

October

2009

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Keeping More Dollars

Efficiency and careful planning help
Obsidian Ridge Contracting maximize profit

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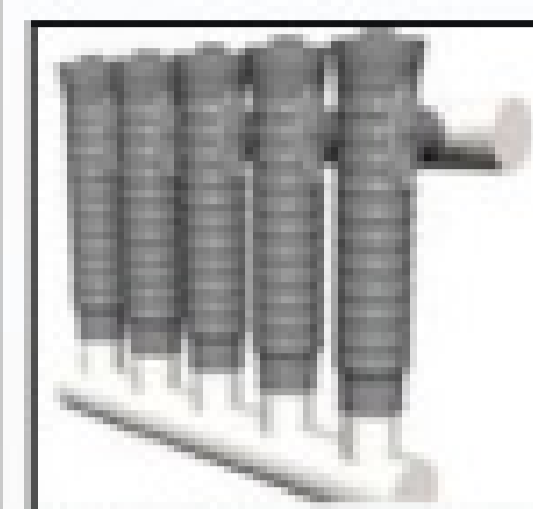
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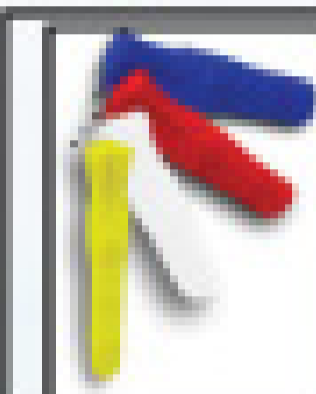


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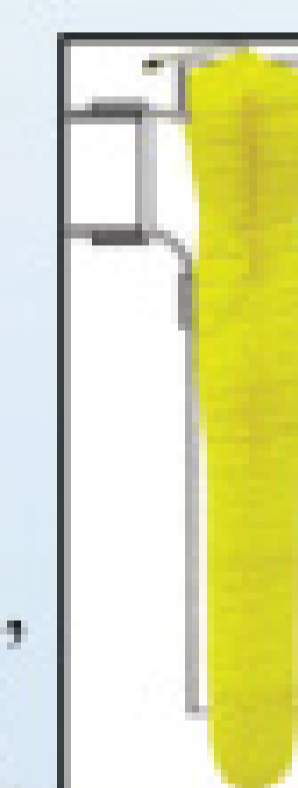


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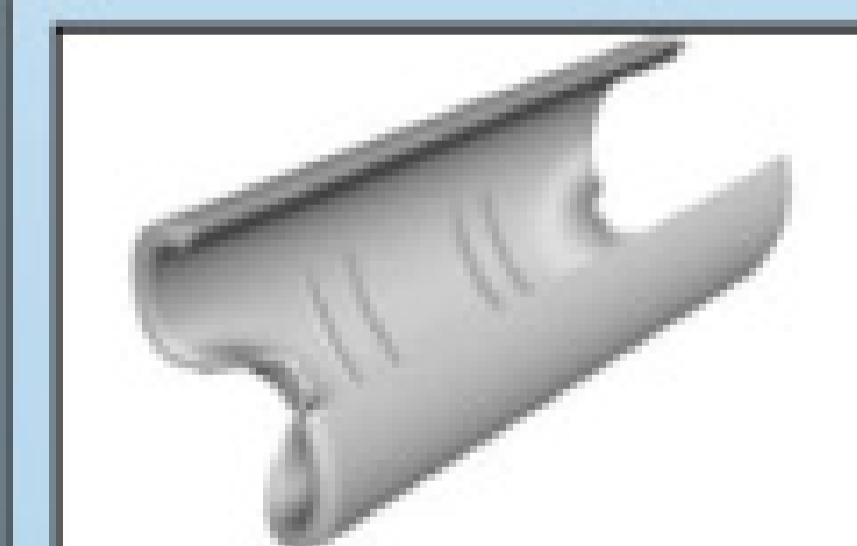
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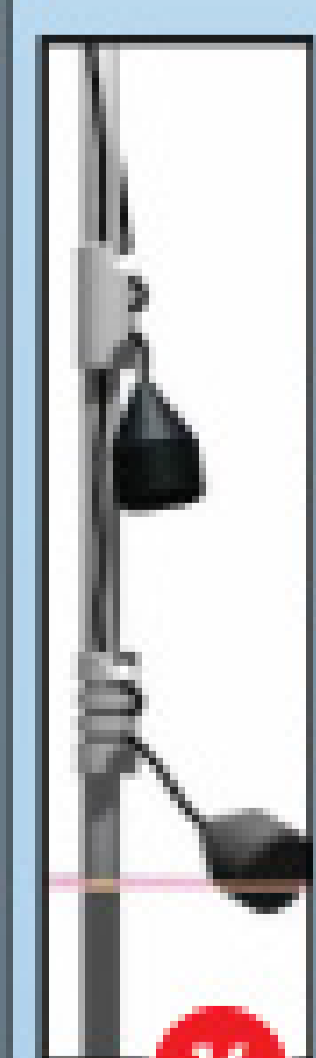
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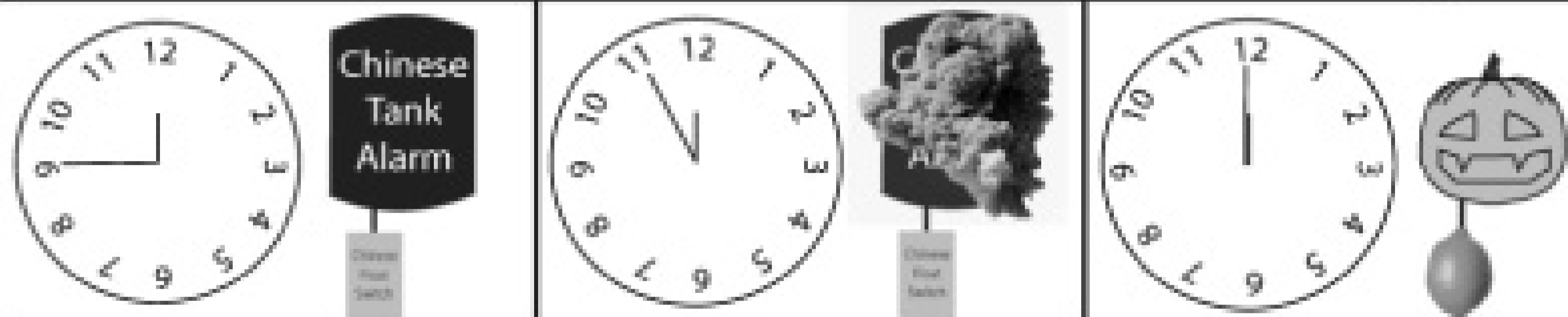
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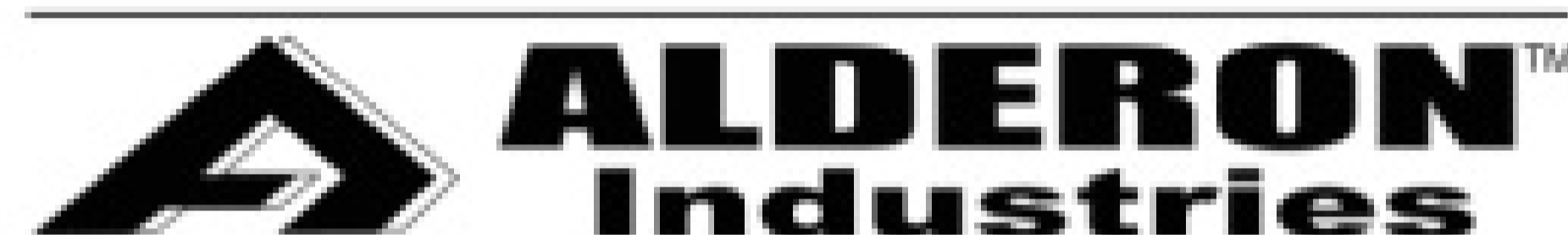
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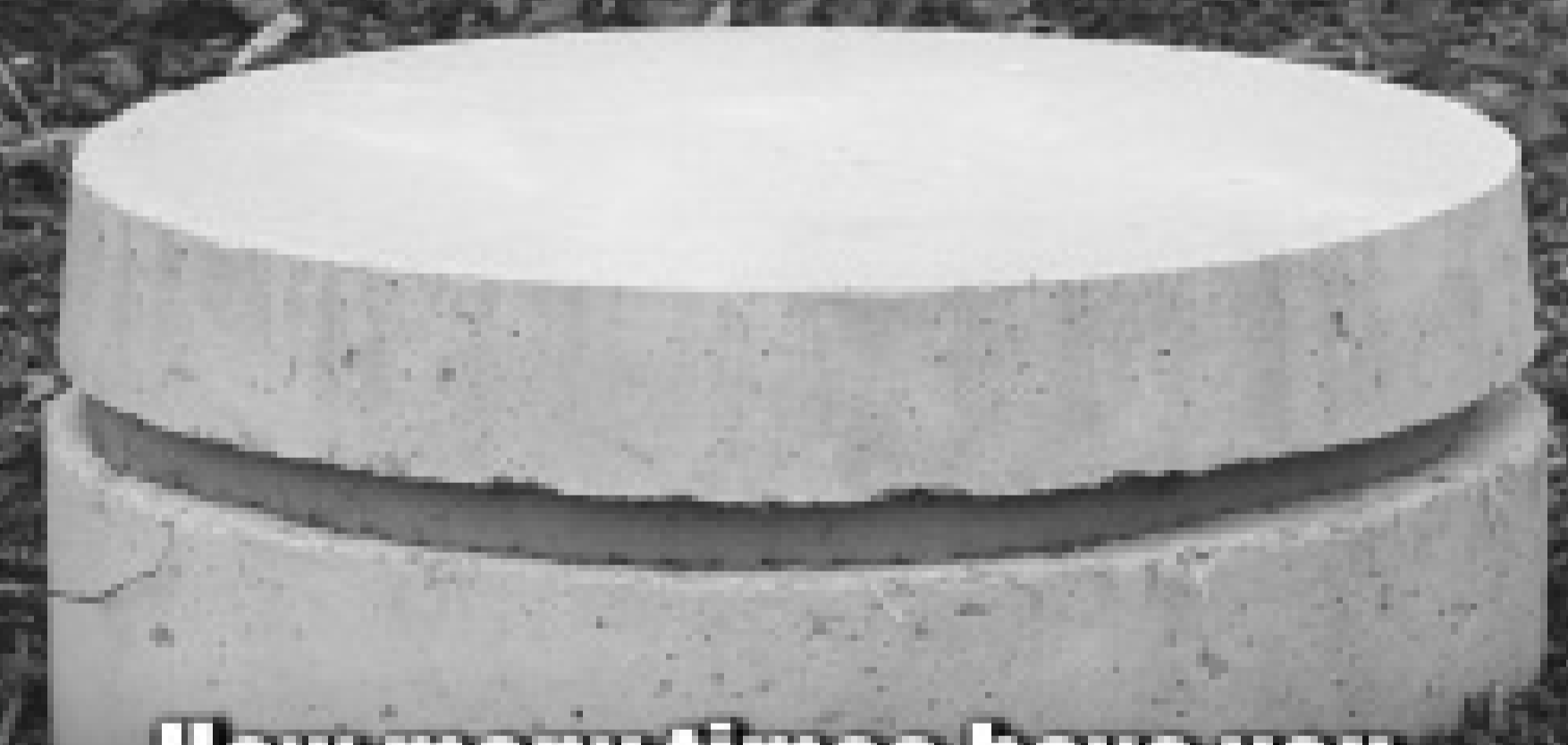


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LETTERS TO THE editor

Regional Codes Have Merit

To the Editor:

I have held a Minnesota license for design, installation, soil testing, and inspection for many years, and I worked through the Minnesota Onsite Treatment Contractors Association for a standard Minnesota code before our 7080 code was adopted. I also hold an AAS degree in building inspection for the State of Minnesota.

I also live near the border of Wisconsin, where I do not work because of the needed plumbing license to install septic systems there. Now, with the uniform Minnesota code, I have designed systems in several counties and municipalities without needing a license from each agency. There are still holdouts where they require an excavator's license for digging in their city, or where there is some other barrier that can be overcome for a fee.

Yes, it would be nice to have a regional code ("Why so many differences?", *Onsite Installer*, August 2009) to be able to meet standards within a geographic area. I look at the building codes and how they have been adopted. This has taken a lot of work, and there has been opposition from many trade groups, politicians, and states to append or modify the ICC codes.

I participated in administrative law hearings on the adoption of the fuel gas codes for the State of Minnesota, where the trade groups within the Minneapolis and St. Paul plumbers and fitters unions were opposed to changes, as they said they would have to re-educate their full memberships to a new code. There seems to be many holdouts on uniformity.

I have also worked on a Washington County code they adopted when Minnesota 7080 code first was adopted. Input from the people who work in the field sometimes is discounted in favor of the engineers' ideas of a perfect solution. This can be in requirements for the type of tank, the drainfield material, or other parts of the system.

I designed a system for a person in Wisconsin using an at-grade design instead of a mound. The answer from his local permitting authority was, "Yes it will work, and we would give a permit, but no one will install it." Why not? Not enough profit, and different from their competitors. So the homeowner pays, and wonders why states differ in cost.

I have also designed replacement systems where another designer came up with mounds or special treatment systems for what they called problem areas, when in reality, solutions could be found by using a different location, moving the house plan on the lot, or using an at-grade or shallow-trench system instead.

To become a valued industry where consumers both value and trust us, we need to put more effort into image and into regional rules. Look at the Operating Engineers and the certifications they have for cranes. Or look at electricians working under the National Electrical Code.

As the Uniform Building Code is now accepted in most states, and since there are also other uniform codes, it is time for the onsite industry to adopt a larger format than just local codes.

Consumers and citizens have been sold the idea that the answer to all disposal problems is the Big Pipe. The idea of recycling wastewater seems to be lost. If groundwater from one region is used and sent down the big pipe to a river or out of the area, that it is not replaced easily.

Wells, septic systems, and other such rural or urban uses for the water we all depend on create a continuous cycle that needs a long look. The regional code concept is an idea that needs more than just exploration by a small group.

Orin Koeckeritz
Afton, Minn.

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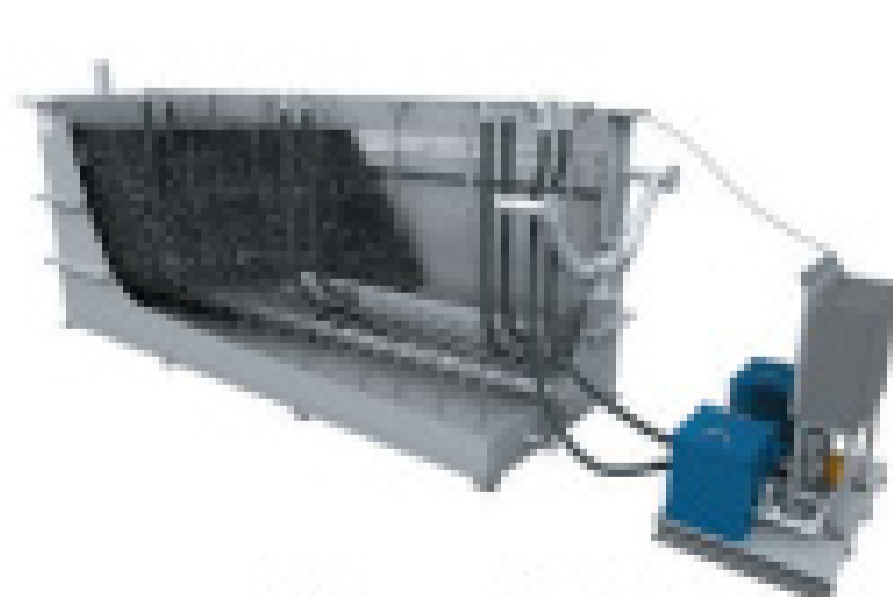
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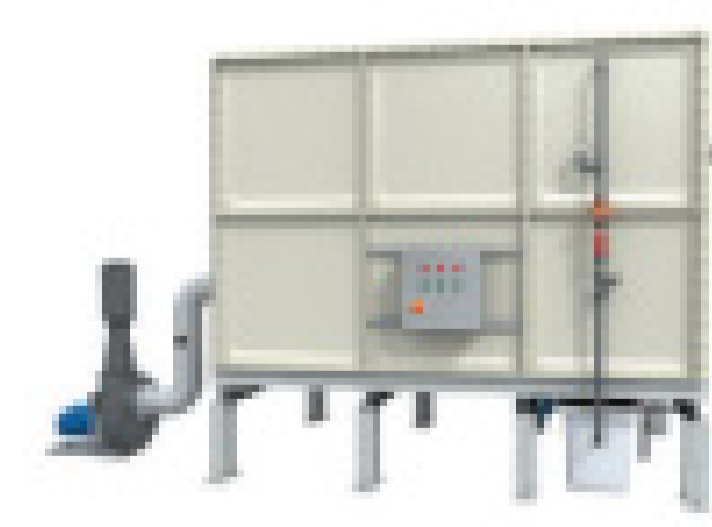
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We're In This Together

NOWRA and *Onsite Installer* have teamed up to bring *Onsite Journal* and its informative content to a much broader industry audience

By Ted J. Rulseh, editor

There's something new in this month's *Onsite Installer*. We're bringing you *Onsite Journal*, the official publication of the National Onsite Wastewater Recycling Association (NOWRA).

