to collect solids from distribution or drop boxes into a vacuum truck or to pump them into the septic tank inlet.

Hydraulic load test

Providing all other conditions are acceptable, we should perform a hydraulic load test of the soil treatment area. This allows us to



Drop box with inspection port/cleanout. If distribution boxes are accessible, they should be inspected for solids and cleaned if necessary. Access to distribution boxes also allows hydrocleaning of laterals. To prevent contamination, it is important to collect solids from distribution or drop boxes into a vacuum truck or to pump them into the septic tank inlet.

track its acceptance rate over time. Hydraulic load testing is based on design flow and requires adding a specific amount of water to the septic tank outlet over a specified time.

By monitoring the response of the tank and the inspection port liquid level during and after the test, we can determine how well the soil treatment area is performing. Many local authorities have adopted procedures for hydraulic load tests. Check with the permitting authority in your area for recommended procedures.

If a drainfield is experiencing dispersal problems due to high groundwater or solids carryover, we should first consult with a qualified professional to see if the soils and site meet current standards for separation from limiting conditions, such as bedrock, fractured rock, heavy clay or groundwater. Many older systems did not take this into consideration, and while they may be renovated, they may not provide adequate protection of groundwater if repaired with a similar system.

Restoration options

If a system has good soils but requires improvements or renovation, there are many options to consider. It may only need a curtain drain or some other method of groundwater or surface water diversion. If solids overloading is the problem, a number of biological, chemical and physical procedures may help.

It has been found that aeration of the septic tank effluent does a good job without the need for additives. Another option might be to install a switching valve to divert the flow between dispersal components, enabling you to rest a portion of the system and allow it to recover naturally.

And then there is the issue of encroachments upon the soil treatment area or reserve area. Activities such as driving, parking, construction, or livestock grazing can cause soil compaction or erosion, damaging the soil structure and the environment. Service providers should also advise system owners on proper vegetation to avoid root intrusion into the soil treatment area, and on the need to avoid encroachment on a designated reserve

or expansion area.

The bottom line is that proper design and siting, user education, and pretreatment tank maintenance will assure long system life and protect human health and the environment.

In summary, here are the questions to ask when performing O&M on a system with a gravity drainfield:

1. What kind of gravity drainfield are we dealing with? Pits? Trenches? Beds? Something else?

2. What type of permeable material or media is employed, if any? Rock? Synthetic materials? Chambers?

3. What is the flow configuration? Parallel or serial? Distribution boxes, drop boxes, overflow?

4. Is the site and are the soils adequate for the level of treatment needed?

5. Are there inspection ports installed to help determine the condition of the soil treatment area?

6. Are there accessible service points to help track condition and perform maintenance?

7. What is the level of saturation of the soil treatment area?

8. Is there adequate separation from groundwater to prevent contamination?

9. How is the hydraulic load test rating?

10. Are there any encroachments upon the soil treatment area or reserve area?

Find out more

To learn more about O&M on standard gravity systems and more, check this magazine's calendar for the next NAWT O&M Service Provider training program, or attend the NAWT O&M Training in Louisville just before the Pumper & Cleaner Expo.

In our next article in the "O&M Matters" series, we will add a pump tank to the treatment train, creating a pump-to-gravity system.

About the author

Kit Rosefield is an adjunct instructor at Columbia Community College and a trainer for NAWT and the California Onsite Wastewater Association. His company, Onsite Wastewater Management in Mi Wuk Village, Calif., has a consumer education service at www.septicguy.com. Reach him at 209/770-6760 or kit@septicguy.com. ■

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Learn to Be Outrageously Successful

Speaker and business coach Scott Hunter brings success secrets that can help owners transform their companies

By Ted J. Rulseh

After more than 20 years of working in and observing companies of every type and size, Scott Hunter has noticed a trait all successful firms share.

"They have enthusiastic, confident, optimistic, appreciative and happy people who work together on behalf of a future they have all committed themselves to," says Hunter, a speaker and business coach who presents a series of seminars on March 2 at the Pumper & Cleaner Environmental Expo in Louisville, Ky., on "The Mindset of Leadership" and "Creating an Outrageously Successful Organization." His Education Day program begins at 8 a.m. in Room C109-112.

Hunter, also author of the book, *Unshackled Leadership*, helps companies transform themselves through his keynote speeches, workshops and retreats. Since 1985, he has worked with hundreds of businesses and more than 250,000 people, helping to produce breakthroughs in personal and professional lives and setting the stage for companies to achieve results far beyond expectations.

All about people

"People who come to the Pumper & Cleaner Expo have a particular expertise, and there is an art and



science to what they do," says Hunter. "But there is also an art and science of how to run a business successfully and profitably, and that's what many people don't understand."

The morning sessions focus on the people skills it takes to be truly successful. "We'll show attendees how to be leaders, how to build a team, how to inspire and motivate people, and how to have their business be a place where people want to work," Hunter says. "It's about listening to people. It's about caring for people. It's about being focused on building a team.



Scott Hunter at the 2010 Expo.

"You don't want to be focused just on making money. You want to be focused on creating that group of enthusiastic, confident, optimistic, appreciative and happy people."

Mood drives success

The afternoon sessions explore "laws of the universe" that, if obeyed, could put a company on the road to outrageous success. "A business is a collection of human beings, and as a result it has a collective energy, or mood, that determines what is possible," Hunter says.

"Your results are very much a function of not how skilled you are but of the mood of the people in your organization. If the mood is upbeat, enthusiastic, positive and optimistic, and people are all pulling together, you're going to have great results.

"The Law of Attraction says we attract to ourselves that which is consistent with our predominant mood. So if you go around being frustrated and angry, you'll attract things that support you in being frustrated and angry. But if you go around being happy, joyous and appreciative, you'll attract things that support you in being happy, joyous and appreciative.

"Another law says we'll always

find what we go looking for. So if you think life is rotten, guess what — it is! But if you think there are opportunities out there, you'll start noticing opportunities. Your brain is wired to help you find evidence for what you believe to be true. So why not believe the world is full of great opportunities?"

"You don't want to be focused just on making money. You want to be focused on creating that group of enthusiastic, confident, optimistic, appreciative and happy people."

Scott Hunter

Hunter says people tend to underestimate their power to influence others. People will show up around you as who you believe them to be," he observes. "If I think you are wonderful, then around me you'll get to be wonderful. You want to think about your employees and customers as being fabulous and wonderful. Look for the gold and the goodness in people and you'll notice how they show up as wonderful around you." ■