It's an experiment that we hope works out to the benefit of NOWRA, COLE Publishing and, most of all, the industry professionals who read *Onsite Installer*. Once per quarter, *OSJ* will be stitched right into the magazine, along with the practitioner profiles, system profiles, machinery information, and instructional pieces you're used to.

Just makes sense

Of course, NOWRA used to produce and mail *OSJ* separately. But by combining it with *Onsite Installer*, the association can produce it at less cost and will now distribute it to some 21,000 readers, instead of about 4,000.

Everyone gains when industry allies share resources. NOWRA and COLE Publishing have worked together since the association's inception; through articles and advertising in *Pumper* and *Onsite Installer* magazines, through NOWRA instructional sessions on Education Day at the annual Pumper & Cleaner Environmental Expo International, and in many other ways. This latest development brings the connection a step closer.

How does this help you as an onsite system designer or installer? Well, NOWRA has been a strong voice for the industry, and *OSJ* contains lots of information about the association's activities — many of which go on outside the limelight.

OSJ is a great place to follow issues with big implications, such as the U.S. EPA model code, NOWRA's own performance-based code proposal and, more recently, discussions of uniform regional codes covering several states.

OSJ is also a good way to track NOWRA's state affiliates and the political, regulatory and other issues they're engaged in. You might know perfectly well what's happening in your own state, but here's a way to see what's going on elsewhere and what might be coming your way sooner or later.

Solid information

The journal also has a record for delivering sound, practical information to help designers and installers work more effectively. That includes everything from technical matters like understanding soils and soil treatment systems, to safety concerns like proper shoring of trenches and the prevention of illnesses borne by ticks and mosquitoes.

In short, *OSJ* helps give you a bigger picture of the issues facing

the industry and another way to share information with your peers. When you see all that NOWRA is doing, you may see more good reasons to become a member yourself, if you are not already.

Many professionals ask: If I join NOWRA, what's in it for me? Part of the answer is that a bigger membership and a stronger association means more resources available to

annual Academy will be run in Louisville, Ky. on Monday and Tuesday, Feb. 22 and 23, just before the annual Pumper & Cleaner Environmental Expo.

Now you can easily benefit from all the instruction at the Academy, and stay a few days more to experience the Expo's extensive education program and vast show hall filled with the latest tools and

***OSJ* is a good way to track NOWRA's state affiliates and the political, regulatory and other issues they're engaged in. You might know perfectly well what's happening in your own state, but here's a way to see what's going on elsewhere and what might be coming your way sooner or later.**

deliver the kinds of benefits members desire. Sometimes it takes a certain critical mass of membership to make a full slate of benefits feasible.

Pulling together

So here's our effort not just to help NOWRA operate more efficiently but to give the association wider exposure and deliver more useful information to our readers.

There's more cooperation in store, too. You know about the NOWRA Installer Academy, held the past four years during December in Las Vegas. Well, in 2010, the fifth

technologies. One tank of gas or one plane ticket does it all. It's just another way in which collaboration makes sense.

In addition, the National Association of Wastewater Transporters will hold its Vacuum Truck Training Program concurrent with the Installer Academy.

We hope you enjoy getting *OSJ* through our magazine. Tell us how you like it. Drop me a note to editor@onsiteinstaller.com. We'll use your feedback to keep on improving the service we offer you through *Onsite Installer*. ■

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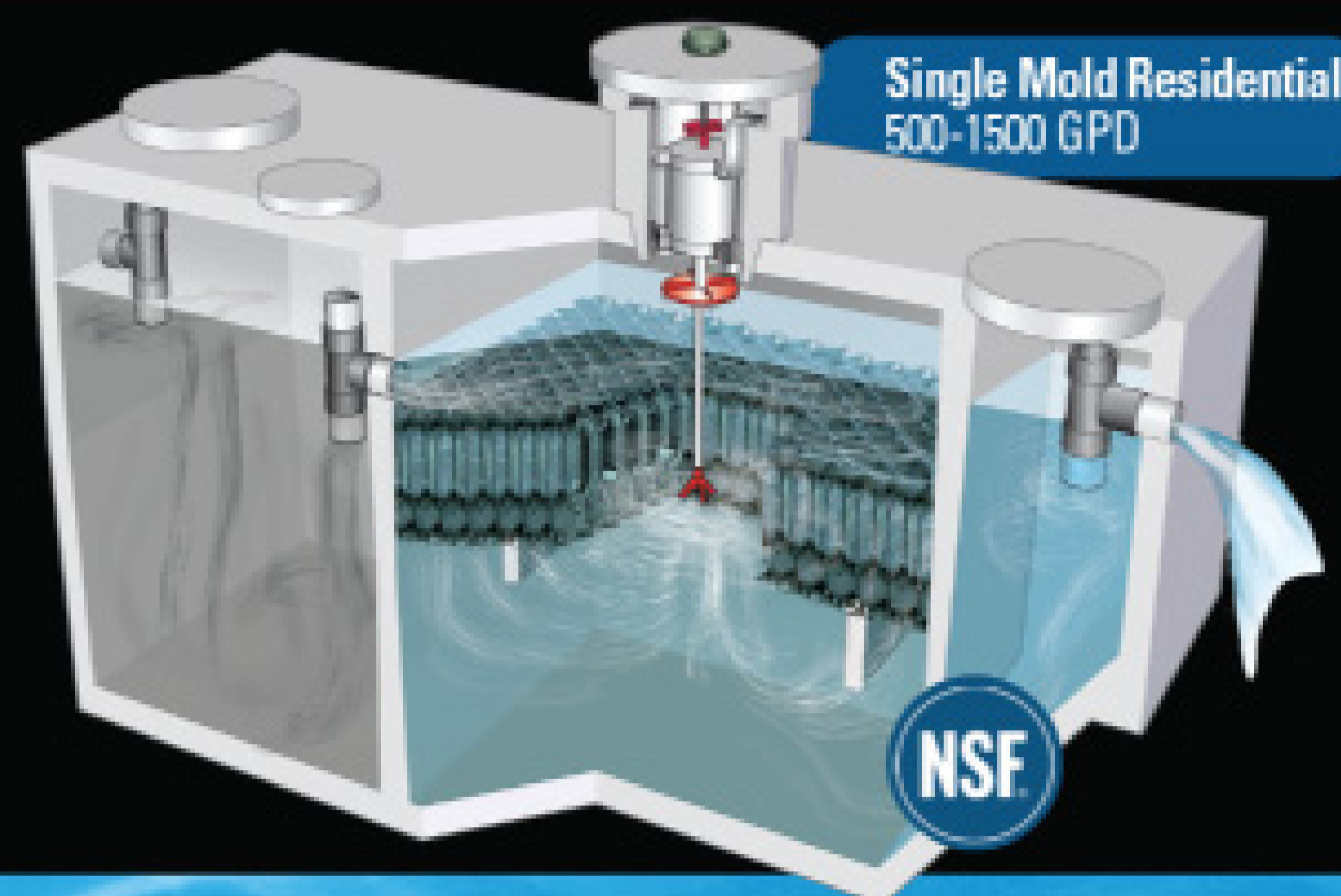
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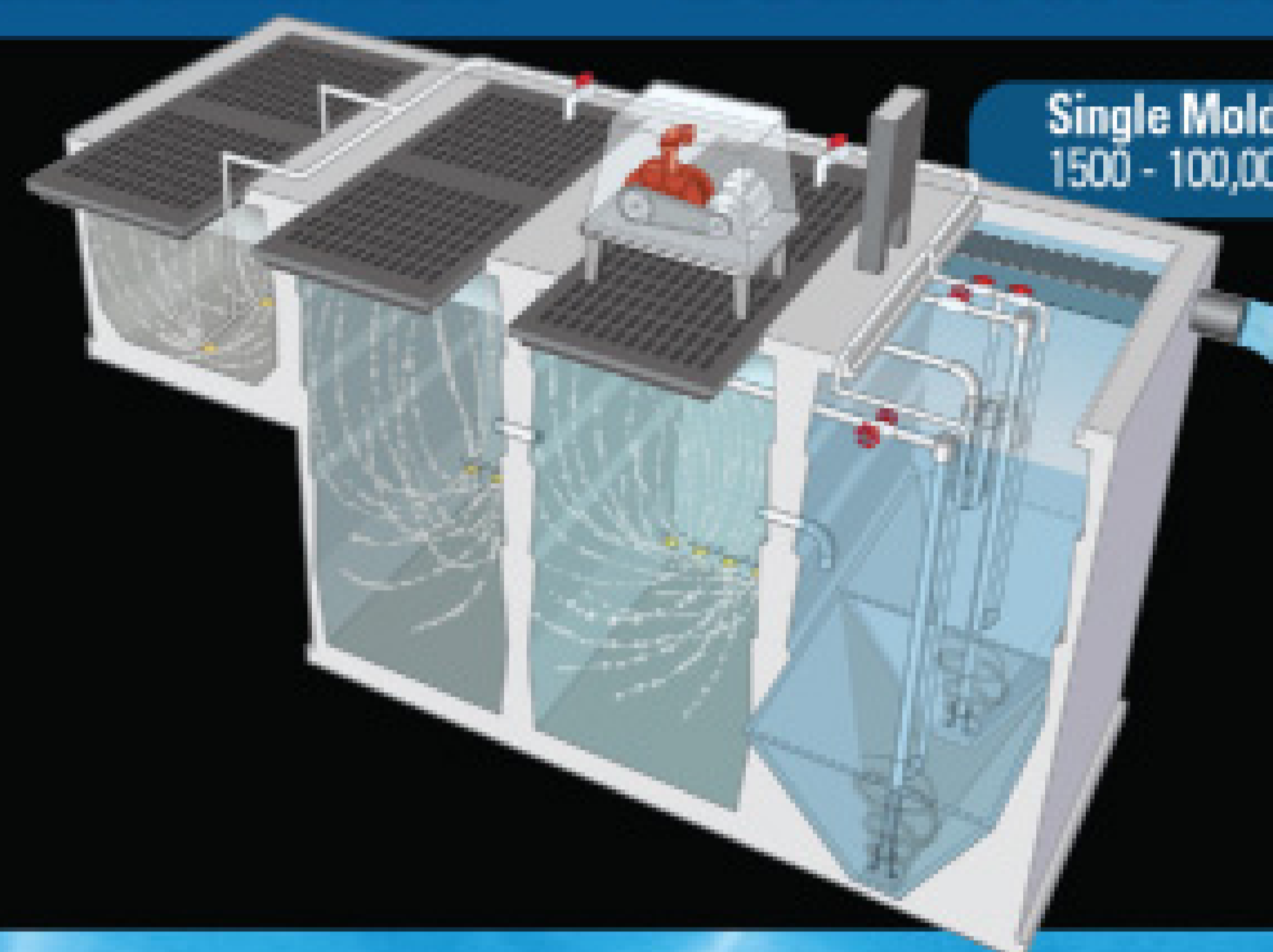
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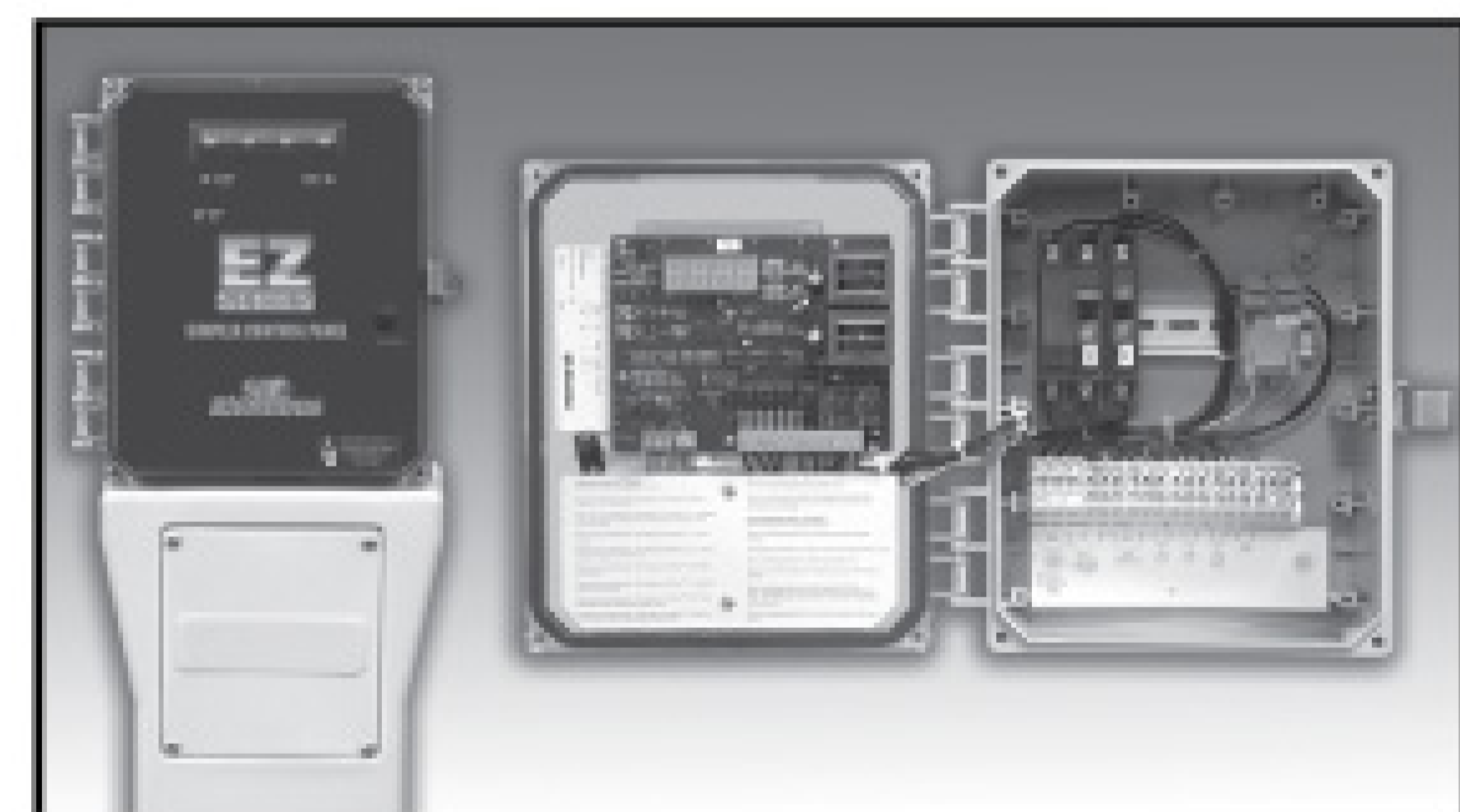
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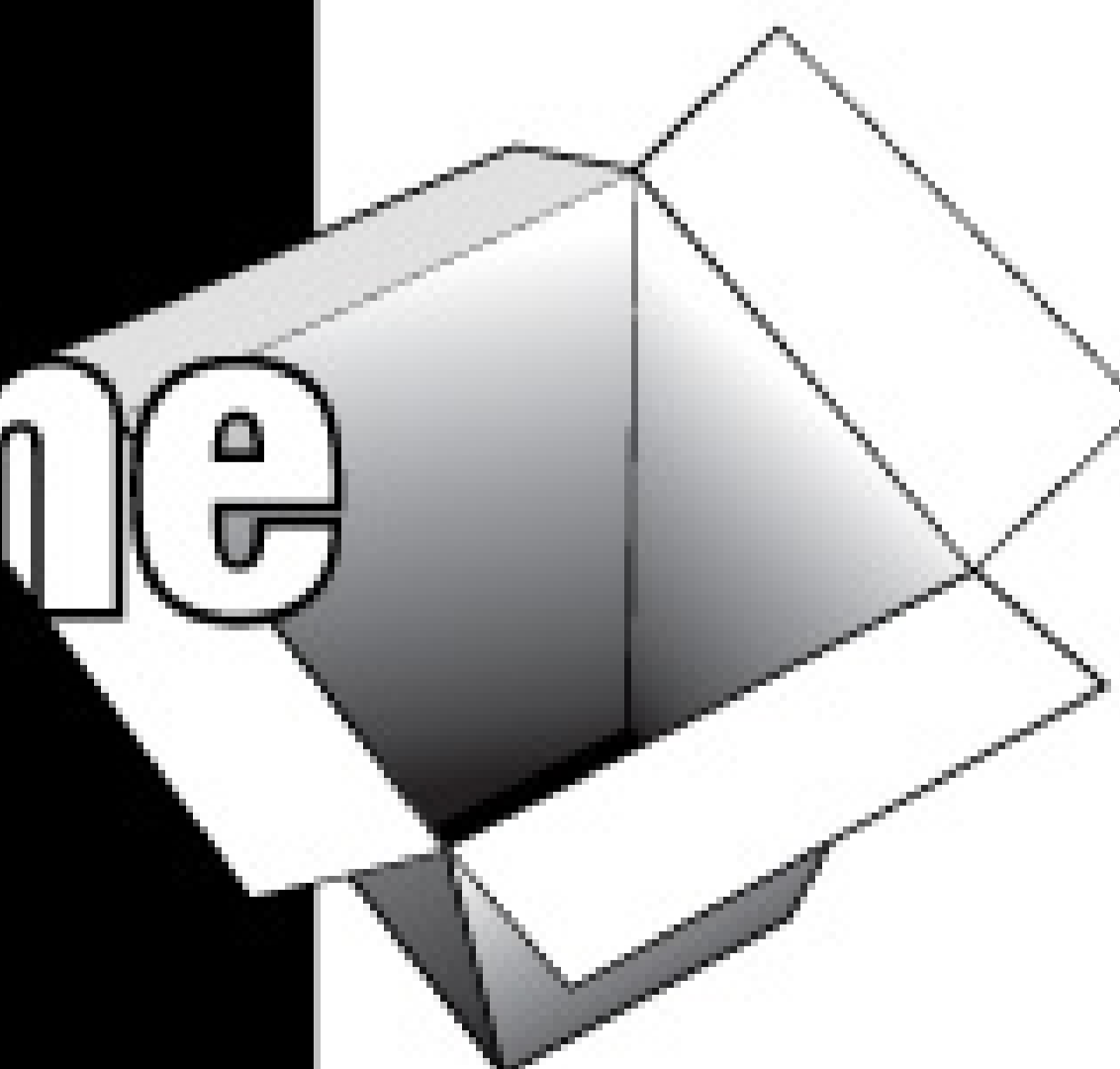
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Jim Anderson and David Gustafson are connected with the University of Minnesota onsite wastewater treatment education program. Dave is extension onsite sewage treatment educator. Jim is former director of the university's Water Resources Center and 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 David. Write to ander045@umn.edu.