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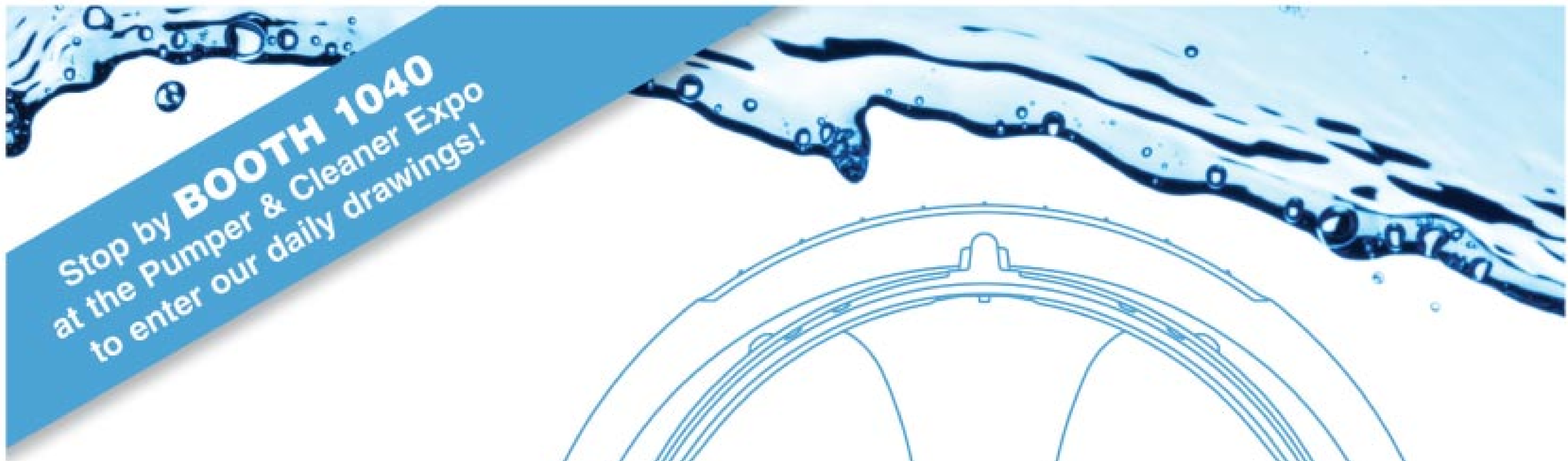
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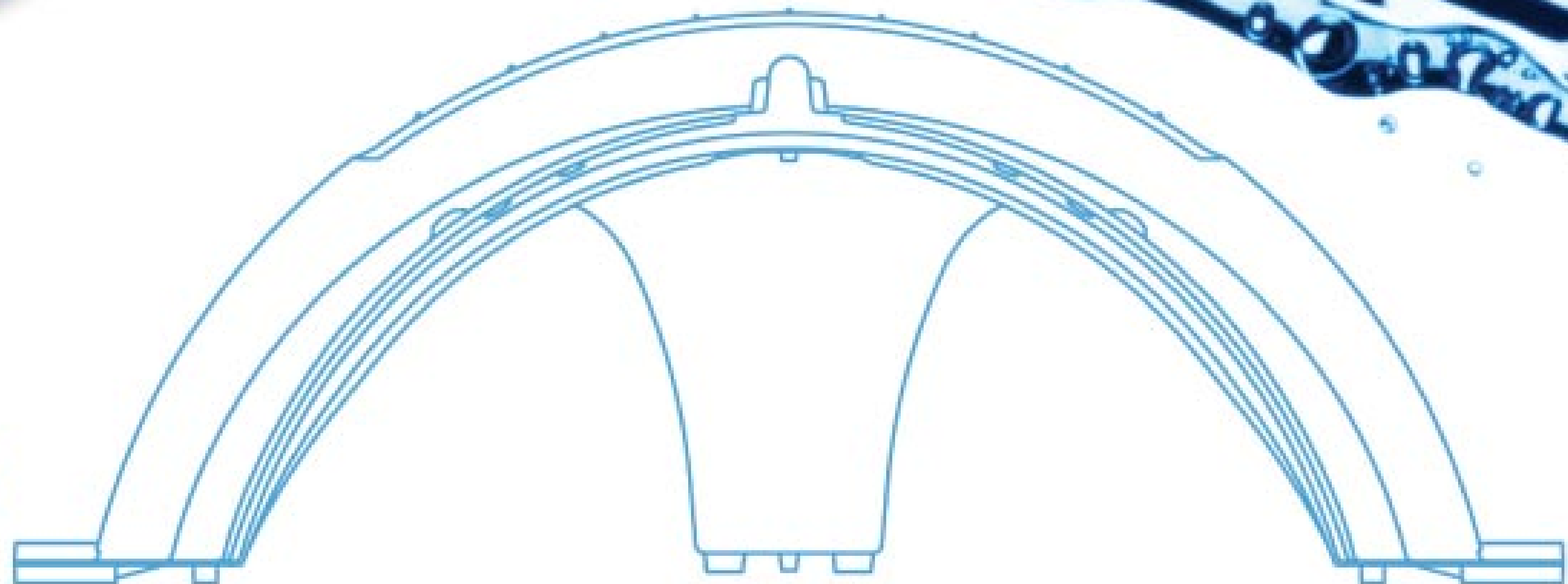
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The Top Five competitors in the 2010 NOWRA Roe-D-Hoe were, from left, Kent House of Indiana, Mike Smallwood of Ohio, Chris Hartman of Kentucky, Cory Hoover of Pennsylvania, and Vincent Sullivan of Texas.



PHOTO COURTESY OF NOWRA

Looking Back, Looking Ahead

Contestants remember the 2010 Roe-D-Hoe and make plans to try again at the 2011 Pumper & Cleaner Expo in Louisville

By Tom Fritts

You'll get a chance to test your backhoe skills at the NOWRA National Backhoe Roe-D-Hoe, to be held at the 31st Annual Pumper & Cleaner Expo, March 2-5 in Louisville.

Last year it was a "big time in Derby Town" for the annual Roe-D-Hoe. There was hootin' and hol-lerin' throughout the hall when contestants (76 on Thursday and 85 on Friday) competed to be among the top five to return on Saturday morning for the finals and a chance to win the (unofficial) title of World's Best Backhoe Operator.

Competition was brisk both days — sharp operators demonstrated several creative approaches at the three events: basketball, bowling and golf. The course was

set up by "Mr. Backhoe Roe-D-Hoe," Mick Heibert of IHI Compact Excavator Sales. He has experience in North and South America setting up challenging tasks for operators who brag about being the best at their trade.

The Roe-D-Hoe kicked off Thursday morning as operators looked



over the equipment and sized up their chances to take home the

grand prize of \$1,000. They soon found out that maintaining grade in an excavation might be a little different from shooting hoops, picking up a spare, and chipping one into the cup with a backhoe.

We had a collection of professional backhoe operators from Canada to Barbados watching, talking and privately figuring out: Do I try and scoop all three basketballs at once or just go for two, and then sweep the last one for a respectable time? Or: Would it be better to pick up two bowling pins with that short dowel on the end of the bucket, or just quickly swing and stab them one at a time? And: What about keeping that golf ball from looking like a moth orbiting a porch light?

Operators used several techniques to stay on the Top 10 board. It was not uncommon to see a Top 10 contestant drop by to check the board, only to find he had slipped off, requiring another trip through the events with a change in technique, more concentration or both. On Saturday morning, the Top 10 board had been reduced to five:

- Kent House from Indiana
 - Chris Hartman from Kentucky
 - Vincent Sullivan from Texas
 - Mike Smallwood from Ohio
 - Cory Hoover from Pennsylvania.
- All had their eyes on the cash.

It was not uncommon to see a Top 10 contestant drop by to check the board, only to find he had slipped off, requiring another trip through the events with a change in technique, more concentration or both.

You could tell there had been some late-night planning and strategizing. The five finalists were allowed one trip through the events for practice, and then came the real thing. The crowd was treated to a superb exhibit of skill.

In the end, Hoover took home the grand prize with a record time of 1 minute, 50 seconds. Second place went to Smallwood and third to Sullivan. Each of the top three finishers took home a belt buckle to show the folks back home that they really were the cream of the crop.

Jet Inc. donated the \$1,000 for the grand prize, IHI contributed the machines, and many volunteers took time from the show to work the event. We look forward to seeing everyone again at the 2011 NOWRA National Backhoe Roe-D-Hoe.

Tom Fritts is vice president of NOWRA. ■



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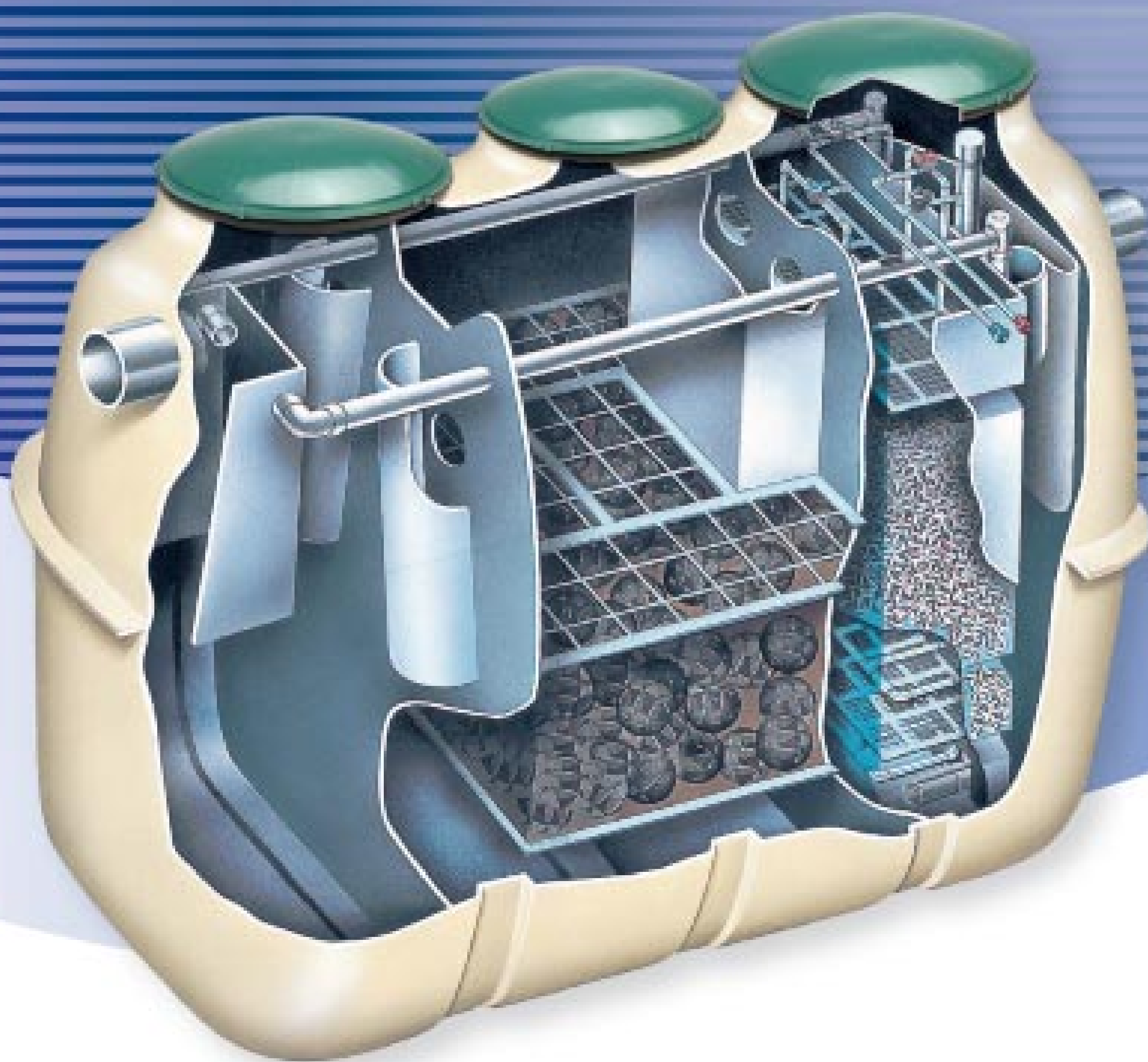
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Machine Matters is designed to help readers get the most from excavators, backhoes, skid-steers and other mechanical equipment through proper maintenance, operation and financial practices. Readers are welcome to submit ideas for this column and can send them to Ted J. Rulseh, editor, by calling 800/257-7222 or e-mailing editor@onsiteinstaller.com.

Muscle Up!

Brawny mini-loaders take the heavy lifting out of challenging projects too big for a shovel and too small for a skid-steer loader

By Ed Wodalski

A versatile mini-loader, also known as a mini-skid-steer or compact utility loader, lets one worker perform a variety of tasks that might normally require extra hands. Small on stature but big on performance, these machines have the muscle to make short work of jobs too big for a shovel or wheelbarrow and in areas too small for a skid-steer or compact track loader.

Easy on the back and simple to operate, the machines can dig, lift, drill, shovel and sweep all day. With a seemingly endless number of attachments, they are highly productive tools to own or rent.

Bobcat MT52

The 20 hp MT52 mini-track-loader from Bobcat has a final Tier 4 diesel engine with 7-gallon fuel tank, a tipping load of 1,600 pounds, operating capacity of 520 pounds, and ground pressure of 5.2 psi. Weighing 2,580 pounds, the loader is 93.1 inches long, 35.6 inches wide and 49.1 inches tall. Hinge pin height is 71.2 inches.

Pump capacity is 12 gpm and system relief is 2,900 psi. The standard Bob-Tach mounting system makes for quick and easy attachment changes on 30 approved attachments, from angle brooms to vibratory plow. The walk-behind loader offers an optional wheeled ride-on platform. Safety features include a reserve-travel stop panel that returns the drive levels to neutral when pushed in, stopping the machine and preventing it from moving backward.

A parking brake prevents the loader from moving when not in use. Neutral start interlocks prevent the engine from starting if the auxiliary hydraulic control level or travel levers are engaged. A lift arm and tilt lockout system (with manual bypass) prevents accidental movement of the arms or attachment. Intuitive hand levers control most functions. Bobcat also offers a slightly larger model MT55. www.bobcat.com.

Ramrod Taskmaster 1150-LKD

The Taskmaster 1150-LKD track-drive loader with Kubota diesel engine from Ramrod Equipment has a tipping capacity of 2,300 pounds and



Bobcat MT52



Boxer 322D



Ramrod Taskmaster 1150-LKD



Toro Dingo TX525



Ditch Witch SK350



Vermeer S800TX

operating capacity of 1,150 pounds. It has a full lift height of 72 inches and 85-degree dump angle. The loader (without bucket) measures 61 inches long and 43.5 inches wide and has an overall height of 87.8 inches.

Weighing 2,500 pounds (with bucket), it has 6.5 inches of ground clearance, two hydraulic pumps, 12 gpm hydraulic flow and 3,000 psi

relief pressure. Other features include self-leveling arms for increased productivity and safety, 6.5-gallon fuel tank, high-torque hydraulic drive system providing 1,600 pounds of tractive power, and joystick controls.

More than 40 attachments are available, including angle broom, 36-inch trencher, nursery tree tongs and paving stone mover. Other models

include the 1150-LKG with Kawasaki gasoline engine and smaller 950, 915 and 905 Taskmaster units. **800/667-1581; www.ramrodequip.com.**

Ditch Witch SK350

The platform SK350 mini-skid-steer has a 20 hp Kohler gasoline engine and 11 gpm dual hydrostatic ground drive and auxiliary gear pump delivering 12 gpm. It's available with turf-friendly or aggressive tracks. A 7.5-gallon fuel tank provides up to five hours of operation.

Offering more than 70 attachments, the machine is 42.5 inches tall, 58.2 inches long and 35.1 inches wide. Weighing 1,660 pounds, it has a hinge pin height of 70.4 inches and maximum track width of 35.1 inches. With four inches of ground clearance, it has a platform height of 7.5 inches. Tipping capacity is 1,030 pounds and operating capacity is 350 pounds.

Color-coded controls make it simple to operate. For those seeking slightly more muscle, Ditch Witch offers the 24 hp SK500 or its big brother, the 31.5 hp diesel-powered SK650. **800/654-6481; www.ditchwitch.com.**

Boxer 322D

The 25 hp Kubota diesel-powered 322D is the newest addition to the Boxer Equipment lineup of mini-skid products. With a tipping capacity of 1,325 pounds and 464-pound operat-

ing capacity, the 322D stands 49 inches tall, 68 inches long (without bucket) and 34.5 inches wide. It has a hinge pin height of 70 inches and dump height of 54 inches.

Weighing 1,900 pounds (without bucket) it has ground pressure of 3.3 psi, five inches of ground clearance, and skid-steer-style controls. Flow ground drive and hydraulic auxiliary flow are 9.4 gpm. The machine accepts more than 50 attachments, including a 36-inch auger and 48-inch trencher using a quick-attach system.

The 322D has a 4.5-gallon fuel tank, 16-gallon reservoir capacity, and 3,000 psi of hydraulic pressure at the attachment. Boxer also offers a 20 hp gasoline-powered model 320, as well as larger 400 and 500 Series machines. **800/654-6433; www.boxerequipment.com.**

Toro Dingo TX525

Toro's diesel-powered Dingo TX525 is available in narrow (33.7 inches) and wide (41 inches) track models. The wide-track model offers 3.4 psi of ground pressure, while the narrow-track version offers 5.2 psi. Both are powered by 25 hp Kubota engines and offer 3,000 psi of hydraulic pressure and 13.8 gpm auxiliary flow with 10.5-gallon reservoir capacity.

Hinge pin height is 65.8 inches, tipping capacity is 1,580 pounds and operating capacity is 553 pounds. Standing 46.1 inches tall and 70.7 inches

long, the narrow-track model weighs 1,904 pounds. The wide-track model weighs 2,001 pounds. The loader and hydraulic systems are joystick-controlled. Attachments range from high-torque auger head to backhoe, leveler, trencher and snowthrower. Larger 27 hp, gasoline-powered Dingo TX427 narrow- and wide-track models are available, as are Dingo 323 and 220 wheeled models. **888/552-5153; www.toro.com.**

Vermeer S800TX

The 35 hp Kubota diesel-powered S800TX mini-skid-steer from Vermeer Corp. has a rated tipping capacity of 2,400 pounds and operating capacity of 840 pounds. Measuring 40.5 inches wide, 84 inches long (without bucket) and 84.5 inches tall, the ride-on loader offers a flow rate of 14 gpm with optional dual auxiliary hydraulic circuit and 14.5-gallon fuel tank capacity.