More About Soils

Soil color can be an important indicator of conditions that will affect the performance of an onsite treatment system

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

As promised last month, and after numerous soil-related questions, we will discuss soil color which we consider to be the second most important property for installers to recognize.

Color is an important soil property because a number of other soil characteristics can be determined from it. You can use color to estimate the organic matter content in the soil. Color can be the indicator that the soil was formed under certain vegetation types or has undergone human disturbance. Many soils exhibit color inherited from the parent material from which the soil formed. All this can provide information that is important to the location and operation of a soil treatment system.

layer can be very dark and thickened. In arid regions where organic matter content is low for lack of vegetation and high oxidation rates of organic matter, the color change or variation can be very slight. So, interpreting color requires you to recognize the different locations you are working in.

The varying shades of red, yellow, or gray found in soils usually reflect the quantity and form of iron present. Uniformly red or brownish colors indicate that the iron is in an oxidized form and is not hydrated. Yellow can indicate somewhat less oxidation and some hydration. Gray indicates a chemical reduction of the iron from wetness and lack of oxygen. Thus, soil color is an indicator of natural soil drainage conditions.

Soil horizons may contain many colors. These changes should be identified on the soil boring logs or pit descriptions provided as part of the design information. You should review this information and compare with what you see when excavating the system.

Humus and iron

There are two primary coloring agents in the soil: humus (organic matter) and iron. Most people recognize the dark color at the surface as being due to the presence of organic matter from decaying vegetation. In humid areas, this surface

Soil horizons may contain many colors. These changes should be identified on the soil boring logs or pit descriptions provided as part of the design information. You should review this information and compare with what you see when excavating the system.



Clumps of soil seen in close-up reveal redoximorphic features used to determine seasonal soil saturation. (Photos by Dave Gustafson)

Limiting conditions

The apparent color changes come from the native parent material, or the soil-forming processes. These processes result in the movement or translocation of clay, organic matter, and silt in the profile. One process that needs special attention is using color to estimate the presence of seasonally saturated soil conditions.

These color conditions become the depth of limiting conditions and will determine the depth or type of system that can be installed. Soil redoximorphic features (mottling) indicate the presence of saturated soil. Most state codes require use of these features to determine

the seasonal high water table.

System separation distances are determined from the point of first identification of these features in the profile. One reason for using these features is that soil color can indicate the presence of saturated conditions even if the soil is dry at the time of site evaluation.

These features form in saturated soil by the processes of reduction, translocation, and oxidation of iron and manganese compounds. In saturated soil above 41 degrees F, soil bacteria deplete the oxygen they need to digest organic matter. Anaerobic bacteria use oxygen from the iron and manganese compounds, making them water soluble. These

A Munsell Color Book is the most common tool for identifying soil color.



ganeous oxide on the faces of the soil structure units, on the walls of pores or cracks, or on the inside of the soil beds. The area from which the iron and manganese oxides are removed becomes light gray. The areas where the iron accumulates are reddish or yellowish, giving the soil a distinct mottled or blotchy appearance.

In depressions, or in soils that are waterlogged for extensive periods, the soils have not been flushed of the dissolved iron oxide. This



Soil Science instructor Dan Wheeler of the University of Minnesota points out color features in a soil test pit.

soluble compounds move with the water until they reach an oxygen-rich zone.

Once they encounter oxygen, the compounds precipitate, accumulating as coatings of reddish or yellowish iron oxide or black man-

results in a bluish gray or greenish color. This color will change when the soil is left exposed to the air and the iron becomes oxidized. This indicates that this soil is saturated for long periods, whether or not you see free water in the hole.

Take precautions

It is important to recognize these conditions. First, when exca-

vating for the tank, you need to recognize the presence of water table so you can take proper precautions to prevent the tank from floating if it happens to be pumped dry during a wet period.

Second, you need to recognize if the bottom of the trench excavation meets the required separation distance from the limiting soil saturation. This is important to ensure adequate treatment of the septic tank effluent. Remember that saturated soils mean a lack of oxygen. Since we rely on the aerobic (oxygen-loving) bacteria for treatment, there will be less treatment in oxygen-poor soil.

There is also the physical limitation of the soil being unable to accept more water. Think of trying to put more coffee into an already full cup. Third, soil conditions may change along a hill slope, and you may encounter natural drainage paths. If you excavate trenches without paying attention to color changes, the trenches can intercept this natural drainage water. At that point, the trenches become a

drainage system for that water, which most likely will overload the system and cause failure. That can mean an expensive re-installation.

Standard tool

There is a standard nomenclature for describing soil color called the Munsell soil color notation. We teach about how to read soil color in our soils classes. If you are not doing site evaluation or design work, it is not absolutely necessary to know the notation, but it helps to be able to recognize the conditions.

You should see the notation on the site evaluation reports and the design. If color is not a part of the evaluation, you should check with the evaluator or designer to see why not, particularly if you see colors that might indicate the presence of saturated soil. We will address the Munsell notation and other soil characteristics in future articles. ■



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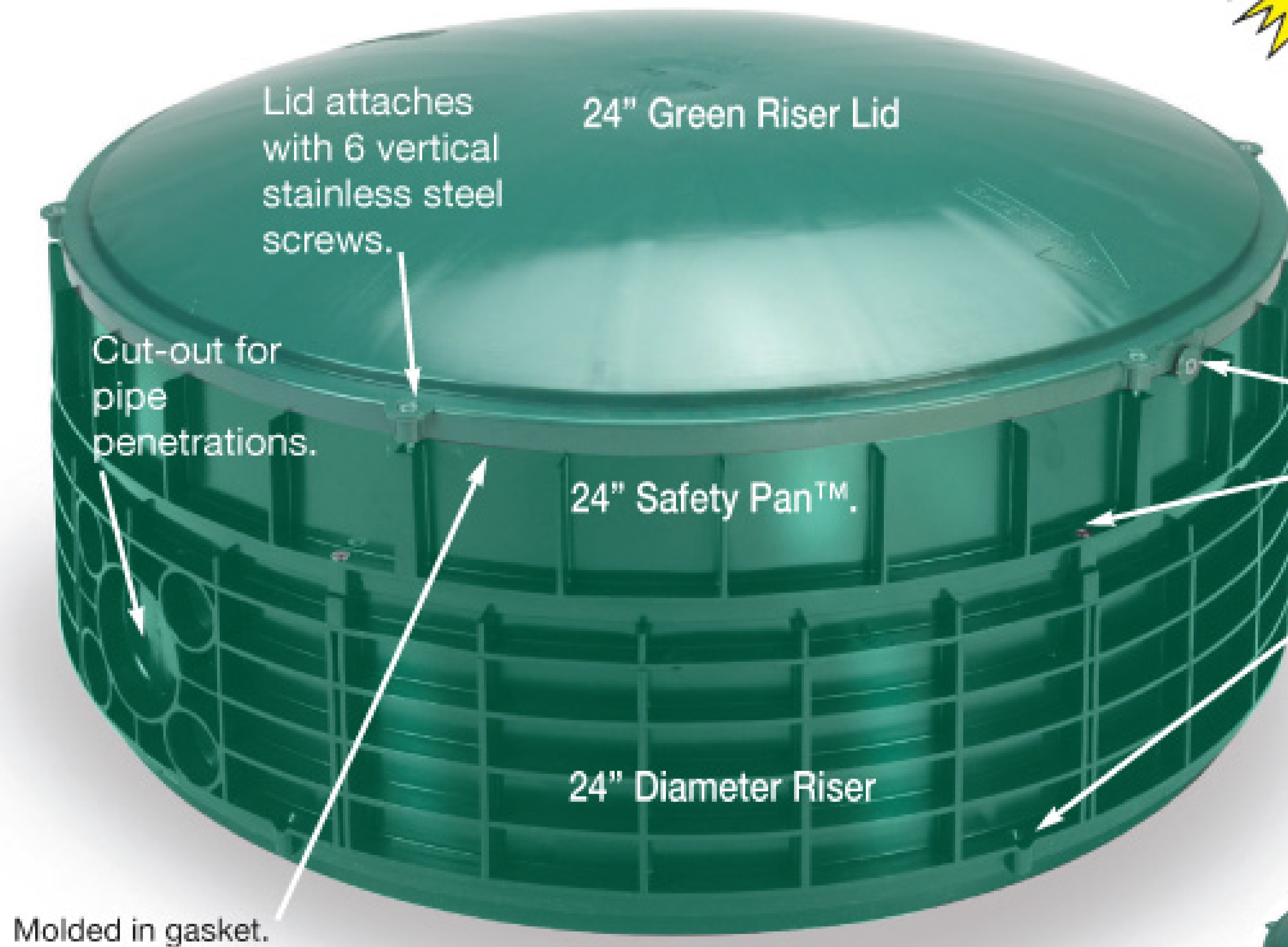
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5,852,901; other
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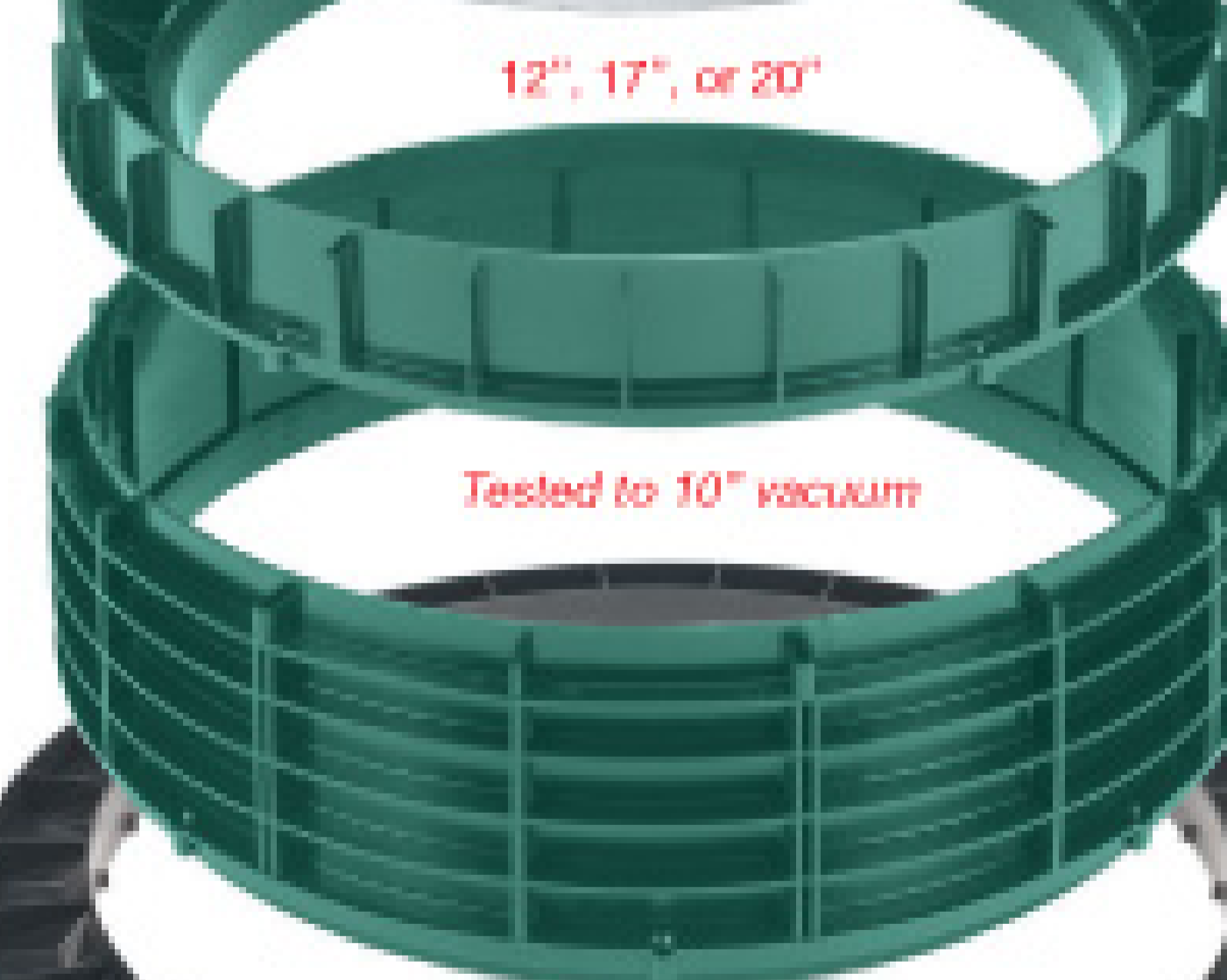
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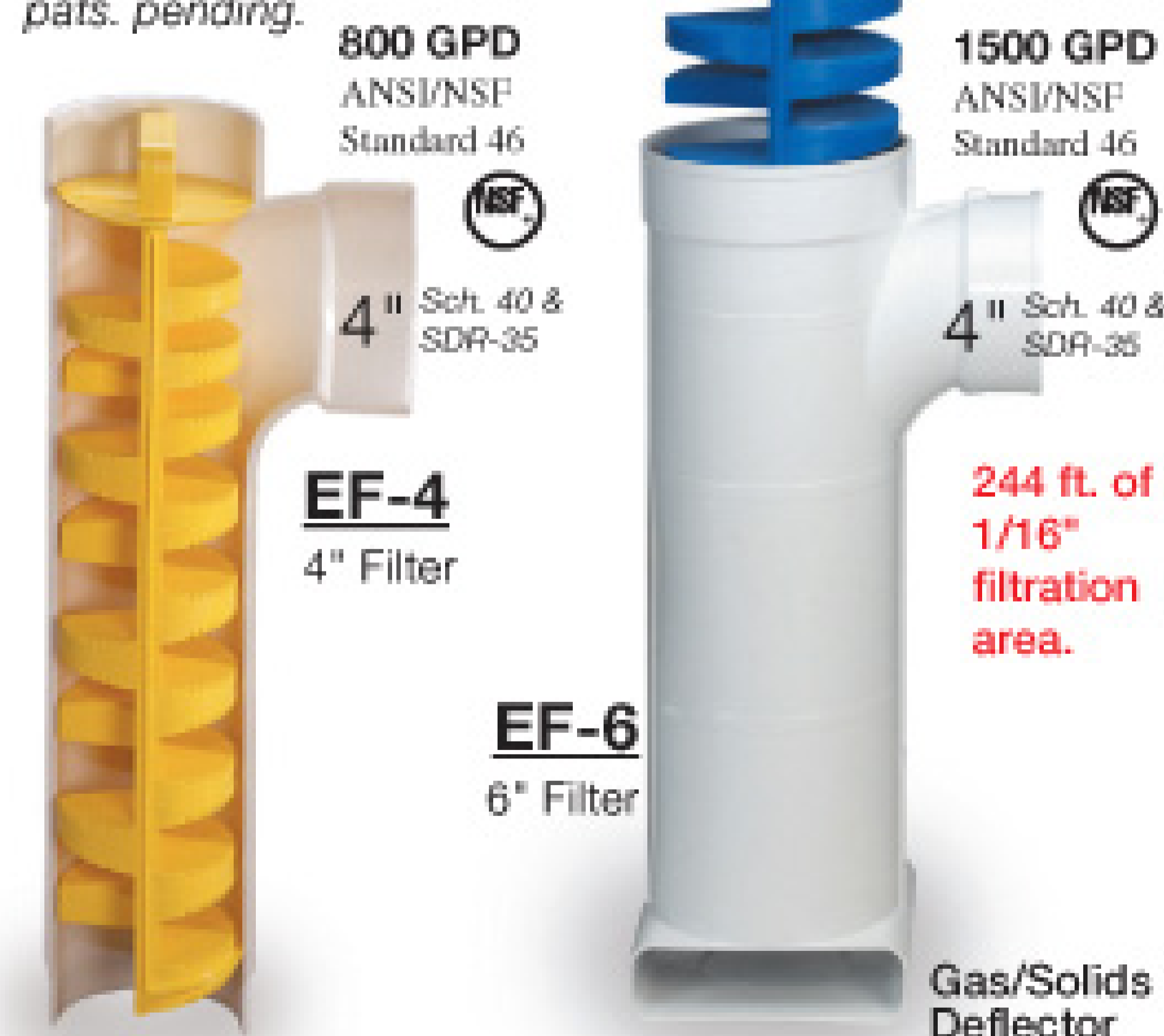
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Brian Cyrus, owner of Obsidian Ridge Contracting Inc., chooses equipment that helps him complete installation jobs efficiently. (Photography by Jayne Onceal)

Keeping More Dollars

Efficiency and careful planning help Obsidian Ridge Contracting deliver quality installations while maximizing profit on every job

By Gil Longwell

Obsidian Ridge Contracting Inc., Redmond, Ore.