Developed primarily for small- to mid-size contractors, the machine has an operator presence system that automatically suspends ground drive and powered boom/bucket motion if the operator steps off the spring-cushioned platform. The tracked unit has a ground pressure of 3.9 psi. Ground drive is controlled by a single joystick, and boom/bucket motion is controlled by one dual-axis joystick. Smaller models include the 30 hp S600TX, S600 and 23 hp S400TX. **888/837-6337; www.vermeer.com.** ■

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Liberty Pumps Selects Rep Council

Liberty Pumps Inc. named members to its Rep Council during its November annual meeting. Council members include Charlie Fletcher, Delco Sales, California, Nevada, Hawaii; Scott Cooper, Cooper New England Sales, Connecticut, New Hampshire; Steve Sutter, Hodes & Sutter Inc., Missouri; Randy Waldron, VP Sales/Marketing, Liberty Pumps; Charlie Pongratz, GT Gordon & Associates, Washington; Tony Bruno, Triumph Sales, Pennsylvania; Charlie Cook, President, Liberty Pumps; Chuck Schwabe, National Sales Manager, Liberty Pumps.



Members of the Liberty Pumps Rep Council (front row, from left) are Charlie Fletcher, Scott Cooper and Steve Sutter. Pictured in the back row (from left) are Randy Waldron, Charlie Pongratz, Tony Bruno and Charlie Cook.

NSF Introduces Flushable Claims Certification Program

NSF International has launched a Flushable Consumer Products Certification Program that provides third-party verification of consumer product claims that they can be safely disposed of via toilet flushing. The program addresses such products as facial tissues, baby/cosmetic wipes, kitty litter, pet refuse bags, disposable diapers and feminine hygiene products. Certified products will bear the NSF Certified Flushable mark, indicating whether the products are suitable for a sewer system, septic system or both. Annual audits and periodic product testing are required to maintain an active listing on the NSF website, www.nsf.org/info/flushability, and retain uses of the NSF mark.

Joint Onsite Wastewater Summit June 18-20

The National Environmental Health Association (NEHA), National Onsite Wastewater Recycling Association (NOWRA) and State Onsite Regulators Alliance (SORA) will present a joint Onsite Wastewater Summit in conjunction with NEHA's 75th Annual Educational Conference and Exhibition June 18-20 in Columbus, Ohio. The summit is designed for regulators and industry representatives and will focus on wastewater issues and sustainable wastewater solutions. To register or for more information, go to www.neha2011aec.org/wastewater.html. ■

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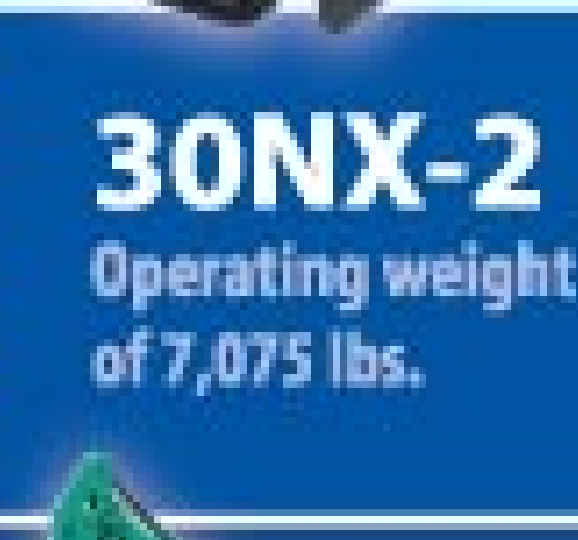
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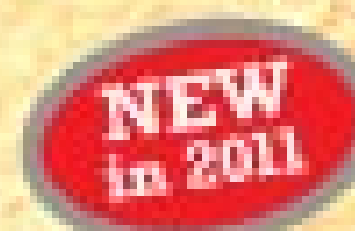
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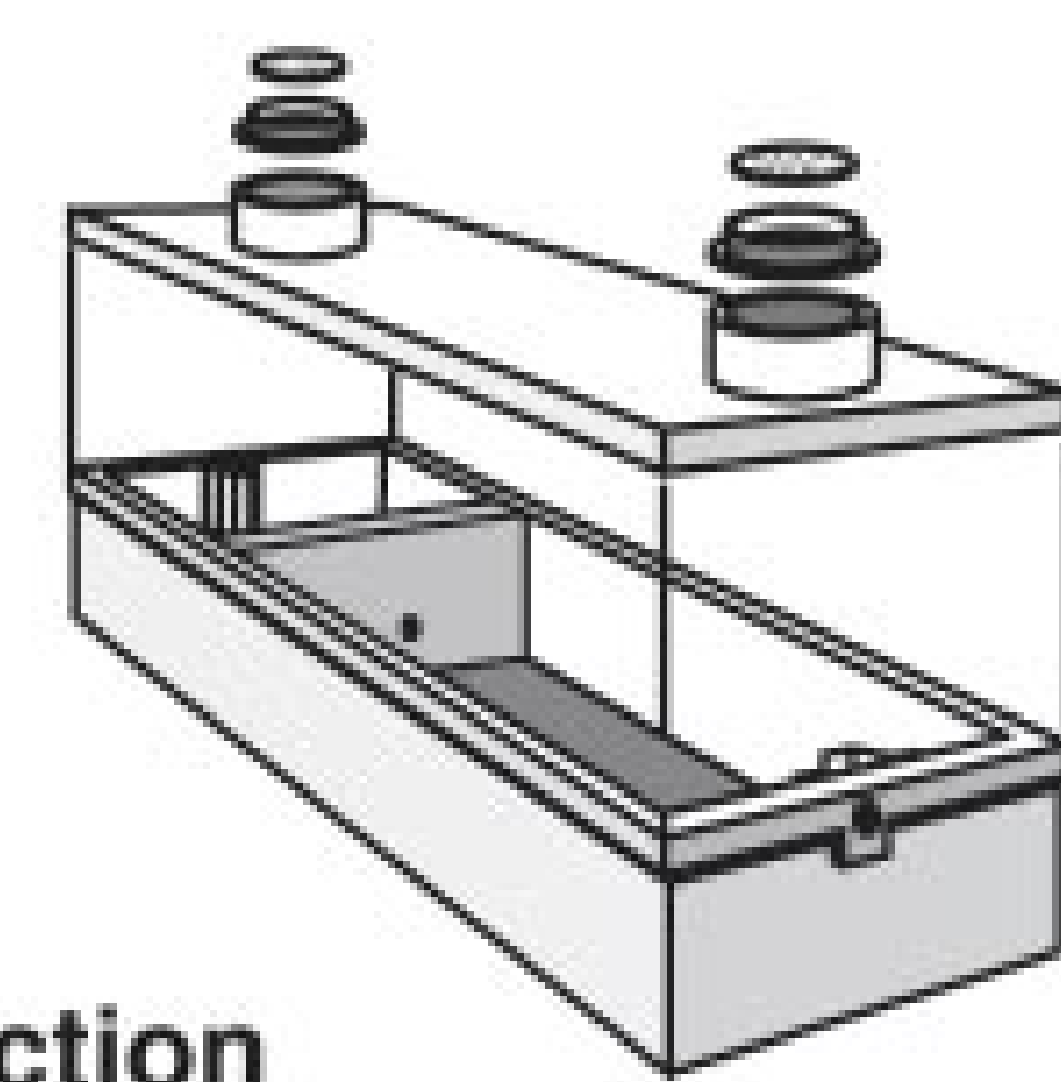
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PRODUCT NEWS

February 2011

SJE-Rhombus Introduces Ultra Nator Control, Alarm

The Ultra Nator control and alarm system for duplex sump pump applications from SJE-Rhombus is designed to control two 120-volt, 1 hp or 15-amp, single-phase pumps. It features two receptacles to accept two 120-volt pump plugs for easy connection. Pumps alternate based on switch level, helping equalize pump wear. If an alarm condition occurs, the alarm indicator and horn activate. The system is NEMA1 rated for indoor use and features factory-installed power cord, pump activation switch and alarm activation switch. In addition to the audible and red visible alarm indicator, the system includes green power-on and green pump-run indicators. The normal/silence alarm switch is externally mounted for easy access. 888/342-5753; www.sjrhombus.com.