OWNERS: Brian and Rebecca Cyrus

YEARS IN BUSINESS: 5

MARKET AREA: 75-mile radius

ONSITE BUSINESS MIX: 10 percent new construction; 90 percent repairs

EMPLOYEES: 3

AFFILIATIONS: NOWRA; Oregon Onsite Wastewater Association; National Oregon and Central Oregon Homebuilders Associations

WEB SITE: www.obsidianridgecontracting.com



Brian Cyrus keeps more of the dollars that pass through this business because of his highly detailed job planning. “Tools are cheap,” he says. “Leaving a jobsite to get a forgotten tool is expensive.”

The same goes for a missing pipefitting, piece of wire or even a broken tool. Cyrus, co-owner of Obsidian Ridge Contracting Inc., in Redmond, Ore., does not start a job until all the materials are stockpiled on the jobsite. Tight job planning is just one of his keys for success.

Named after a local geologic formation, Obsidian Ridge Contracting has been serving three counties within a 75-mile radius of Redmond since 2004. Starting the business with his wife, Rebecca (who still handles accounting and office functions), was a natural continuation for someone who has been involved in excavation enterprises since eighth grade.

Cyrus’ earlier excavation activities were in agriculture, but farming

and timbering have nearly stopped in his area, about 100 miles east of Eugene. So he followed the opportunities into general excavation contracting. “Onsite system installation is both a logical addition to general excavating and a business necessity,” he says.

Right the first time

“Mobilizing for this work is expensive and time consuming,” Cyrus says. Once his crew is on site, they stay until the job is done right. To cut cost and increase productivity, he has custom-outfitted a Freightliner straight truck with a compressor and generator.

Carrying duplicates of the most commonly used tools and a similar depth of pipes, parts and components, he is ready for nearly any onsite surprise. “We deploy a better equipped, more versatile truck for less than the cost of a new high-end pickup without the equipment,” he says. The few times he has had to

“We deploy a better equipped, more versatile truck for less than the cost of a new high-end pickup without equipment.”

Brian Cyrus

go for a part, he returns with at least two — the one he needs, and a spare for future jobs.

The relatively small size of his operation is an advantage. Traditionally, larger companies passed up small jobs that he could easily snap up. Larger companies would also subcontract site preparation work, site clean-up, or job completion to Cyrus so they could move on to larger jobs for which they were better suited. Smaller jobs seemed to seek him out and this was fine with him. But times are changing. He recently attended a pre-bid meeting where 29 excavators were present. The norm had been two to three



Brian Cyrus prides himself on doing quality work that ensures customer satisfaction and minimizes call-backs.

bidders at such meetings.

Attention to the detail sets his crew apart as well. For example, when gluing pipe joints and fittings, they clean each pipe, then use the appropriate primer before applying the glue and making the connection. He has seen competitors called back to repair poorly prepared glue joints.

This meticulous approach to the work has gained the respect and support of his three-man crew. Matt Yoder, foreman, supervises when Cyrus is not on site and also operates equipment. Dale Piper and Steve Remilong are pipe fitters and installers who handle any assignment Cyrus or Yoder may send their way.

Versatility and cross training let Obsidian Ridge field a full complement of skills with a small number of workers. "The crew has developed a satisfaction with and pride in their work," Cyrus observes. "This is due in part to my approach to job planning."

"We do not push to hurry a job, but we do not linger either. When I leave a site, I know that the next time I am there, it will be for a new job."

At right, an Apache Bullseye 5+ laser receiver helps keep the blade level for finishing work.

Solutions through education

Cyrus understands that all soil is not well suited for onsite systems. In his service area, importing soil to make a site suitable is not an option. At training sessions, such as the NOWRA Installer Academy, he has learned about systems for marginal sites.

Informal discussion sessions at conferences are real eye-openers. There, he hears the practical aspects of emerging technologies and installers swap experience on how they overcome problem sites. "This pays off when we can make marginal lots buildable or lower the cost of conventional systems," he says. "We become more valuable to our customers."

Although new installations are down by 90 percent from two years ago, repairs and upgrades are on the increase. Cyrus finds people are willing to install innovative technologies to solve problems and avoid complete system replacements. "Without new technologies, it is challenging to keep busy," he says. "If the old ways are not successful, they are counterproductive and quickly abandoned. When new products emerge, you must try them to see how they work, and how you can use them to do a better job."

Of the failing systems he encounters, he believes the most common cause is overuse. "Most people cause their own problems," he says. Often, he fixes the system by repair-

"When I leave a site, I know that the next time I am there, it will be for a new job."

Brian Cyrus

ing plumbing issues, such as leaky faucets and toilets. Sometimes the owner has no idea his absorption area is under the lawn irrigation or sprinkler system; sometimes the owner knows that but does not understand the impact sprinklers can have.



Legacy Lots

Many deeded lots created up to 40 years ago still remain in the unbuilt inventory held by speculators, homebuilders, or individual investors in Oregon. These lots were created before modern onsite regulations, and they create challenges for landowners, installers and regulators.

"Sanitarians are called upon to validate legacy lots' site suitability and approve the original system proposal," says Brian Cyrus, owner of Obsidian Ridge Contracting. "They make the final call regarding system type and location."

County sanitarians work to find a balance between current regulations and the need to enable legacy lots to be viable homesites. Each county has a slightly different take on these situations, and often the sanitarians can find solu-

tions to site challenges. Occasionally, the original plans need to be altered to address a better understanding of site constraints or to take advantage of new technologies.

Cyrus finds that legacy lots are the most likely places where he will install AdvanTex systems from Orenco Systems Inc. There is still plenty of land to subdivide that is suitable for conventional systems, whereas legacy lots require advanced technology.

Validating old plans and moving legacy lots from inventory will help development rebound. The important role for installers and sanitarians is to be sure the new legacy created is one of good siting and proper operation. "Homeowner education is part of every proper installation," Cyrus says.

Cyrus estimates that about 10 percent of the failures result from lack of pumping. Other problems he sees are crushed tanks and poor installation practices. Regardless of the problem or cause, sharing his knowledge and educating homeowners is a critical task to solve problems and avoid future problems. Good work on repair jobs also leads to future business.

Listening to the site

In the Redmond area, the local economy is now based on "importing wealth, since harvesting food and timber are essentially extinct," Cyrus says. Recognizing and adjusting to these changes has brought new opportunities.

Even in the slow market, developers, builders and landowners seek his expertise to balance the competing demands placed on a property and its soil. A panoramic view of the nearby mountains nearly always influences the location and orientation of the house. Sometimes the best house site is also the best onsite system location. This is most often true on "legacy lots" (see sidebar), which may have been approved more than 15 years ago. These lots were subdivided when the siting and design standards were more relaxed.



Attention to detail, down to careful gluing of pipe joints, is a hallmark of Obsidian Ridge Contracting.

best attributes of the site are used to the best advantage. The landowner winds up with an environmentally responsible project that compliments the site. As Cyrus summarizes it, "We make dirt look good."

Always adapting

Cyrus acknowledges he is self-taught, having practiced the learn-by-doing approach as he grew his enterprise. By continually building

"When new products emerge, you must try them to see how they work, and how you can use them to do a better job."

Brian Cyrus

Cyrus lets each site owner talk to him. Then, taking all things into consideration, he develops and presents a vision of the completed project to the landowner for consideration and negotiation. From these conversations, a site development plan emerges and the necessary permits are obtained from the county-based sanitarian who implements state-wide regulations.

When all is said and done, the

on his skills, he has separated his business from others. He has also developed techniques that increase productivity and lower costs without sacrificing the quality for which he is known.

Investing in a laser leveling system with a price tag of more than \$2,200 was not a decision quickly made. But when he realized that mounting the laser target or receiver on the backhoe's boom freed-up the "rod-man" for other more productive tasks, it was an easy choice. "I have seen others not make this purchase because they do not understand the savings it will bring," he says. Another benefit is much better excavation elevation control, which is essential when installing systems on-contour on complex slopes.

Obsidian Ridge Contracting uses EZflow aggregate substitute from Infiltrator Systems Inc., for faster installations. The product combines perforated pipe and plastic foam pellets in pre-assembled units that are easy to carry and position. Matching his backhoe bucket's width to the EZflow bundles' 12-inch width avoids excess site disruption. State regulations allow the substitution of a 12-inch trench with EZflow aggregate for a traditional 24-inch aggregate and perforated pipe trench.

Cyrus specifies filter fabric that is pre-cut by the supplier to specific widths. This eliminates time-con-

suming field cutting so installations move more rapidly.

Flexible equipment

Supporting a wide range of installations and earth moving work requires adaptable and well-maintained equipment. Insight is also valuable for recognizing innovative ways to use the equipment on hand.

Cyrus has been selective in stocking his fleet. He has three John Deere machines: a 1984 510B and a 2002 310SG backhoe, and a 1999 550G LT dozer. For a lighter footprint and for their specialized capabilities, he uses a 2005 Terex HR3.7 mini-excavator and a 1999 Bobcat 753 skid-steer. His utility truck is built on a 2000 Freightliner FL70 chassis. When he encounters basalt, a very hard igneous rock, he can call on a hydraulic hammer to break it up.

The bottom line

Whatever equipment he may deploy, and no matter the site conditions, Cyrus takes a responsible approach to the job. "Many contractors give my business a bad name," he says. He believes there is a significant difference between excavation contractors who also do onsite installations, and installers who also do general excavation.

For Obsidian Ridge Contracting, success comes from detailed planning, scheduling and attention to detail. These attributes are keys to maximizing productivity. Cyrus abhors wasted time, lost opportunities and do-overs. The fewer repairs he makes, the more dollars he can keep. That's his bottom line. ■



Brian Cyrus sets up a Spectra Precision Laser LL500 leveling system.

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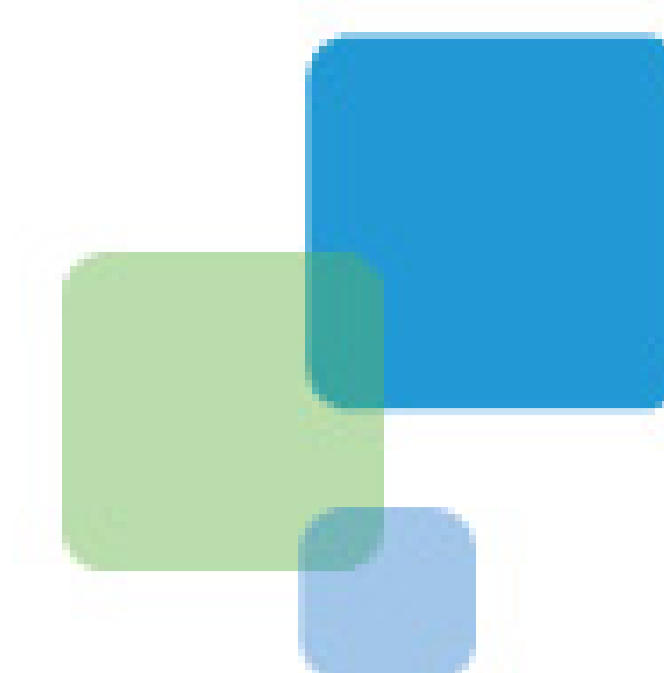
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NOWRA HEADQUARTERS
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President
Thomas Groves

Welcome to the second issue of the NOWRA Onsite Journal for 2009. As you may have gathered from the packaging, this issue of the NOWRA Onsite Journal is unlike any previous issue. This edition is a direct benefit of the newfound partnership between COLE Publishing and NOWRA. We'd like to thank COLE for assisting NOWRA with this publication and for their ongoing support of our organization and the onsite industry as a whole.

So you may be asking yourself, "Why is this issue with the Onsite Installer magazine?" That's a good question. NOWRA's collaboration with COLE started a few years ago with COLE's support and promotion of our past Installer Academies and Annual Technical Conferences. This led to discussions on how we could continue to partner.

Here are just a few of the great benefits our new Partnership with COLE Publishing will offer NOWRA members and Business Benefit Program members:

Onsite Journal – The NOWRA Board made the decision to cut back on the Onsite Journal for 2009 to reduce costs. COLE graciously offered to assist NOWRA with maintaining the publication on a quarterly basis. By combining the two publications, it will increase both of our circulations and our exposure. This is a great opportunity to be seen in the NOWRA's Septic Locator.

Installer Academy – NOWRA was looking for a different location for the Installer Academy, and upon COLE's suggestion, the Pumper and Cleaner Environmental Expo appeared to be a great opportunity to showcase our Academy. So we are pleased to be offering the 5th NOWRA Installer Academy immediately prior to the Pumper Show in Louisville, KY in February 2010. This event will include the traditional NOWRA Backhoe "Roe-D-Hoe" which will be held in the exhibit hall during the Pumper Show hours for all to see and attend.

There have also been many other changes with NOWRA since my last president's message – addressing issues concerning the economy, affiliates, communications, and the conference. The downturn in the economy has led to decreased professional memberships and attendance at national programs all across the country. Unfortunately, our industry is no exception. Although we are beginning to see a turnaround with the economy, it still may take a year or more before our industry feels the effects. On the average, our affiliate groups are seeing a 30-40 percent decrease in membership. This has prompted some of NOWRA's traditionally stronger affiliates not to maintain their affiliation with NOWRA for 2009. Given the current state of the economy, reductions in state membership, and local issues, the NOWRA Board fully understands and accepts these decisions with the hopes that they will be able to re-affiliate in the near future.

As many of you may be aware from our new NOWRA "e-News" communication, NOWRA is under new management with one of our affiliates,

the Washington OnSite Sewage Association (WOSSA) providing interim support. The NOWRA Board's decision for this move was primarily due to financial constraints with the previous management team, BTF Enterprises. The contract with WOSSA is a temporary arrangement based on a reduced level of administrative support to bridge the gap to the new "NOWRA." We greatly appreciate the support of the WOSSA Board as well as John Thomas, WOSSA executive director, and Sherene Lewis, WOSSA administrative manager, for helping NOWRA to make this transition immediately following the April Milwaukee conference. It could not have gone smoother.

The good news is that the NOWRA Executive Committee and Board of Directors have been working diligently to build from our many beneficial partnerships while also formulating a plan for the future. The plans include more joint conferences, such as the NOWRA Installer Academy at the 2010 COLE Pumper Show and the tentative plans for a U.S. EPA MOU Super-Partner Conference in 2011 with NEHA and SORA. We also plan to move forward with our resource library for NOWRA members and to be more prominent with national issues and timely responses to EPA, Congress, and others on national issues of interest to our members.

Additional changes include the re-evaluation of our membership dues rate for NOWRA affiliates and for Business Benefit Program members. While NOWRA has been doing all of this, we have also been attempting to keep our membership up-to-date with the news in the industry, trends in the housing/construction market, U.S. EPA MOU partner news, etc. through the new NOWRA electronic monthly newsletter, "NOWRA e-News." The e-News is not meant to replace the Onsite Journal; it is just a mechanism that we can use to reach our membership in a more timely fashion with relevant and timely news for the industry.