Caterpillar Introduces D Series Mini Excavators

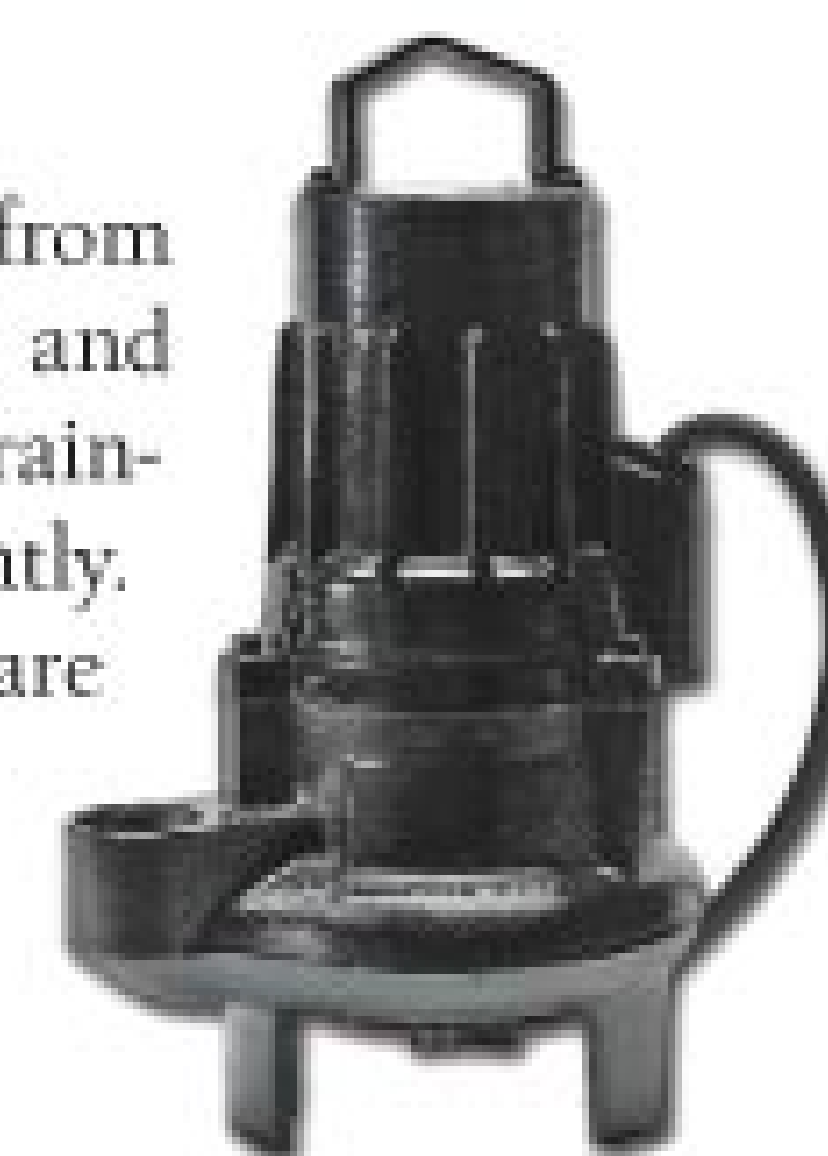
D Series mini hydraulic excavators (models 303.5D CR, 304D CR, 305D CR and 305.5D CR) from Caterpillar are designed for work in confined spaces. The excavators, with operating weights of 3.5 to 5.5 metric tons, feature enhanced stability, redesigned work-tool coupler, load-sensing hydraulics and engines that meet U.S. EPA Tier-4 Interim and E.U. Stage-3A emissions regulations.



Models 303.5D CR and 304D CR are zero-tail-swing, while models 305D CR and 305.5D CR have an upper-body tail-swing over the tracks of 5.5 inches or less. www.cat.com.

Bell & Gossett Introduces Impact Series Submersible Pumps

Impact Series submersible wastewater pumps from Bell & Gossett are designed for use in commercial and building services applications where wastewater or drainage must be disposed of quickly, quietly and efficiently. The pumps feature a self-cleaning impeller and are configured to process solids and reduce clogging. The air-filled motor, dual mechanical seal and specially designed seal chamber help improve overall efficiency and durability. www.bellgossett.com.



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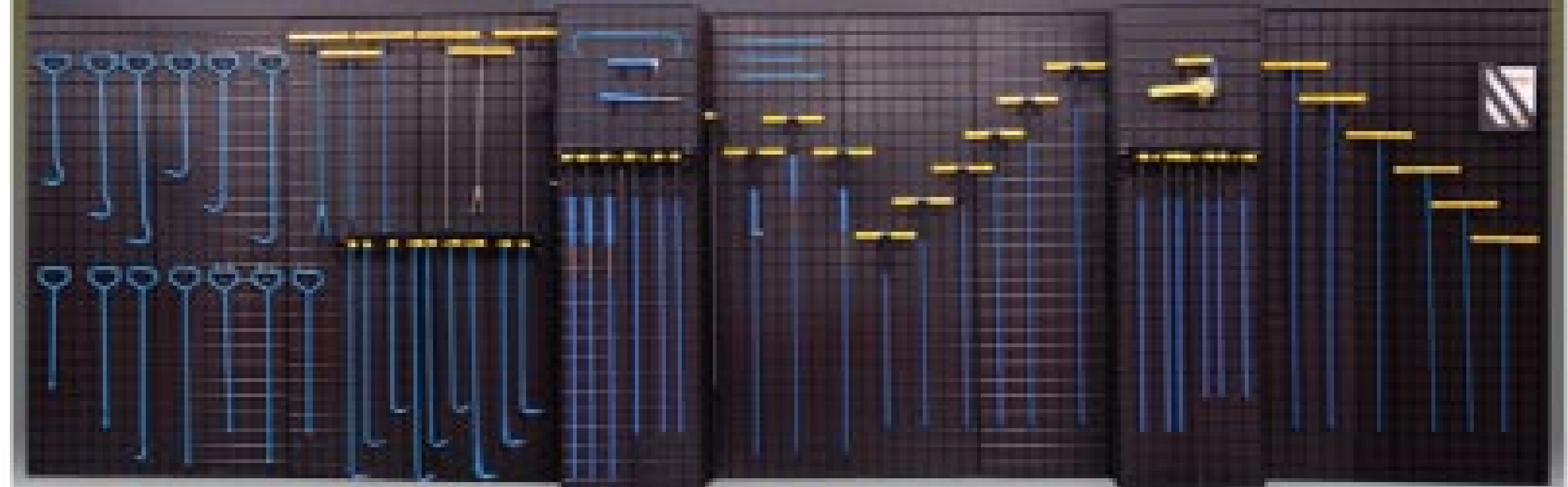
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 - WATERBLASTING
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 - UTILITY LOCATION
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EDUCATION DAY

WEDNESDAY, MARCH 2ND

WWW.PUMPERSHOW.COM

SSCSC Southern Section Collection Systems Committee

- 8 a.m. Sewer Collection System History & the Evaluation of Pipeline Materials and Problems
- 9:30 a.m. Combo Vacuuming, a Forgotten Art
- 11 a.m. Keeping your Standard CCTV Inspection Program Relevant
- 1 p.m. Growing Your Business by Building Your Company Image
- 2:30 p.m. Pump and Lift Station Fundamentals: How to Achieve Maximum Service and Reliability
- 4 p.m. Making Sense out of Nozzle Nonsense

NAWT National Association of Wastewater Transporters

- 8 a.m. So You Think You Want to Own a Waste Treatment Facility?
- 9:30 a.m. Grease as a Resource
- 11 a.m. Resource Recovery - Methane and Septage
- 1 p.m. O & M Problems on Drip Distribution Systems
- 2:30 p.m. O & M Problems We Have Seen
- 4 p.m. O & M Problems with Media Filters

NASSCO National Association of Sewer Service Companies

- 8 a.m. Grout: Its Use and Application for the Total Collection System
- 9:30 a.m. Cured-In-Place Pipe
- 11 a.m. Pipe Bursting Tools for Everyday Utility Installations
- 1 p.m. How Will You Know if You Need to do a Sewer System Evaluation Survey (SSES)?
- 2:30 p.m. Laser Profiling Applications for Documenting Piping System Conditions
- 4 p.m. Advancements in UV Technology for Curing CIPP

WJTA WaterJet Technology Association

- 8 a.m. Estimating the Vacuum Job for Fun and Profit
- 9:30 a.m. How to Maximize the Power of Your Waterjetter
- 11 a.m. Waterjetting - Financial Startup Considerations and Real-World Application

PSAI Portable Sanitation Association International

- 1 p.m. Understanding Your True Cost per Service for Special Events - Part 1
- 2:30 p.m. Understanding Your True Cost per Service for Special Events - Part 2