The NOWRA Board is excited about future partnership opportunities that we will be able to reveal in the near future. These partnerships will greatly strengthen NOWRA in the eyes of our members, affiliates, and the on-site industry. We plan to maintain and build on our partnership with COLE Publishing through additional issues of the Onsite Journal as well as other ventures. We appreciate the support that COLE has provided NOWRA during this transitional period, and we ask that our members also thank COLE and support their programs and activities, such as the Pumper Show.

In closing, I would just like to thank the NOWRA Board of Directors and Committee Chairs who have been burning the midnight oil in running this organization on a volunteer basis since June. Sometimes it can be a thankless task, but we would not be where we are today without your support and commitment.

Sincerely,

Thomas W. Groves
NOWRA President





LOCAL AFFILIATES' UPDATES

Colorado Professionals in Onsite Wastewater (CPOW)

This has been an exciting year in Colorado. CPOW has been working to create model statute and guideline documents to help guide change in the OWS industry in Colorado. The stakeholder process is underway to listen to concerns and support of those that could be affected by new legislation that would incorporate at least some of the CPOW wish list. CPOW is moving forward to support legislation that would represent what many local regulators and others feel are changes that have been needed for quite some time. The suggested changes are not limited to but include:

- "Transfer of title" inspections for OWS
- State-wide certification/credentialing of OWS practitioners

The Board of Directors has met with legislators, lobbyists, and the Colorado Department of Public Health and Environment (CDPHE) to help chart the best course for improving the standards of the on-site wastewater industry in Colorado. Much work lies in front of the organization, but a dedicated group is ensuring the ball keeps rolling forward. We are currently scheduled to present at the Colorado Water Quality Control Commission, Colorado Environmental Health Association, and our own CPOW annual conference. We will be continually meeting with stakeholders across the state. CPOW is looking for support from other state regulatory agencies or NOWRA affiliate groups that have been down this road before. If you would like to learn more about CPOW and their activities or you feel you have wisdom to offer please visit our Web site at www.cpow.net or contact Becky Roland at broland@phoenix-amc.com.

Minnesota Onsite Wastewater Association

Legislative/Regulatory

The MPCA (Minnesota Pollution Control Agency) has made major changes to the SSTS (Subsurface Sewage Treatment System) Rules effecting on-site system design, installation, maintenance and inspection. These changes include: Advanced training and licensure requirements, increased septic tank requirements, and a new process for product registration for treatment and distribution products. Several MOWA members and our lobbyist, Gary Botzek have been actively involved in the legislative process.

Conventions/Seminars

The Summer Seminar is scheduled for Thursday, Aug. 27 at Camp Courage/Camp Friendship near Annandale, Minn.

Topics will include:

- Describing and interpreting coarse sandy soils
- Requirements for land application or disposal of flammable waste traps, car wash waste, and sand traps.
- Discussion of the performance of the various distribution media products installed at this site.

- Tour of the Albertville Class A Wastewater Treatment Plant that uses reed plants for treatment and removal of phosphorus and UV disinfection.

The planning has started for the 2009 Annual MOWA Convention. The convention is scheduled Feb. 1-3, 2010 at the Arrowwood Resort in Alexandria, Minn.

Strategic Planning

The MOWA BOD went through a Strategic Planning process in January. The group agreed to focus efforts in two key areas:

- Enhance our relationship with regulatory agencies and continue our participation in the legislative process.
- Membership: The Membership Committee is developing a plan to attract new, younger members and improve the process for recruiting and retaining our volunteers.

To learn more about the Minnesota Onsite Wastewater Association:

- Visit our Web site: www.mowa-mn.com
- Contact Pat Martyn, Executive Director: (952) 345-1141 or (888) 810-4178

Ohio Onsite Wastewater Association - OOWA

Ohio has good news and bad news to report. First the bad news: The legislative battle for new sewage rules continues with no end in sight. The recently passed budget bill (Amended Substitute HB 1) extends the suspension of the sewage rules to Jan. 1, 2010. This means sewage rules vary county by county and contractors continue to have to obtain a separate bond for each county they work in.

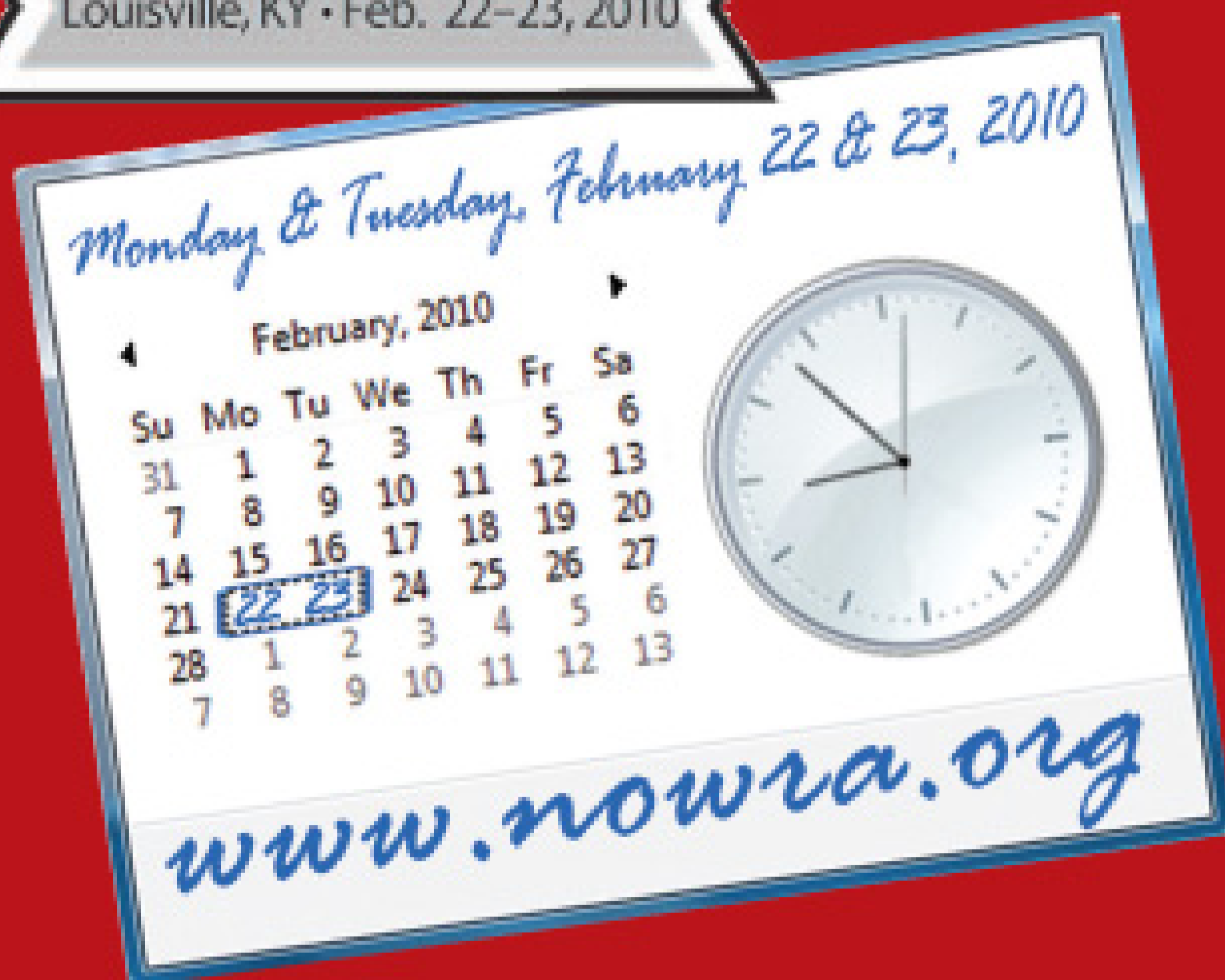
Since the beginning of the year, widely conflicting bills have been introduced to both the Senate and House that would amend the Ohio Revised Code. Two of the proposed bills, SB 110 and HB 141 closely follow the recommendations as set forth by the Household & Small Flow Onsite Sewage Treatment System Study Commission. OOWA supports these companion bills and has testified on their behalf. We are hoping that "science-sense" and common sense prevail and these bills are passed at the beginning of the year.

Now for the good news. Ohio is the only state to be awarded federal stimulus money, now called the American Resource Recovery Act, for the repair or replacement of household sewage treatment systems. Five million dollars will be used for homes with failed sewage systems. Qualifying homeowners must pay at least 25 percent of the total project cost and contractors must follow federal requirements including the Davis-Bacon Act. This is a much-needed program that not only benefits homeowners, but also gives a boost to contractors during these tough economic times while protecting the environment and public health. ●



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Reports from Our Committees

The real "work" of any organization is done by its committees. This is certainly true of NOWRA! Many members volunteer their time and expertise to work on a broad range of issues that affect our industry, our affiliates, our businesses, our practices, our regulations, and the public we serve.

Much has already been accomplished this year by our committees. Read below the mid-year reports from each of the committees. Please contact the committee chairs with comments or ideas that you have to improve or expand what NOWRA does. Better yet, ask to join a committee by e-mailing a committee chair or applying online at <http://www.nowra.org/committees.html> and help us be better!

Education (Sara Christopherson, Chair)

The Education Committee's mission is to provide member education on current and emerging issues through the annual conference, Installer Academy, specialty workshops, and roundtable discussions, which offer CEU's for attendees.

At this year's Annual Conference, which was held in April in Milwaukee, Wis., had an excellent educational program that included a pre-conference workshops, over 35 technical presentations, NOWRA's two-day "A to Z" overview of on-site wastewater treatment, keynote speakers from Canada, EPA, and the Milwaukee Metropolitan Sewerage District, and a field trip to five different on-site treatment systems in the Milwaukee area. Proceedings of the educational program were produced on CDs and are available on NOWRA's website.

Currently, the committee is working with the Annual Conference Committee to develop an educational program for the two-day Installer Academy to be held together with the Pumper Show in February 2010 in Louisville, Ky. The committee is also developing a NOWRA program for the Pumper Show's Education Day.

If you are interested in contributing to the committee contact Sara Heger Christopherson at heger001@umn.edu. The EC has a conference call the third Wednesday of the month at 1:00 p.m. EST. Between meetings committee members are expected to contribute to one or multiple programs the education committee is working on. This can range from a few hours per month to as much time as one has to volunteer.

sity resource materials, and national and regional EPA on-site information.

Judy Sims and student aides at Utah State University are presently working on compiling the information that will be included in the Resource Library. We hope to have a draft site developed by late fall 2009.

Specific activities that we are engaging in include:

Defining and developing the overall concept and outline of the site, including deciding and approving what materials we want to include and participating in the design of the organizational framework for the library materials.

Identifying links to informational and educational resources information that can be included on the Web site (we will seek approval for all links before we add them to the site and we will consider copyright laws).

We are still looking for enthusiastic volunteers to help us! If you are interested in participating, please contact Judy Sims, task force chair, at jl-sims2014@gmail.com.

Resource Library (Judy Sims, Chair)

In December 2008, the NOWRA Executive Committee appointed a Task Force to develop an OnLine Resource Library concerning on-site and decentralized wastewater treatment. This project was included in the 2008 NOWRA Strategic Plan as an essential service that NOWRA will provide to members and affiliate groups. The library was requested both by the affiliates to find articles to utilize in their publications as well as manufacturers who are looking for case studies and research.

We envision that the NOWRA Resource Library will become the "go-to" Web site for on-site/decentralized information. The library will include NOWRA conference materials, presentations, and white papers and other available research and case study materials as well as links to other information such as NOWRA affiliate newsletters, state/local regulations and informational/educational Web sites, homeowner educational materials, training opportunities and manuals, septage disposal information, univer-

Conference 2010 (Randy Miles, Chair)

Due to the poor economy, NOWRA is looking carefully at whether enough interest and support exists to hold our 2010 Annual Conference in St. Louis, Mo. in October. To defray costs of a possible conference, the Conference Committee is looking at the potential for holding a joint meeting with the American Society of Agricultural and Biological Engineering (ASABE) in St. Louis. ASABE has been a strong supporter of on-site and small community wastewater treatment systems, which held 11 international symposia on on-site wastewater treatment since 1972.

Installer Academy 2010 (Tom Fritts, Chair)

NOWRA is excited to partner with the annual Pumper Show Feb. 24th thru 27th, 2010 in Louisville, Ky. by offering our annual "Installer Academy" on Feb. 22nd & 23rd. The Installer Academy will offer valuable training covering several topics in the on-site industry. And what a great opportunity to travel to one location for national training and walking through one of the finest shows in our business. Don't worry we have not forgotten the Backhoe Roe-De-Hoe. The defending champion along with state champions will be competing all week on the floor of the show. Come for the education. Come for the show. Come for the fun. We will have plenty of all.

2011 Super Conference

(Craig Gilbertson, Chair)

NOWRA is working to expand our working relationships with other associations with similar water quality agendas. Currently we are planning a "super conference" in Columbus, Ohio to partner with the National Environmental Health Association and the State Onsite Regulators Alliance to offer the opportunity for each of our memberships to join together to discuss mutual goals and how we can better coordinate our activities. We intend that this conference will offer an excellent opportunity for exhibitors to reach a broad range of potential clients in one rather than three shows. Our hope is that the "super conference" is a large success and spurs interest to partner with other associations in the future.

Finance (Greg Graves, Chair)

Last year and thus far in 2009, the economic downturn has made it difficult for NOWRA and its affiliates to sustain member services and conference activities. Fortunately, it appears at this time that NOWRA will have sufficient operating funds for 2009 although, like most other organizations, we are feeling the effect of the recession.

The Finance Committee is actively working on several projects to help secure the future of NOWRA. Those projects are:

1) Wrap up remaining invoices from the Milwaukee Conference: There are a few bills that remain to be resolved, and the committee is helping the treasurer address them. We anticipate these issues will be resolved soon to allow NOWRA to move forward.

2) Evaluate Dues structure: The Finance Committee will be working to evaluate the way NOWRA funds its activities, including State Affiliate dues and Business Benefit Partnerships. The goal is to provide a recommendation to the Board of Directors by October 1. Members with thoughts or interest in this area are invited to share their ideas with the Finance Committee. Comments can be directed to Greg Graves, phone number (419) 668-4471, e-mail: ggraves@norweco.com.

The Finance Committee is always looking for additional members to help the organization. If you have any interest, please contact Greg Graves at the above referenced information.

Marketing & Communications (Mike Stoll, Chair)

The Marketing & Communications Committee has been working hard this year to maintain communication with our membership and other interested parties regarding NOWRA's current activities, accomplishments and other information relevant to our industry.

Activities that are on-going are:

- Publishing the monthly "e-News" to provide a timely summary of events and information of interest to our industry
- Working with the Web & Technology Committee on NOWRA's Web site to post a help wanted/jobs available page
- Assisting other committees in editing and publishing

technical documents for our membership. Recent documents completed for the Technical Practices Committee that may be found on NOWRA's Web site include:

- A "white paper" for engineers to describe the benefits of decentralized wastewater treatment facilities to small community clients (see Technical Guidance for Homeowners) regarding the selection and use of water softeners in homes served by on-site systems
- Plans for the future documents include:
 - Homeowner on-site system guidance – to be redone in coordination with Tech Practices
 - Several one-page documents on homeowner-related topics such as septic tank lid safety, etc. in coordination with Tech Practices

Technical Practices (Allison Blodig, Chair)

The Technical Practices Committee's responsibility in NOWRA is to develop technical materials on proven and successful technologies, soil science, transmission, installation, and recycle/reuse practices that ensure the effective implementation of safe on-site systems and water quality protection. We are always interested in having new members and have added three recently. Jill Hass, director of research and development at Clearford Industries Inc.; Collin Bishop, head of government relations and business development at Bord na Móna Environmental Products U.S. Inc.; and Bob Pickney, chief technical officer at Adenus, Inc.

The TPC just finished a white paper that promotes decentralized options to decision makers of small communities faced with upgrading their wastewater treatment services. This document was submitted to the Board and approved on June 25. It should be available at NOWRA.org soon.

The TPC, with help from the Education Committee, updated the Onsite System Guide for Homeowners. This document will be finalized and submitted to the board for approval at the next board meeting.

We are in the process of reviewing information from the Leadership in Energy and Environmental Design (LEED) to determine how our manufacturer members could fit into this program. We are also planning to comment on and update fact sheets for several types of technologies. These fact sheets will all follow a standard format and give basic introductory information for use by our installer members to educate themselves, prospective clients and/or regulators unfamiliar with technology.

If you have any questions about the TPC or would like to become involved please contact Allison Blodig at (913) 422-0707 or by e-mail at ablodig@biomicrobics.com.

External Affairs (Mary Clark, Chair)

The External Affairs Committee is focusing on efforts with the EPA MOU Partner group, which has expanded this year to include 14 national organizations with a water connection. Here are some of the accomplishments of this group and the individual organizations over the past 6 months:

A tri-fold brochure describing the partnership and the work they are doing has been developed and recently published (http://www.epa.gov/owm/septic/pubs/final_decentralized_mou_agreement_12-17-08.pdf).

- A MOU Trainings/tools Matrix has also been developed and is being completed with each organization's types of training programs and links to resources compiled into one spreadsheet.
- The MOU group is compiling research needs priorities for promotion to become real projects, including scientific and engineering priorities, to social, economic, management and education and outreach topic areas.
 - EPA has sponsored a conference on surface discharging decentralized systems.
 - EPA has also sponsored 2 webinars on the Economic Stimulus funding opportunities and how decentralized systems qualify.
 - WERF ([werf.org](http://www.werf.org)) has published new fact sheets on creating a Responsible Management Entity (RME) that should be a great starting point for community stakeholders to consider the various administrative and technical levels of management available.
 - The Water Environment Federation has asked NOWRA (which we happily accepted!) to be a sponsor to their conference entitled, Cities of the Future 2010 (<http://www.wef.org/ConferencesTraining/ConferenceEvents/CitiesoftheFuture/>).

We are looking to expand the membership and work of the External Affairs Committee, and anyone interested in helping, please contact Mary Clark (marykclark@comcast.net), cell (802) 917-4746. Thanks!

Model Code

(Tony Smithson, Chair)

While interest in performance-based codes for regulating onsite systems seems to grow, implementation of such codes has been slow. To help initiate code reform, the Model Code committee is sponsoring a Midwest regional effort to develop a regional code for product approval. The states who have agreed to participate are Illinois, Iowa, Minnesota, and Wisconsin. The first meeting of this group is expected in the third quarter of this year.

Affiliates

(Brian Scheffe, Chair)

The NOWRA State Affiliate Group has been meeting monthly in order to keep the membership well informed as to the changes and most recent developments within the NOWRA community, as well as to solicit the opinions of the greater membership to help better inform the NOWRA Board of Directors.

Some of the most critical issues facing NOWRA at this time could substantially impact the organization and member organizations must be kept abreast of how such changes might affect NOWRA and its affiliates. Some of the strongest opinions voiced thus far have been related to the I4A database/septic locator, the temporary transition of directorship to the Washington OnSite Sewage Association (WOSSA), future conferences, the Onsite Journal, possible organization partnerships, and the Installer Academy.

The group of affiliate leaders will continue to meet monthly until further notice. It is not only important to keep the member organization well informed, but also to continue to solicit their opinions.

OSJ Editorial Board

(Matt Byers, Chair)

NOWRA's Onsite Journal (OSJ) is being cooperatively produced with COLE Publishing. COLE will include the OSJ in its popular 'Installer' publication as an insert. NOWRA has recently convened an editorial board to replace the paid staff that once performed the duties of collecting pieces for the OSJ. This board is just getting started and is working on its first issue, the one you're now reading. The OSJ board covets your input, as we all grow together seeking to produce an informative and useful resource for the onsite community.

Web & Technology

(Ron Suchecki, Chair)

NOWRA's website is a critical portal for our members and interested parties to learn of NOWRA's activities and initiatives and find technical and public interest papers regarding the onsite industry. The Web & Technology Committee is looking for enthusiastic members to help with the layout and content of the website and to incorporate such things as RSS feeds, slide shows, training modules, job boards, interactive surveys, and other ideas. If you are interested in this important function, please contact Ron Suchecki at ron@hootsystems.com ●

New Fact Sheets Provide Practical Guidance on How to Become a Successful RME



We know that good management of decentralized systems is essential to ensure minimum standards of public health and environmental protection and to make a sound contribution to more sustainable infrastructure. To do this, we need more successful, responsible management entities (RMEs), from contract service providers through to own/operate arrangements. A recent WERF National Capacity Development Program funded project provides practical guidance on how to become such an organization. The Institute for Sustainable Futures, UTS led the project, with valuable support from Stone Environmental, Scott Johnstone, Richard Pinkham, Elizabeth Dietzmann and many others.

The goal of the project was to investigate the collective experience from across the U.S. and to develop a resource that helps organizations work out how best to deliver locally-appropriate services, that are financially and socio-economically feasible, and that provide adequate public health and environmental protection.

Two successful workshops were held, one in Memphis NOWRA meeting in April 2008, which attracted about 40 registrant covering regulators, public RMEs, private RMEs, successes, failures, and 'wannabe-s' (those who are looking to set up businesses in this space) who shared their stories and experiences. A second workshop was held at WEF's inaugural Sustainability Conference in June 2008 in Washington D.C. with eight national leaders from inside and outside the field who considered critical dimensions to what's needed for RMEs to be successful.

The result is a series of 10 fact sheets now available on the WERF Web

site at www.werf.org/rme. These sheets contain all the basics, with lots of stories from real situations, and links to more detailed materials where that makes sense. The sheets target three groups: (i) existing RMEs seeking to improve their operations, (ii) prospective RMEs considering setting up, and (iii) other individuals and organizations looking to enter the decentralized wastewater field, and will significantly aid these groups to establish and run successful RME businesses. ●

Dr. Juliet Willetts, research director, Institute for Sustainable Futures, University of Technology, Sydney www.isf.uts.edu.au



First CIDWT Installer Training Program Train-the-Trainer Academy in St. Louis, MO August 9-12, 2009



The first Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT) Train-the-Trainer Academy introducing the new installer training materials was conducted on Aug. 9-12, 2009. Missouri SmallFlows Organization (MSO) served as the local host for the training event and worked with the St. Louis Plumbing Industry Council to secure the classroom. This installer train-the-trainer event was conducted following the completion of the Installer Training Program project.

The Installer Training Program project focused on development of a training manual and associated training materials. The manual Installation of Wastewater Treatment Systems is a comprehensive document describing the installation of various technological components which comprise decentralized wastewater treatment systems. The installation and startup checklists for these components are the heart of the training manual and guide the classroom instruction. The start-up checklists provide critical information that serves as the starting point for system operation and maintenance. This is essential to the continued use of on-site wastewater treatment systems as a sustainable part of our wastewater infrastructure. The associated training materials included slide presentations and assessment tools. The training

offered in Florida, Iowa, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, Oregon, Pennsylvania, Utah, and Virginia. The instructors and writing team are affiliated with training programs in Minnesota, Missouri, North Carolina, Rhode Island, Tennessee and Texas. Therefore, qualified instructors will now work with training entities located in 16 states to deliver the installer training materials.

The Train-the-Trainer Academy consisted of a two-day installer training course and an additional training day focused on how to use the materials to deliver an effective training program. The installer training course was an intensive two-day overview of the training presentations. Because of the volume of material developed through the writing project, the training course was extremely fast paced.

The training materials can serve as a reference for taking installer certification and credentialing exams. The course participants had the opportunity to take the examination for the Certified Installer of Onsite Wastewater Treatment Systems (CIOWTS) credential being offered by the National Environmental Health Association (NEHA) following completion of the two-day training.

The qualified instructors will use these materials to develop training courses for certification and/or continuing education units for delivery through their training programs. The training materials provide a starting point for development of multiple training courses for installers and other audiences. Participants indicated they would begin to conduct their first training classes in October and November 2009.

Instructors for the event included John Buchanan, University of Tennessee, Nancy Deal, North Carolina State University, Bruce Lesikar, Texas AgriLife Extension Service and Randy Miles, University of Missouri. Additional writing team members not present at the training event include Sara Christopherson, University of Minnesota, Kitt Farrell-Poe, University of Arizona, David Gustafson, University of Minnesota, David Kalen, University of Rhode Island, David Lindbo, North Carolina State University, George Loomis, University of Rhode Island, and Rebecca Melton, Texas AgriLife Extension Service.

The installer training manual will be available through the Midwest Plan Service located in Ames, Iowa. Midwest Plan Service can be reached by e-mail using mwps@iastate.edu, telephone at 800-562-3618, or web at www.mwps.org. The expected availability date for the manual is October 2009.

The writing team thanks the decentralized wastewater treatment industry for their input during development of these training materials. Because of the willingness of this wide array of industry members to share their knowledge, skills and business practices, these materials will serve as a comprehensive resource for installation practitioners for a long time into the future.

To access the checklists in an electronic format or gain information about future CIDWT Train-the-Trainer events covering the Installer, O&M service provider or Analyzing Wastewater Treatment Systems training curriculums please visit the CIDWT Web site: www.onsiteconsortium.org. ●

Contact information: Bruce J. Lesikar, Texas AgriLife Extension Service, College Station, Texas, b-lesikar@tamu.edu, (979) 845-7453.



materials bring the science into installing systems by focusing on the why and how to perform tasks rather than using a prescriptive number. Understanding why installation tasks are critical will promote installation of reliable long-term systems. The Installer Training Project was funded as part of the National Decentralized Water Resources Capacity Development Project from the U.S. Environmental Protection Agency and was administered through the Water Environment Research Foundation.

Eighteen people representing 12 training entities in 11 states attended the Academy. The attendees currently help deliver training courses

LEEDing the Way for NOWRA Member Opportunities



With so many company advertisements flooding us every day with information that promotes their “green”, “environmentally sensitive” or “eco-friendly” products, it’s hard for conscientious consumers to pick out the best products and services that support truly sound environmental practices from cradle-to-grave. Indeed, some of this ubiquitous greenwashing can be overwhelming to consumers who are willing to pay top dollar for ecologically sensitive products. However, in the building industry, one beacon stands out amongst others, lighting the way for sustainable building development – and that is the Leadership in Energy and Environmental Design (LEED) rating system. In a time when we are bombarded with confusing claims of green technology in everyday products, you may ask: How can an average person tell if a building they are renting or buying is truly sustainable? That’s where the LEED sustainable building rating system excels, providing confidence to the purchaser/renter that the building has been designed to the highest current environmental standards.

What is LEED?

Leadership in Energy and Environmental Design (LEED) is simply a rating system, formulated by a committee of experienced industry leaders to assign points to sustainable design. According to the LEED reference book, each point has the basic intent to “improve occupant well-being, environmental performance and economic returns of buildings using established and innovative practices, standards and technologies.” Implemented by the non-profit United States Green Building Council (USGBC), the LEED reference guidebooks provide one definition for what constitutes a “green building” currently accepted by industry.

LEED does not certify products. Instead this rating system assigns a credit to the green benefit of the product’s inclusion in a building project. For example, a proprietary greywater recycling system could not be LEED certified; however, including the greywater system on a project and thereby reducing the required potable water delivered by the municipal water distribution system to the building by 50% (*Water Efficiency Credit 2: Innovative Wastewater Technologies*) would earn the project LEED points.

This “point” rating system is used to calculate the benefits from the number of green features included in a building, in a campus or in a community installation from commencement of the design phase through to occupancy. To be considered a LEED building, minimum technical requirements are necessary within the design and/or during construction, and the team of designers blend these features with one another for best efficiencies. The minimum number of points required to be acclaimed as a USGBC’s LEED® Certified project is 40 points out of a potential 100. After reaching the benchmarks of 50, 60 and 80 points, the project can be considered LEED® Silver, LEED® Gold and LEED® Platinum, respectively.

How LEED works

The entire LEED rating system is broken into several categories which are more specific to different kinds of building construction such as: Home; Commercial Interiors; Core and Shell; Schools, Healthcare, Retail; New Construction and Neighborhood Developments. Of all of these LEED sections, the two that would most often apply to NOWRA members are the current New Construction (LEED-NC) section and the future Neighborhood Development (LEED-ND) section, the latter of which is currently under a pilot program and may be introduced later this year.

For USGBC’s LEED-NC projects, 100 available points can be allocated from the key performance criteria categories and 10 available bonus points can be allocated from the additional topics. In all LEED rating system sections, the explicit set of environmental performance criteria for LEED certification is organized into five key categories: Water Efficiency (WE), Sustainable Sites (SS), Materials and Resources (MR), Energy and Atmosphere (EA) and Indoor Environmental Quality (EQ). The two other focus areas are Innovation in Design (ID) and Regional Materials (RM).

Onsite System Applicable LEED-NC Points

Many municipal and state governments are stipulating that new government buildings must receive or could receive a LEED® Certified, or higher rating, thereby increasing the number of new LEED projects in the U.S. NOWRA members who are interested in participating in a LEED-NC project may want to familiarize themselves with the following prerequisites and credits of LEED-NC.

Windmill Development's Dockside Green Townhouses



LEED-NC Rating Category for Project	Possible Points
WE Prerequisite 1: Water Use Reduction	Required
WE Credit 1: Water Efficient Landscaping	2-4 points
WE Credit 2: Innovative Wastewater Technologies	2 points
WE Credit 3: Water Use Reduction	2-4 points
SS Credit 6.1: Stormwater Design – Quality Control	1 point
SS Credit 6.2: Stormwater Design – Quality Control	1 point
MR Credit 4: Recycled Content	1-2 points
MR Credit 5: Regional Materials	1-2 points
RP Credit 1: Regional Priority	1-4 points
ID Credit 1: Innovation in Design	1-5 points

Business Opportunity for NOWRA Members

Many opportunities exist for NOWRA members to join in commercial or campus building projects through the LEED-NC program. However, the on-site wastewater industry has one unique business opportunity that NOWRA members can tap into, and that is the “cost per points earned” economic advantage of introducing an on-site wastewater treatment and discharge system to the project in comparison to other design features that could earn LEED points. One criticism of LEED is that often the assigned LEED points do not reflect proportionally the additional financial burden that design modifications can bring to a project. Instead designers may choose one feature over another based solely on installation costs and not environmental protection value.

For example, a design team discovers that the inclusion of a living green roof on a building’s parking lot (LEED-NC SS Credit 7.1) can increase the construction costs of a building by 10% and instead chooses to add public area change rooms and some bicycle stands outside the building (LEED-NC SS Credit 4.2) for considerably less capital costs but earning the same LEED points. Developers then pressure designers to abandon more financially burdensome features.

Even though the point system is not always proportional to the cost of the added features, NOWRA members should be aware that this discrepancy may not apply to on-site wastewater servicing and instead may benefit our market. The addition of tertiary on-site treatment and discharge, stormwater treatment, graywater recycling systems or rainwater harvesting, amongst other on-site technologies, are fairly economical design features relative to other LEED point earning features, and members may be able to sway designers to include these innovative on-site technologies on a project, thereby creating more on-site wastewater opportunities. As an example of an opportunity, an on-site graywater separation and reuse for a non-potable purposes system that is topped up with rainwater/stormwater could potentially receive points for WE Prerequisite 1, WE Credit 2, WE Credit 3, SS Credit 6.1, SS Credit 6.2, and ID Credit 1 (ID Credit 1, only if the system exceeds any standards of the previous credits) even if the blackwater is discharged into a local sewer. Additionally, on-site wastewater and stormwater systems can be used to “stack points” (meaning using one feature to obtain points in many credit sections) and our members’ products, technologies and local knowledge can exploit this business opportunity that LEED provides. ●

Jill Lauren Hass, M.Eng., PEng, director of research and development, Clearford Industries Inc. Office: (613) 599-6474 x305 Mobile: (613) 858-5287 www.clearford.com

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NOWRA (National Onsite Wastewater Recycling Association) held its 18th Annual Technical Education Conference in Milwaukee, Wis., April 6-9, 2009. The Conference reflected the struggles felt across the country at other such events. However, it did not affect the number of papers presented, the quality of the presentations, or the educational learning opportunities.

The information presented from the Educational Sessions was rich in panel discussions and provided industry professionals with excellent learning opportunities. Both budding and seasoned attendees experienced a wave of information and new trends in the decentralized wastewater industry to weather this economic storm. They heard new perspectives, learned new skills, and met new people, all with the tools they needed to return to work with a vision for on-site sustainability.

The keynote address given by Mr. Wm. Patrick Lucey, president of Aqua-Tex Scientific Consulting Ltd. and Fidelis Resource Group Inc., spoke about using "Integrated Resource Management" (IRM) to help create resilient cities in these uncertain times. IRM examines how and where water and energy are used and generated, and seeks to co-locate the supply with the demand.

Among the events hosted at the Conference was a Midwest Code Forum on how states can work together to make their regulations more closely based on science. A panel of state and local officials along with local manufacturers were invited to offer their perspectives on a variety of issues. A press release was sent out regarding the roundtable and can be viewed on the NOWRA website at http://www.nowra.org/news_releases.html.

A special session entitled "Weathering the Economic Storm: Business Survival" was a late addition to the program, but a popular one.

The session, led by NOWRA past-president Jerry Stonebridge and Valerie Nelson of the Coalition for Alternative Onsite Wastewater Treatment, was open to all who wanted to discuss the state of the economy and how it affects their businesses. This great discussion focused on how NOWRA might "weather the storm." It was the opinion of the session attendees

that NOWRA needed to become more involved in the bigger picture of integrated water reuse management. That focus and objective, along with some others, has been targeted by the Board to help NOWRA become financially sustainable as soon as possible.