NARC National Association of Regulated Carriers

- 4 p.m. Avoiding Violation Fines and Tickets with DOT Safety Compliance

NOWRA National Onsite Wastewater Recycling Association

- 8 a.m. Troubleshooting Our Modern Waste Stream
- 9:30 a.m. Pumps - A Basic Understanding
- 11 a.m. System Remediation - Why, What, When, Where and How?
- 1 p.m. Selling the System to Site Conditions
- 2:30 p.m. Sampling Sewage Treatment Systems
- 4 p.m. Effluent Dispersal and Water Management

NEHA National Environmental Health Association

- 8 a.m. The Qualified O & M Service Provider
- 9:30 a.m. Effluent Screens and Filters for Onsite Applications
- 11 a.m. Develop Champions for Your Decentralized Wastewater Projects
- 1 p.m. The Business of Management
- 2:30 p.m. Developing O & M Inspection Actions
- 4 p.m. Working with Regulators, Regulations & Industry

SCOTT HUNTER Business Track

- 8 a.m. Creating an Extraordinary Organization - The Mindset of Leadership (Part 1)
- 9:30 a.m. The Mindset of Leadership (Part 2)
- 11 a.m. The Mindset of Leadership (Part 3)
- 2:30 p.m. Creating an Outrageously Successful Organization (Part 1)
- 4 p.m. Creating an Outrageously Successful Organization (Part 2)

LRN Leaders Resource Network

- 8 a.m. The Disciplines and Art of Business Success
- 10 a.m. Developing a "Fantastic" Team
- 1 p.m. Diversifying or Specializing Your Services
- 3 p.m. Succession Planning

DETAILED SESSION INFORMATION AVAILABLE AT:

WWW.PUMPERSHOW.COM



THURSDAY SESSIONS

March 3, 2011

BUSINESS TRACK

- 8 a.m.** 45 Marketing Tips in 45 Minutes
Lenzyme Inc. - Jerard Nighorn
- 9:30 a.m.** The Benefits of Vehicle Routing Software in Today's Economy
RouteOptix Inc. - Ron Davey
- 11 a.m.** Unleashing the Power to Profit and Freedom
Nexstar Inc. - Kenny Chapman

LIQUID WASTE TRACK

- 8 a.m.** The Evolution of Effluent Filters
Bear Onsite LLC - Theo Terry
- 9:30 a.m.** "Life Cycle" From Waste to Windfall
Big Fish Environmental - John Campbell
- 11 a.m.** Take Confined Space Seriously - A Matter of Life and Death
M Tech Co. - Chris Cira

NEW BUSINESS OPPORTUNITY TRACK

- 8 a.m.** Centripipe (Centrifugally Cast Concrete Pipe)
AP/M Permaform - Steve Henning
- 9:30 a.m.** Valve Exercising and Fire Flow Testing for a Reliable Water Distribution System
Hurco Technologies Inc. - Lynn Hurley
- 11 a.m.** The Basics of Buying and Selling a Septic or Sewer Business
COLE Publishing - Jeff Bruss

MUNICIPAL TRACK

- 8 a.m.** Think Like Grout... For Better Point Repair of Below Grade Structures
Prime Resins Inc. - Scott Kelly
- 9:30 a.m.** CCTV Inspections Evolve to Unparalleled Heights
Aries Industries Inc. - George Rada
- 11 a.m.** Manhole Chimney Section Rebuilds
Mr. Manhole Systems - Michael Crites

INSTALLER TRACK

- 8 a.m.** Membrane Bioreactor (MBR) Technology for Decentralized Wastewater Systems
Bio-Microbics Inc. - Dr. Reza Shams
- 9:30 a.m.** Shallow Pressurized Drainfields for Soil-Based Effluent Dispersal
Orenco Systems Inc. - Mark Gross
- 11 a.m.** Onsite System Solutions for Shallow Installations
Infiltrator Systems Inc. - Dennis Hallahan

CLASES EN ESPAÑOL

- 8 a.m.** Técnicas Corrientes de Limpieza de Tuberías
Innerline Engineering - Jim Aanderud
- 9:30 a.m.** Avances en la Evaluación de Tuberías y Tecnologías sin Zanja para Rehabilitación de Tuberías
CDM - Luis Roberto León
- 11 a.m.** La Elección de Boquillas en la Limpieza de Drenajes
Innerline Engineering - Jim Aanderud

FRIDAY SESSIONS

March 4, 2011

MUNICIPAL TRACK

- 8 a.m.** Large Pipe Inspection
QUES Inc. - N.H. Doc Bennett
- 9:30 a.m.** Chemical Grouts & Grouting Methods
Avanti International - Jim Gentry
- 11 a.m.** Sectional CIPP Repairs Per ASTM F2599
LMK Enterprises Inc. - Rick Gage

BUSINESS TRACK

- 8 a.m.** Save Money - Go Paperless
Clear Computing Inc. - Joel Smith
- 9:30 a.m.** Marketing Your Septic/Drain Service Business
COLE Publishing Inc. - Jeff Bruss
- 11 a.m.** Evolving Your Business with Digital Solutions
RIDGID - Josh Sooy, Brad Yuronich

CLASES EN ESPAÑOL

- 8 a.m.** Anúnciate exitosamente y económicamente, Cuidando tu negocio con atención
Armal Inc. - Angel Romero
- 9:30 a.m.** Eficiente las operaciones de limpieza de cualquier red de alcantarillado de América Latina
Hi-Vac Corp. - Gerardo Ramirez
- 11 a.m.** Varilla Herramientas y Equipos Simples para Limpieza De Alcantarillas
Max-Life Manufacturing, David Pryor

LIQUID WASTE/INSTALLER TRACK

- 8 a.m.** Grease Interceptor 101
Schier Products - Charlie Ismert, Ben Ismert
- 9:30 a.m.** Datalogging for Onsite Septic System Diagnosis
SJE Rhombus - Scott Rietsema
- 11 a.m.** Belt Press Performance Optimization
BDP Industries Inc. - Kelly Brown

SEWER & DRAIN CLEANING TRACK

- 8 a.m.** Inline Cutting Tools - Taking Science to the Sewer!
NozzTeq Inc. - Scott Paquet
- 9:30 a.m.** Waterjetting! Impact on Drain Cleaning
US Jetting - Nick Woodhea, Ken Bryson
- 11 a.m.** Don't underestimate your cable machines?
MyTana Manufacturing - Jack Donaldson

PORTABLE RESTROOM TRACK

- 9:30 a.m.** Give Me 3 Reasons Why I Should Advertise My Portable Restroom Company
Satellite Industries Inc. - Mitch Moores
- 11 a.m.** How to Start a Business in South America, Marketing and Importing/Exporting
Armal Inc. - Angel Romero

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ADVANCED INSTALLER COURSE

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8 a.m. - 5 p.m. • Jim Anderson and Dave Gustafson

2011 EXHIBITOR LIST



Current list of exhibiting companies as of January 18, 2011.
List subject to change without notice.

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A Corp./Roater-Man
A.R. North America
Abbott Rubber Company
Abernethy Welding & Repair Inc.
ACE DuraFlo Systems
Acra Trailer
Advance Pump & Equipment
Advanced Containment Solutions, Inc.
Advanced Drainage Systems
Advanced Infrastructure Technologies
Advanced Pressure Systems
Advanced Tank Systems
Advanced Wastewater Systems
Advantix International Corp.
Aero-Tech
AeroTech, LLC
AK Industries
All Star Equipment Sales, Inc.
Allan J. Coleman
Allied Forward Motion LLC
Allied Graphics
Allied Tank Co.
AlumaMats
Ameri-Con Engineering
American Express OPEN
American Highway Products
Amerik Engineering
Anther International
Anchor Graphics, Inc.
AP/W Permaform
Aqua Ben Corporation
Aqua Blast Corporation
Aqua Male Technologies
Aqua-Zyme Disposal Systems Inc.
Aquesales
Aran Enterprises Inc.
Aries Industries Inc.
Arrow Magnolia International, Inc.
Art Co. LLC
Arthur Products
Atlanta Rubber & Hydraulics Inc.
Avanti International
B.A.G. Corp.
Bad Dog Tools
BakerCorp
Bandlock Corporation
BB & T Insurance Svc, Inc.
BDP Industries
Bear Onsite
Benjamin Franklin Franchising
Best Enterprises Inc.
Betts Industries
Big Fish Environmental, LLC
Bio Clean
Bio-Microbics Inc.
Black Tie Manufacturing
Blasters, Inc.
Blood Hound Underground
Blue Angel Pumps
Boerger LLC
Bord no Mono
Bowman Tool Co.
Brenlin Co., Inc.
Bright Dyes, Division of Kingscote Chemicals
Bright Technologies
BW Technologies by Honeywell
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Canam Equipment Solutions Inc.
Cangas Industries Ltd.
Cape Cod Biochemical Co.
Capital Partners
Capital Rubber Corp.
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Carbo
CAT PUMPS
CEMTEC / A.W. Cook Cement Products, Inc.
Century Chemical Corporation

Century Paper & Chemical
Champion Pump Company, Inc.
Chandler Equipment Inc.
Chelsea Products/Div. of Parker
Chemical Containers, Inc.
Chempace Corporation
Chempure Products Corp.
Chemie Industries Inc.
City Wide Development Group, Inc.
Clarus Environmental/
Zoeller Pump Company
Clear Computing
Clearstream Wastewater Systems Inc.
Clewler
Cloverleaf Tool Co.
Cobra Technologies
Comet USA, Inc.
Comforts of Home
Compa Industries
Conaqtec
Containment Solutions Inc.
Control Chief
Cortec Corporation
Cosmic Tophat LLC
Cougur Vibration
a Division of Martin Engineering
Coxreels
Crane Pumps & Systems
Crescent Tank Manufacturing
Cretec Specialty Products
Cross Bore Safety Association
Crust Buster/Schmitz Bros.
CSI Controls
CUES Inc.
Custom Biologicals Inc.
Cyclops Electronics, Inc.
D&W Diesel, Inc.
De Neef Construction Chemicals
Deal Associates
Del Val Chemical Co.
Delta Environmental
Direct Purchase Quick Couplings
Ditch Witch
Downey Ridge Environmental Company
Dr. Shrink, Inc.
Dragon Products
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Dresser Roots
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Durable Manufacturing
Durand-Wayland, Inc.
Dyno Flex Inc.
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Ecological Tanks, Inc.
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Engine & Accessory Inc.
Environmental Products and Access.
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FMC Technologies
Footage Tools, Inc.
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Formadrain Inc.
Fournier Industries Inc.
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GEA Haulo Inc.
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Godwin Pumps / ITT
Goldak Inc.
Gorlitz Sewer & Drain, Inc.
Goulds/ITT
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Greenovative Technologies
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Poly-Flow
PolyJohn Enterprises Corp.
Polylok/Zabel
PolyPortables Inc.
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PRH LLC
Prime Resins, Inc.
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Salcor, Inc.
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Sprayraq Inc.
Stamp Works
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StoneAge, Inc.
Subsurface Instruments
Sumbelt Rentals
Sunrise Environmental
Superior Signal Company
SuperVac 2000
SVE Portable Roadway Systems, Inc.
Synergy Insoles by V.P. Marketing
T & T Tools Inc.
Tank Technologies & Supply Co., LLC
TCF Equipment Finance
TeleSwivel
The Service Program
The Strong Company
Thompson Pump
Toico Industries
Topp Industries, Inc.
Tracker Solutions
Tranway Systems Inc.
Trenchless Technology Magazine
Tri State Tank LLC
TRIC Tools Inc.
Trident Insurance/Septicover/
Waste Insurance Program
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TRY TEK Machine Works, Inc.
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Clogged effluent filters

Drain flies, also known as sewer flies or sewer gnats, are common in bathrooms and kitchens, but the Arizona Onsite Wastewater Recycling Association newsletter cited a study by board member Dawn Long stating that the insects are plugging effluent filters.

Long's company, American Septic Service in Sierra Vista, received calls almost daily from owners with backed up onsite systems. In all cases, they were only a few years old, and the submerged part of the effluent filter was clogged with dead adult flies. The filter portion above the waterline was often covered with wiggling fly larvae.

Customers frequently complained that the insects emerged from the kitchen sink drain. Since the flies require oxygen, Long attributes their presence to shallower systems. She has found no insects in older, deeper systems that were never opened.

American Septic caps the pump hoses to prevent drain flies from escaping, but they still cling to the exterior hose surface. Long speculates that it is possible for the hose to deposit larvae and adult flies into the tank during service, but the theory does not apply to new, unopened systems where the insects are profuse.

The association and Long are asking pumpers and maintenance providers if they have had similar experiences or know what is causing the infestations. The best method Long found to kill the flies is to leave one-half cup of bleach in the P-trap overnight. She wonders how often to repeat the dose before it harms the microorganisms in the tank. E-mail septicseuths@qwestoffice.net.

PSMA announces staffing change

Lisa Herron, former associate administrative director of the Pennsylvania Septage Management Association, has been named its administrative director. Besides overseeing the certification program, she will continue to work with the board and the executive, bylaws and policy, and nominating committees.

She has 15 years of nonprofit experience in trade associations, specializing in strategic direction and management, public relations, marketing, and event planning. Contact Herron at director@psma.net.

CALENDAR OF EVENTS

Feb. 3-4

Ohio Water Quality & Waste Management Conference, University Plaza Hotel, Columbus. Call Holly Bartholomew at 843/471-2357 or visit www.setll.osu.edu/programs/owqwm_conf.html.

Feb. 16-17

Nebraska On-Site Wastewater Annual Convention and Trade Show, Lancaster County Event Center, Lincoln. Call 402/476-0162 or visit www.nowwa.org.

March 2-5

Pumper & Cleaner Environmental Expo International, Louisville, Ky. Call 800/257-7222 or visit www.pumpershow.com.

March 6-8

Pennsylvania Association of Sewage Enforcement Officers Conference and Trade Show, Holiday Inn, Grantville. Call 717/761-8648 or visit www.pa-seo.org.

March 11-12

Oregon Onsite Wastewater Association Conference, Valley River Inn, Eugene. Call 541/389-6692 or visit www.o2wa.org.

March 22-23

Pennsylvania Septage Management Association Annual Training, Crowne Plaza Hotel, Reading. Call 717/763-7762 or visit www.pasma.net.

TRAINING & EDUCATION

NAWT

The National Association of Wastewater Transporters has these training sessions:

- March 1 – Vacuum Truck Technician, Louisville, Ky.
- March 10-11 – Operation and

Maintenance, Part 2, San Luis Obispo, Calif.

For Louisville classes, call NAWT at 800/236-6298 or visit www.nawt.org. For California classes, call Kit Rosefield at 530/513-6658 or visit www.cowa.org.

NEHA

The National Environmental Health Association is offering the Certified Installer of Onsite Wastewater Treatment Systems national credential exam on March 4 at the Pumper & Cleaner Environmental Expo International. Pre-registration is required. Call Carol Newlin at 303/756-9090, Ext. 337 or e-mail cnewlin@neha.org.

California

The California Onsite Wastewater Association is offering the NAWT Operation and Maintenance course, Part 2, March 10-11 at San Luis Obispo. Call Kit Rosefield at 530/513-6658 or visit www.cowa.org.

Minnesota

The University of Minnesota Extension has these classes:

- March 7-9 – Introduction to Onsite Systems, Owatonna
- March 10-11 – Installing Onsite Systems, Owatonna
- March 22-23 – Installer Continuing Education, Grand Rapids
- March 23 – Pipelayer, Grand Rapids
- March 29-31 – Advanced Design and Inspection on Onsite Systems, Mankato
- April 5-7 – Basic Design of Onsite Systems, St. Cloud
- April 12-13 – General Continuing Education, Rochester
- April 19 – Design Continuing Education, Hinckley
- April 19-20 – Design and Inspector Continuing Education, Hinckley
- April 20 – Inspector Continuing Education, Hinckley
- April 22 – Troubleshooting, St. Cloud
- April 25-27 – Introduction to Onsite Systems, Grand Rapids

- April 28-29 – Installing Onsite Systems, Grand Rapids
- Call Nick Haig at 800/322-8642 or visit www.septic.umn.edu.

Pennsylvania

The Pennsylvania Septage Management Association is offering Inspector Certification courses March 22-23 at the Crowne Plaza in Reading. Call 717/763-7762 or visit www.pasma.net.

Virginia

The Virginia Center for Onsite Wastewater Training has these classes at Pickett:

- March 15-17 – Onsite Basic Skills
- March 21-23 – Locator Training
- March 22-31 – Onsite Systems
- April 25-29 – Onsite Design Camp I

Contact Lydia Shepherd at 434/292-3101, e-mail lydia.shepherd@southside.edu, or visit www.southside.edu.

Washington

The Washington On-Site Sewage Association and Washington State Department of Health, in cooperation with Washington State University, offers these certification courses at the training center in Puyallup unless stated otherwise:

- March 9-10 – Using and Interpreting WAC246-272-A
- March 16-17 – Exam Review
- March 23 – Pumper Basics, Vancouver
- April 6 – Maintenance Basics
- April 13 – Pumper Basics
- April 20 – Design of Subsurface Drip Systems

Call WOSSA at 253/770-6594 or visit www.wossa.org.