A pre-conference workshop on Pharmaceuticals and Personal Care Products in Wastewater, Surface Water, and Groundwater was also a crowd favorite. This symposium presented the latest research on how best to address the issue of emerging contaminants impacting the environment and advancing our understanding of the contaminants in on-site wastewater treatment systems.

If all that was not enough, a full day tour highlighting four on-site wastewater treatment sites was conducted for a capacity crowd. Jim Converse, UW Emeritus Professor, Biological Systems Engineering, was the guide for the day. Among the topics addressed was the history of the Wisconsin Mound.

Sites visited included a 1,000-student high school and Cabela's retail store and deli. The tour continued to a 100-home subdivision with septic tanks and pump chambers at each home feeding to ATU units followed by six mounds and finally a Business Center with a number of different businesses including restaurants.

Also held, the annual NOWRA Membership Business Meeting where Tom Groves, the current NOWRA president, gave an overview of the association's status with input from the NOWRA treasurer, Brian McQuestion, and NOWRA vice president, Dick Otis. New programs, initiatives, membership, finances, and partnerships were all discussed. A full copy of the 2009 NOWRA Business Meeting presentation can be found on the NOWRA Web site under the Press Release section.

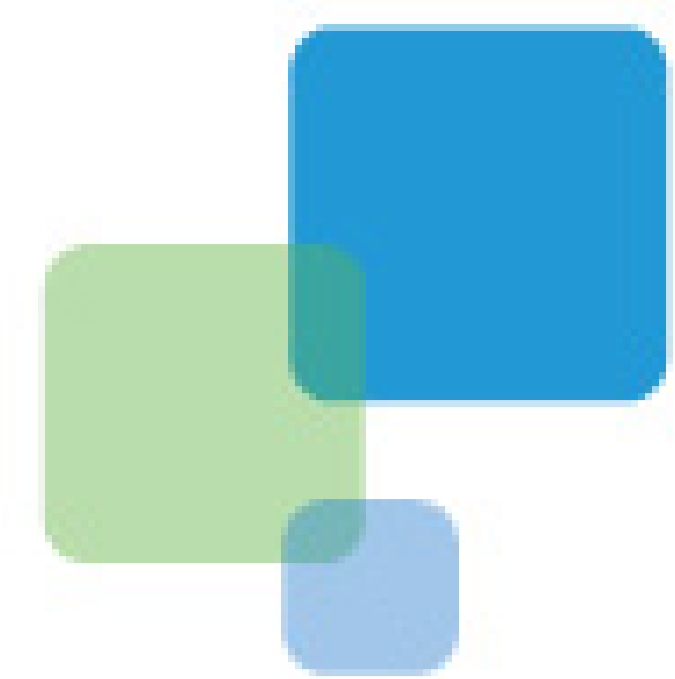
NOWRA looks forward to new and exciting partnership opportunities for our Annual Technical Conference for 2010 and beyond. Watch for more information on the 2010 annual conference in St. Louis, Mo., and the 2011 USEPA MOU Partner "Super-conference" in Columbus, Ohio with NEHA, SORA, and NESC.

Special thanks go out to our local host, the Wisconsin Onsite Water Recycling Association (WOWRA). Their support was greatly appreciated. ●



Mark your Calendar Feb 22 & 23, 2010

NOWRA'S 5TH ANNUAL "INSTALLER ACADEMY"



If you are looking for a jammed up, highly concentrated, professionally written and delivered training course, look no longer. The NOWRA "Installer Academy" is coming to Louisville, Ky. Held in conjunction with the spectacular annual Pumper and Cleaner Environmental Expo it will prove to be one of the best investments in time and money any contractor can make.

The "Installer Academy" will include two full days of training including topics you have requested. NOWRA has secured several on-site educators and professionals to share their valuable knowledge and experience in design, installation, inspection and O & M of on-site systems, as well as practical skills needed to do your job and run a successful business. In fact, over 30 individual classes have already been set and 12 instructors are already developing materials for the 2010 academy, including an entire day of education focused on drip dispersal.

Along with the classes presented at the "Installer Academy" you will have the opportunity to visit vendor training rooms where you can sit down one on one with the representatives from the factories. There is nothing like getting information from the horse's mouth.

Brush up on your operators skills and compete in the annual NOWRA National Backhoe Roe-De-Hoe. We will award the coveted first place belt buckle but how about \$1,000 to go along with it? Attending the "Installer Academy" will get you one free shot at the grand prize. Too nervous the first time? Don't worry it is only \$25 for another chance. Thanks to COLE, the event will be held indoors and will surely be a real crowd-pleaser. If you think you are one of the best, there will never be a better place to prove it than at the show in Louisville.

It is not just the "Pumper Show" any longer. Industry professionals like you will be viewing all the latest in pumping technology and vendors from the on-site wastewater industry.

Don't miss this one...Your competitor won't!

The agenda and program descriptions are posted at www.nowra.org/academy.html. Check back often as more details and registration information is made available. ●

SEPTIC LOCATOR - Your 24/7 Internet Sales Tool



With over 60 percent of people using the internet to find a service or product provider, it is more important than ever to have a web presence for your business. And that is why NOWRA developed "Septic Locator."

Septic Locator steers customers to NOWRA business members, and it is the premier resource for placing their company's on-site wastewater products and services in front of homeowners, builders, realtors, regulators, and policy officials. No other Web site offers the kind of direct access to on-site wastewater professionals and products like Septic Locator.

As a free service to all NOWRA members, Septic Locator is easy to use and offers the flexibility of being upgradeable if the member wants to make a stronger impression on the Web.

If you are a NOWRA member, just go to www.septiclocator.com and click on "Add My Company." Fill out the simple form, hit "submit", and you are well on your way to having your information available to anyone in your area needing assistance. There is no easier way to make your NOWRA membership work for you 24/7 than on the world's most popular site for on-site services!

If you are not a member of NOWRA, isn't this a great reason to join?

Visit us at www.NOWRA.org.





Three-State Survey Finds Households Flushing More Organic Material Than Expected Down the Drain

Households are flushing more organic material—including medicines and cleaning and personal care products—down the drain compared to historic data, according to researchers at the University of Minnesota’s Onsite Sewage Treatment Program.

The yearlong monitoring of households in Colorado, Florida and Minnesota reinforces concerns that Americans in general may be adding more household chemicals and pharmaceuticals to wastewater.

This pilot study funded by the Water Environment Research Foundation, lead by the Colorado School of Mines and in partnership with the University of Minnesota’s Onsite Sewage Treatment Program team, sampled the wastewater of 16 households in three states —Minnesota, Florida and Colorado—for one year beginning in fall 2006. By adding a mechanical diverter to the homes’ building sewer, researchers were able to sample water both seasonally and around the clock during a seven-day period for each home.

In addition to an increase in medicines and organic chemicals in the wastewater, researchers found caffeine in all samples that were tested; salicylic acid (the active compound in aspirin) was in about three quarters of samples, ibuprofen in half, and detergent additives and plasticizers in more than three quarters. Researchers also found that water use did not vary from season to season, but was affected by the household’s age, with younger households using nearly twice the amount of water per person than households with occupants 55 and older.

The good news is a decrease in the amount of oil and grease flushed down the drain. Concentrations of phosphates were also down—due to phosphate-free detergents and household cleansers—while the amount of nitrogen in household wastewater remained the same.

“It’s a little like going through someone’s trash can—you get a snapshot of what’s being used inside the home,” said WRC research assistant Jessica Wittwer, who was the field sampler for Minnesota. “While fewer households are flushing oils and grease down the drain, households across the board are using more pharmaceuticals and stronger, anti-microbial and nonbiodegradable cleansers. The concern with pharmaceuticals and nonbiodegradable chemicals is their long-term effect on the larger ecosystem and food chain.”

The literature search is available at www.ndwrcdp.org/publications (Lowe, K.S., N. Rothe, J. Tomaras, K. DeJong, M. Tucholke, J. Drewes, J. McCray, and J. Munakata-Marr. 2007. Influent Constituent Characteristics of the Modern Waste Stream from Single Sources: Literature Review. 04-DEC-1) with the final project report anticipated in July 2009 with additional publications forthcoming. For more information on the two university programs see <http://smallflows.mines.edu/> and <http://septic.umn.edu>. ●



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- Have your business and professional interests represented by the only national organization with direct access to state and federal policy officials
- Participate in medical, life and health insurance program for small businesses
- Receive discounts and other promotional savings from national office supply chains
- Network with your peers from other parts of the U.S. and Canada to learn what is happening in other parts of the country and around the world
- Learn about the industry and regulatory trends that could impact your business
- Attend educational sessions (and earn CEUs) taught by leaders in the onsite industry

Other benefits include:

- Onsite Journal Subscription - Provides a valuable forum for what is happening around the country
- National Conferences & Training - In-depth information in a national & international forum for new information and research
- NOWRA - The only national organization that exclusively supports the on-site industry

For more information on NOWRA visit www.nowra.org

WERF Water Softeners Research Workshop



The Water Environment Research Foundation, in partnership with the US Environmental Protection Agency, the National Onsite Wastewater Recycling Association, the Water Quality Association, the Coalition of Alternate Wastewater Treatment, the National Association of Wastewater Transporters and other stakeholders, are sponsoring a research workshop to identify short, mid and long term research needs of the water softener and on-site systems industry. The workshop is being designed to identify technical issues and needed research centered on evaluating whether there are negative impacts to on-site systems as a result of water softener brine, and if so, what can be done to mitigate the problem. The principal stakeholders include the water softener industry, the on-site treatment system manufacturers, consulting engineers and state and local environmental health officials.

In 2002, the U.S. EPA released an update to its decentralized system design manual to assist in proper construction of on-site systems. However, the manual did not include sufficient guidance on the potential impacts of water softeners or steps to mitigate them. Because there was no consensus on key technical issues, the Water Quality Association (WQA) and the National Onsite Wastewater Recycling Association (NOWRA) met in 2007 to develop a common set of goals to move the research agenda forward. Although research projects have taken place, a comprehensive stakeholder driven research agenda is needed to address important unresolved techni-

cal issues around the use of water softeners and on-site systems performance. In an informal survey taken by WERF during the States Onsite Regulators Alliance meeting last June in Atlanta, Ga., state regulators expressed the need for more scientific information on potential links between on-site systems performance and water softener issues which could help inform their regulatory decision making. In the meantime, while more specific information is produced from the research, NOWRA and WQA have collaborated to make available guidelines (see NOWRA Web site) to help inform the industry, residents and homeowners on the best practices associated with water softeners and their use in on-site treatment systems.

WERF is working with a planning committee comprised of representatives from all perspectives of the industry as well as state regulators and the U.S. EPA. WERF is focused on assuring the research plan is comprehensive, affordable and focused on answering the important questions of the industry. WERF will publish the proceedings of the workshop and conduct outreach to gather input from organizations and individuals not able to attend the workshop. WERF is also inviting stakeholders interested in partnering to fund the implementation of the research plan. The workshop will take place in early November 2009 in Washington, DC. For more information, please contact Claudio Ternieden, Assistant Director of Research at cternieden@werf.org or at (703) 684-2470, Ext. 7907. ●



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NOWRA Board of Director Elections for 2010

NOWRA is conducting an election for two new members of the Board of Directors. The new director terms are for 3 years commencing on Dec. 1, 2009. The new directors will assist with a leadership role in helping guide NOWRA in meeting the goals of its mission. The NOWRA Board is made up of representation from many sectors of the on-site industry.

The current Board openings are:

- Regulator
- Manufacturer/Supplier

All NOWRA members in good-standing are eligible to vote for the current slate of candidates for the Board of Directors. For the full ballot as well as background information on all of the candidates, please visit the NOWRA election Web page (www.nowra.org/bylaws.html).

The NOWRA Board of Director elections run from Sept. 1, 2009 through Oct. 31, 2009. Election ballots may be mailed or faxed to the NOWRA office. **NOTE:** Your ballot must include your NOWRA membership number and signature to be counted. Only current NOWRA members can vote, and only one vote is allowed per member.

New Life

Formulations are designed to help worn-out drainfields recover

By Benjamin Wideman

There are ways to treat a problem drainfield other than digging it up and replacing it. Manufacturers offer a variety of bacterial, enzyme and chemical treatments that can restore flow while attacking odors and retarding build-ups. These formulations are often tried before taking more drastic and costly measures. Here are the latest offerings.

Waste digestion

Bio-Clean from **Statewide Supply** is a combination of natural bacteria and enzymes that digests organic waste found in drainfields. The organic waste is metabolized to water and carbon dioxide, providing bacteria with energy to sustain life. The result is that the organic wastes are no longer present to produce odors or clogs. The formulation incorporates beneficial bacteria at concentrations up to one billion per gram. 800/553-5573; www.statewidesupply.com.

Oxygen-enhanced

One-Shot Plus from **Lenzyme** is an oxygen-enhanced drainfield rejuvenator. It is designed to be applied all at once, with selected strains of bacteria doing the work. Oxygen released into the system helps the bacteria consume organic material 20 times faster than they would naturally. No equipment is necessary for application. 800/223-3083.

Time-release oxygen

AfterShock from **Cape Cod Biochemical Company** is a soil absorptive that restores drainage to clogged and sluggish drainfields and eliminates odors. It contains a multi-strain bacillus spore-bearing bacteria blend with a bacteria-friendly, time-release oxygen source. It is a tan and white free-flowing powder. The product's consortium of bacteria and oxidizer can be applied at the same time. 800/343-8007; www.capecodbiochemical.com.

Liquid bacteria

BioFORCE Liquid from **Chempace Corporation** is a liquid bacteria formulation that keeps drainfields flowing freely and eliminates odors. The product is non-toxic and non-caustic and reduces bottom solids and total suspended solids. 800/423-5350; www.chempace.com.

Once a year

Septic-Miracle from **Organic Products of South Carolina** is a once-a-year treatment botanical blend derived from GRAS-listed ingredients. It is non-toxic, non-hazardous, biodegradable, and environmentally friendly and is available in quarts, gallons, and 5-gallon pails. 866/842-1708; www.organicofsc.com.

Flow restoration

Septic-Scrub drainfield flow restorer from **Arcan Enterprises Inc.** is a chemical treatment that oxidizes sulfides and releases oxygen into the drainfield. It can be used to help restore flow to a slowed system and to help keep problems from developing. 888/352-7226; www.arcan.com.

Cure for hardpan

Septic Seep, invented in 1953 in the labs of **Chevron-ORTHO**, is designed to interact with elements in drainfields and cure hardpan conditions. The main ingredient is calcium polysulfide. It is not a bacteria or enzyme product. 877/220-5499; www.septicseep.com.

Multi-strain

Septic Saver from **BioStim LLC** is a multi-strain microbial formulation designed to digest organic material and promote the free flow of the system. It reduces or eliminates fats, oils and grease, odors, and organic buildup. It does not cause pass-through, requires only quarterly treatment, and is free of chemicals such as caustics and FOG emulsifiers. 800/338-8812; www.biostim.com.

Wet and dry

Microbe-Lift/IND Series from **Ecological Laboratories Inc.** includes both liquid and dry cultures. It contains specialized microorganisms selected and designed to speed the biological degradation of problem compounds. The cultures are designed to resist inhibitory concentrations of difficult-to-degrade constituents. 215/598-0563; www.microbelift.com.

Auto-dispensing

The **BioOne** auto-dispensing system from **One Biotechnology** releases live vegetative cultures in a programmed fashion. The formulation consumes unwanted compounds, converting them to harmless substances. It contains no emulsifiers, surfactants, or added enzymes. 800/951-4246; www.1biotechnology.com.

Concentrated bacteria

BioBug Green C from **Bio-Systems International** contains selected naturally occurring bacteria, concentrated and preserved, and blended with environmentally friendly high-potency nutrients, stimulants, surfactants and non-synthetic biological enhancers. The product is non-toxic, non-corrosive, and free of VOCs, phosphates, potassium hydroxide, and opacifiers. 800/232-2847; www.biobugs.com. ■

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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.

Lasting Cool

Fill-for-life coolants can offer good value for your money, if you follow some simple but critical steps to keep them in top working condition

By Greg Northcutt

It sounds too good to be true — a coolant that lasts at least 600,000 miles in your dump truck or 6,000 hours or six years in your excavator, tractor-loader-backhoe or other earthmoving equipment. That's up to three times the life of a conventional coolant. Yet, that's exactly the kind of performance you can expect from extended life coolants.

So, what's the catch? You'll probably pay about 50 percent more for an ELC and you'll have to add an extender at 300,000 miles, 3,000 hours, or three years. But look at what you get:

- No need to add supplemental coolant additives (SCAs).
- No need to test levels of inhibitors that protect wet-sleeve cylinder liners.
- Longer life for cooling system components.
- A single coolant that can be used in both diesel and gasoline engines.
- Less coolant to dispose of, so lower disposal costs over time.