Wisconsin

Weiser Concrete is offering training sessions in onsite wastewater treatment system basics at these locations:

- March 8 – Fond du Lac
- March 10 – Arbor Vitae
- March 15 – Maiden Rock
- March 17 – Portage
- March 22 – Shell Lake

For more information, call 800/325-8456 or visit www.wieserconcrete.com. ■

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BLOWERS

VFC200P-5T, FUJI Pumps, Regenerative Blowers, Ring Compressors. All models, accessories. Authorized distributor. Authorized parts and repair center. Call 888-227-9822. www.carymfg.com. (IBM)

BUSINESSES

Chicago-Area Biosolids, Land Application, Dredging and Industrial Services Business. Established in 1985, owner is retiring. Reputable business includes real estate servicing the entire Chicagoland area with sludge and biosolids disposal and treatment services. Real estate and shop included with sale valued at \$750,000, business grosses in excess of \$3 million annually, \$6.3 million in equipment and assets including several TerraGators, Vac Trailers, dump trailers, loaders and much more. Offered at \$4,900,000 - huge potential, good profit and priced right. Non-Disclosure Agreement required, all P&L statements, list of assets, and financials available to qualified buyers. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing. www.BTwo.biz.** (IBM)

Well-Established and Profitable Texas Septic, Sewer & Installation Business For Sale. PRICE RECENTLY REDUCED. Grossing in excess of \$600,000 annually, customer list of nearly 2,000 accounts and 430 contracted customers. Includes nice late model equipment, most are 2007, 2008 model years. Owner retiring after nearly 40 years in business. Real estate available upon request. Reduced to \$450,000. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing - www.BTwo.biz.** (IBM)

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

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

2009 Terralift TL-2000 Style w/PS 180 Hammer in new condition. A new trailer with stainless steel tool box is included. \$45,000. 828-696-3370 NC. (P04)

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2003 Case 580SM backhoe, cab, 4X4, extendahoe, ride control, rear hyd. quick coupler. 2002 CAT 312CL excavator, hyd. quick coupler, hyd. thumb. Both machines are clean, one-owner machines. 330-897-0804 or 330-763-0475 OH. (I02)

HAND TOOLS

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

MISCELLANEOUS

SEPTI-MARKERS - Make your business grow! Plant a Septi-Marker and advertise your company. Contact MCSP @ 800-537-5800. (I02)

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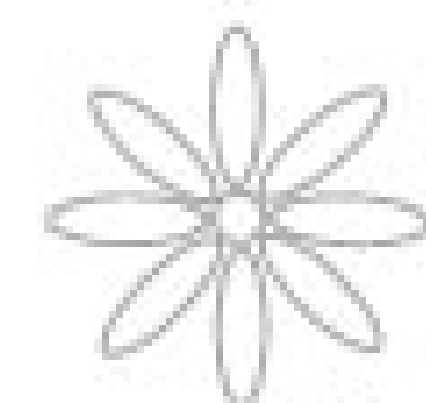
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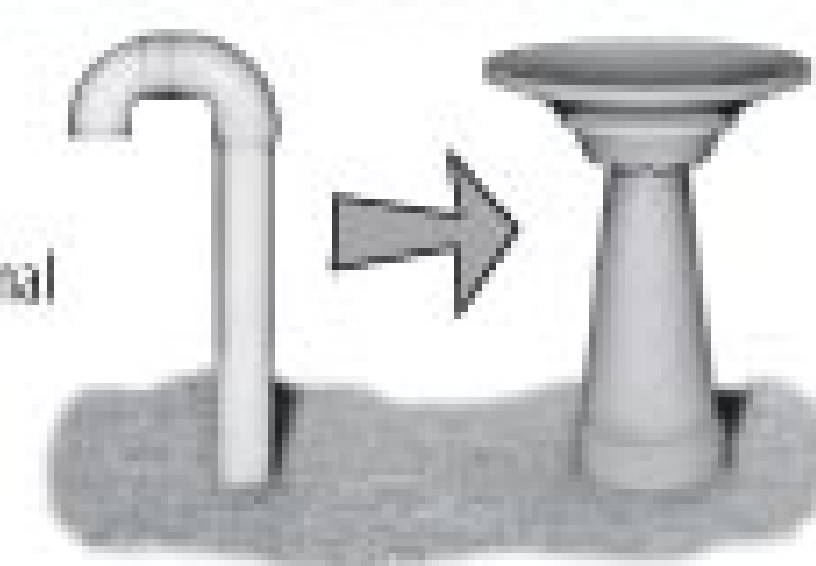
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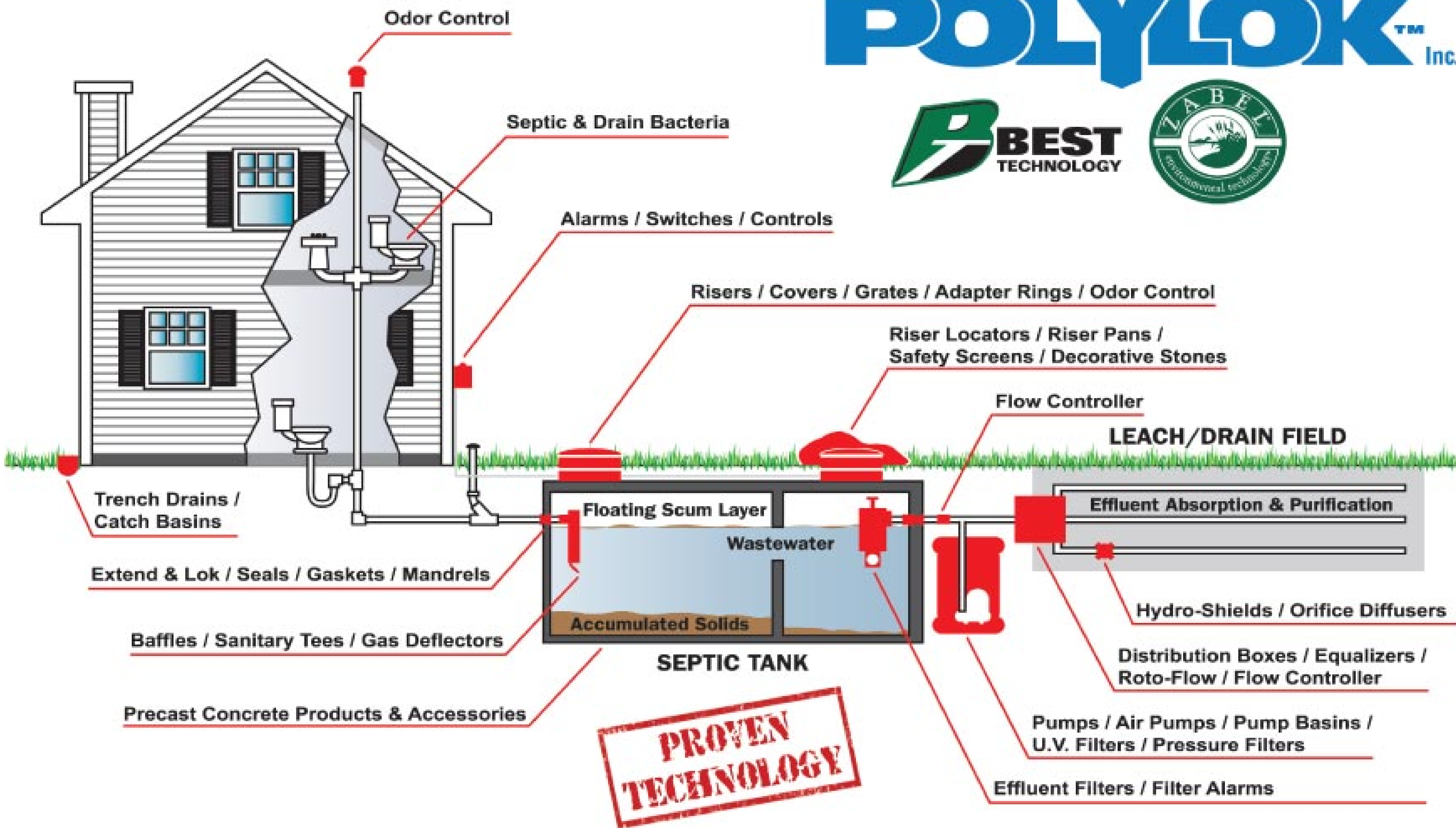
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