It can all add up to significantly lower cost over the life of an ELC, and more value for your money, coolant manufacturers say. "National truck fleet managers tell us that they use ELCs because these products offer longer life, less maintenance, and lower costs than conventional coolants," says Stede Granger, OEM technical manager for Shell.

Significant difference

Extended life coolants are simi-

lar to conventional coolants in that they contain similar amounts of water (to transfer heat) and ethylene glycol (to protect the water from freezing and boiling). Most extended life coolants are red, while conventional fully formulated coolants typically are purple. But the big difference between the two — and the reason for the much longer life of an ELC — is the corrosion inhibitor additive package that protects the cooling system.

A conventional coolant uses inorganic materials, like silicates, phosphates, and borates, which coat metal surfaces to control corrosion. Because these materials become depleted, they must be replaced from time to time. Also, they plate out or build up on the metal surfaces, where they act like an insulator, holding in heat and creating hotspots. This leads to more plating and more hotspots, which eventually prevent proper cooling of the engine and can cause failure of cooling system components.

Depletion of the additives adds to maintenance costs in another way, too. As silicate coolants become depleted, the silicates form larger, abrasive particles that can damage seals in the water pump.

The additives in an ELC, on the other hand, contain organic acids salts. They have been neutralized to form carboxylates, which are highly effective corrosion inhibitors. These inhibitors eliminate the plating and insulation problems of the inorganic additives.



New long-life coolants such as Rotella ELC from Shell are an alternative for providing quality performance and lasting cooling system protection.

"The organic additives work on a molecular level to provide an electrochemical barrier against corrosion with pinpoint accuracy. Only a tiny bit of additive goes to the actual spot of the metal surface that requires protection. Inorganic additives blindly coat surfaces, whether they need protection or not."

Fred Alverson
Shell Global Solutions

"The organic additives work on a molecular level to provide an electrochemical barrier against corrosion with pinpoint accuracy," explains Fred Alverson, a coolant researcher with Shell Global Solutions. "Only a tiny bit of additive goes to the actual spot of the metal surface that requires protection. Inorganic additives blindly coat surfaces, whether they need protection or not. Also, the organic additives are much more stable. Because they deplete so slowly, they don't have to be replenished frequently like those in

conventional coolants."

The end result is better cooling, longer cooling system component life, and much longer coolant protection. Shell's Rotella ELC illustrates the improvement in heat transfer properties of ELC coolants. It offers about a 10- to 20-degree F temperature reduction in laboratory dynamic heat transfer tests compared to conventional fully formulated coolant. It also provides long-term protection for all cooling system metals: aluminum, brass, cast iron, steel, solder, and copper.

That extra protection is important to equipment manufacturers as well as owners. "One major OEM switched to extended life coolant because they found improvements in water pump seal life and reduction in water pump warranty costs," says Granger.

Making the change

If you switch from a conventional coolant to an ELC, you have two options. The simplest is to drain the conventional coolant, flush the cooling system, and refill with the ELC. Or, if your conventional coolant is still in good condition, you can minimize downtime and the cost of coolant disposal by converting that coolant to an ELC.

That requires adding a conversion fluid containing a concentrate of ELC corrosion inhibitors. For instance, one gallon of Shell Rotella ELC Conversion Fluid is added for every 12 gallons of cooling system volume. The conversion kit also includes materials for collecting and submitting a lab sample to make sure the conversion to an ELC was successful.

Extended life coolants are available with or without nitrites. Heavy-duty ELCs are traditionally formulated with nitrites (or with nitrites and molybdate) to protect engines with wet-sleeve cylinder liners from cavitation corrosion. The organic additive corrosion inhibitor technology in nitrite-free ELC coolants provides satisfactory cavitation protection without nitrite, Alverson notes. The new nitrite-free ELCs also protect today's high-aluminum-content engines by eliminating aluminum-nitrite interactions that may occur under severe operating conditions.

Depending on the manufacturer, you can buy an ELC in a concentrated formulation where you mix in the water, or in a 50/50 mixture, where the coolant is pre-mixed with de-ionized and de-mineralized water. "We recommend using the pre-mix," says Alverson. "That way, you're assured that you don't add too much or too little water or coolant to your system."

Simple maintenance

Keeping an ELC performing properly is much easier than with a

conventional coolant. Alverson stresses the importance of checking the coolant for freeze point protection twice a year. "The proper mix of water and glycol for just about anywhere in the United States is 50/50 throughout the year," he says. "This will protect against freezing to -34 degrees F. Use this same mixture when topping off. If you just add water, you'll have less freeze protection and reduced corrosion protection."

In Alaska and Canada and other areas of extreme cold, glycol concentration can be increased to 60 percent to provide freeze protection down to -59 degrees F. Alverson does not recommend any higher glycol concentration.

Although the depletion rate of corrosion inhibitors in ELCs is extremely low, they do have to be replenished. So make sure you add the correct amount of extender at the midpoint of the ELC's life: 300,000 miles, 3,000 hours, or three years.

Depending on how well you maintain your cooling system and how you operate your equipment; an ELC may still have life left in it after the first 600,000 miles or 6,000 hours of operation. So it may pay to have it tested before replacing it.

Manufacturers don't recommend mixing ELCs and conventional coolants. "The two types are compatible in terms of mixing, but the inhibitors represent different chemistry and won't work together," says Granger. "You end up reducing corrosion protection of both. Also, you won't lengthen the life of the conventional coolant, but will shorten the life of the ELC."

What happens if you accidentally top off an ELC with a conventional coolant? "An ELC should tolerate a small amount of a conventional silicate coolant without any problems," Granger says. "But, if you added any more than about 15 percent of the coolant capacity of your equipment, you should have it tested to verify carboxylate levels."

Greg Northcutt is a freelance writer based in Port Orchard, Wash. He can be reached by e-mailing this publication at editor@onsiteinstaller.com. ■

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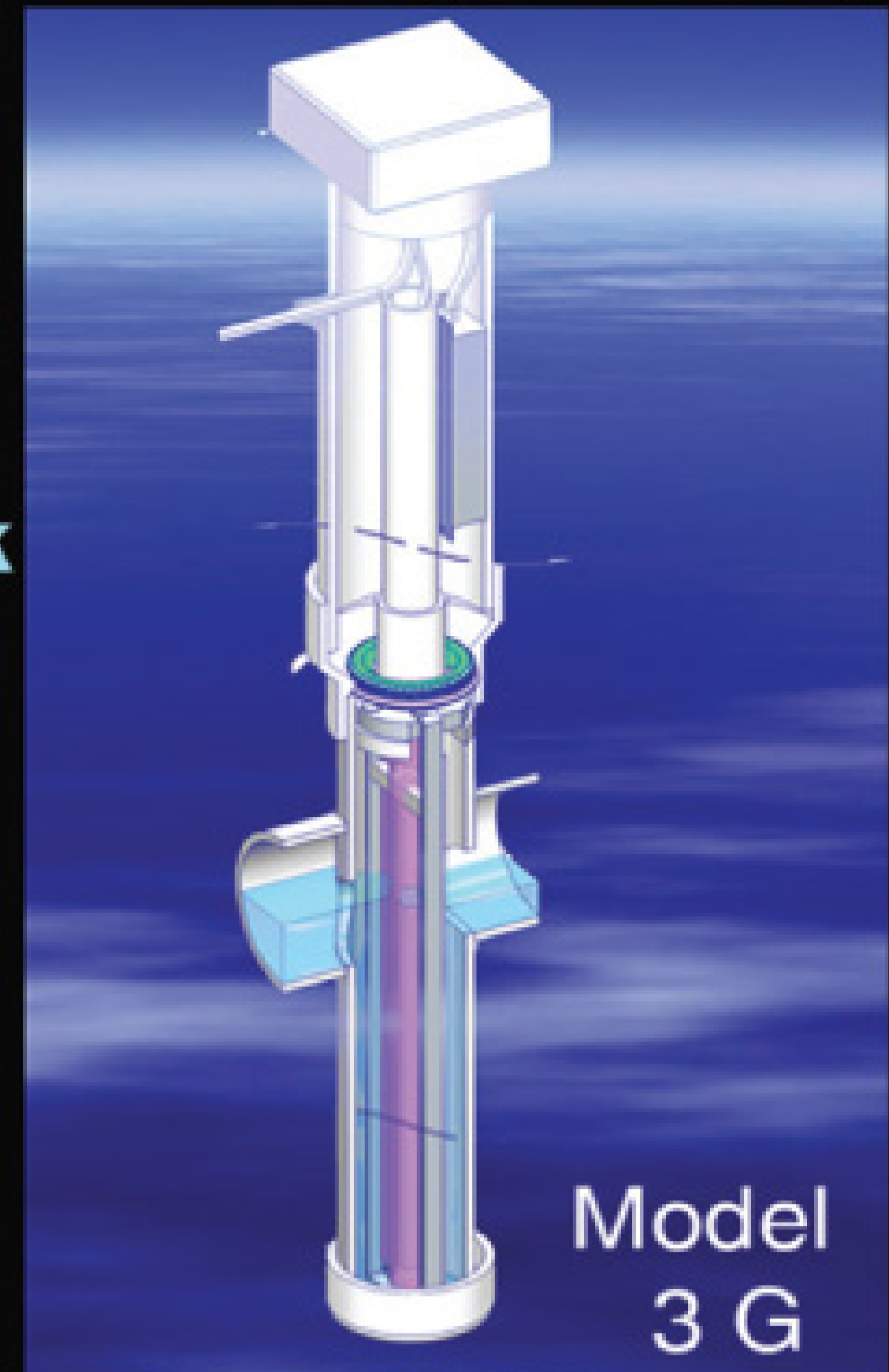
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Long-Term Treatment

A constructed wetlands leachate treatment system enables a North Carolina landfill to begin replacing its wastewater treatment plant

By **Scottie Dayton**

The New Hanover County landfill in Wilmington, N.C., is the only one in the state with a wastewater treatment plant, and it requires high maintenance.

Knowing landfills produce leachate for years after closure made officials think about ways to eliminate the treatment plant. They approached CDM, an engineering firm in Raleigh, N.C., along with North Carolina State University and the Water Environment Research Federation (WERF). CDM suggested a constructed wetland leachate treatment system.

The university conducted a pilot project to see which type of wetland — free surface (water is visible) or subsurface — would work best with the leachate. The free surface system treated it to irrigation quality. The wetlands came online in 2003, funded by the county and WERF grants.

“Every landfill must grow grass



The constructed wetlands, seen from the top of Cell 1 at the New Hanover County landfill. (Photo by Shannon Culpepper)

on closed cells, and we use the treated water to irrigate two of them,” says Shannon Culpepper, environmental programs assistant for the New Hanover County Department of Environmental Management. “Our course will enable us eventually to recycle all the treated

leachate instead of discharging it to the Lower East Cape Fear River.”

Site conditions

The landfill occupies 416 acres, but most of the land serves as a buffer between the facility and river. The landfill receives 160,000 tons of trash per year and has a total disposal capacity of 8.9 million cubic yards.

System components

The wastewater treatment plant is permitted to discharge 50,000 gpd. Its major components are:

- 3-million-gallon, 2-acre lagoon
- 90,000-gallon aeration basin
- 18,000-gallon clarifier
- 50,000 gpd sand filter

CDM designed the constructed wetlands leachate treatment system to handle 60,000 gpd. Its major components are:

- 1-million-gallon, 2.47-acre Pond A

- 1.4-million-gallon, 2.63-acre Pond B
- 480,000-gallon, 0.56-acre retention pond

System operation

Pumps send leachate from the entire landfill and two closed cells through 6-inch HDPE pipes to the lagoon. It receives 95,000 gpd during the wet season and 30,000 gpd during the dry season. Four 10-hp Tornado aerators (Aeromix System Inc.) circulate and push the influent through the lagoon. The average retention time is 48 hours.

A pump in the lagoon draws influent into the treatment plant. It flows to the aeration basin, then to the clarifier, through the sand filter, and discharges to the river. A day before the grass on the 10-acre closed cells requires irrigation, staff members activate a pump in the lagoon that sends influent through a 2.5-inch PVC pipe to the wetlands.

System Profile

Location:	Wilmington, N.C.
Facility served:	New Hanover County landfill
Designer/installer:	CDM, Raleigh, N.C.
Site conditions:	Receives 160,000 tons of trash per year; 8.9 million cubic yards total disposal capacity
Type of system:	Constructed wetlands leachate treatment system
Hydraulic capacity:	60,000 gpd

"It takes a minute for influent to reach the head of the wetlands, and then the flow splits to both ponds," says Culpepper. "Liquid gravity-flows over 24 hours to the retention pond. As soon as it's full, we irrigate using Greenfield mini center-pivot irrigation systems." Each unit sprays 10,000 gallons per hour.

During summer, most influent is directed to irrigation. In winter, the bulrushes and cattails in the wetlands go dormant. "We don't get as much treatment, but we can still irrigate," says Culpepper.

Installation

The greatest installation challenge was the summer heat. After excavating 8-foot-deep depressions for the wetlands and pond, CDM workers

"The process was incredibly slow. The men would do one weld, then an inspector checked the seam for bubbles with a special device. The tiniest leak could cause contamination."

Shannon Culpepper

used electric heat welders to join the bottom layer of 20-foot-wide 60-mil HDPE geomembrane sheets. The surface of the liner reached 140 degrees.

"The process was incredibly slow," says Culpepper. "The men would do one weld, then an inspector checked the seam for bubbles with a special device. The tiniest leak could cause contamination." A geonet drainage geocomposite with pipes formed the middle layer.

"We hook a pump to the pipes and if the vacuum draws no water, the top layer isn't leaking," says Culpepper. Another 60-mil geomembrane liner topped the geonet.

Each wetland has areas of open water surrounded by bulrushes and cattails buried in soil. Workers enclosed the roots of perimeter plants in heavy paper bags to prevent them from spreading. "We must keep the open areas clear of vegetation, enabling incoming flows to circulate the water and provide uniform treatment," says Culpepper.

Access pipes were installed along the influent line to facilitate cleaning. "Our first closed cell taught us a lot about irrigation and how to plan around weather," says Culpepper. "Consequently, the sec-

ond cell is running more effectively. We remain aware of expected rainfalls that may keep us from irrigating."

Maintenance

The wetland system requires low maintenance and operation. The geonet liner is pumped occasionally to check for leaks, and the influent pipe is cleaned. "If we can't irrigate after heavy rains, the pressure of all that water in the retention pond may cause some leaks," says Culpepper. "We just pump out the water between the liners and return it to the wetlands system."

New Hanover County landfill has taken the first step to attaining its goal of replacing its wastewater treatment plant with constructed wetlands. ■

MORE INFO:

279 Aeromix Systems Inc.
800/879-3677
www.aeromix.com



The lagoon, seen from the top of the wastewater treatment plant. What looks like a black box in the back left corner of the lagoon is the influent pump for the wetlands. (Photo by Shannon Culpepper)



A Greenfield mini center-pivot irrigation system sprays 10,000 gallons an hour of treated landfill leachate on a 10-acre closed cell. Wetland Ponds A and B are in the background. (Photo courtesy of the New Hanover County Department of Environmental Management)

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October 2009



Orenco Introduces EasyPak Pump Package

The EasyPak pump package from Orenco Systems Inc., designed for wastewater dosing tanks, includes a low-profile pump vault surrounded by three filter cartridges, 4-inch turbine effluent pump, control panel with floats and adjustable float collars, splice box, and discharge assembly. The system is suitable for new installations and retrofits. Packages are available for both timed and on-demand dosing. **800/348-9843; www.orenco.com.**

Norweco Offers AT 1500 UV Disinfection System

The Model AT 1500 ultraviolet disinfection system from Norweco Inc. is designed to reduce pathogenic bacteria in onsite treatment systems. Installed downstream of treatment tanks and upstream of receiving environments, the system features demand-use treatment, longer lamp life, increased bulb intensity, sealed NEMA 4X weatherproof enclosure, single low-voltage power cable, and a flow path that allows dual doses of UV light. Able to treat up to 1,500 gpd, the system can reduce fecal coliform to less than 200 CFU/100 mL in conjunction with an NSF Standard 40 Class 1 aerobic treatment system. **419/668-4471; www.norweco.com.**



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Cap Switch Technology from Blue Angel Pumps includes a sealed, microprocessor-controlled switch that detects the presence of water versus air in determining the cycle time of the pump. **888/636-6628; www.blueangelpumps.com.**

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The Quick4 Plus line of chambers from Infiltrator Systems Inc. includes the 8-inch tall LP for shallow installations and the 12-inch tall Standard. Both 4-foot-long chambers offer the Contour Swivel Connection, which allows 10-degree turns. The chambers also have two end-cap options and an All-in-One Periscope for 180-degree inletting. **800/221-4436; www.infiltrator-systems.com.**



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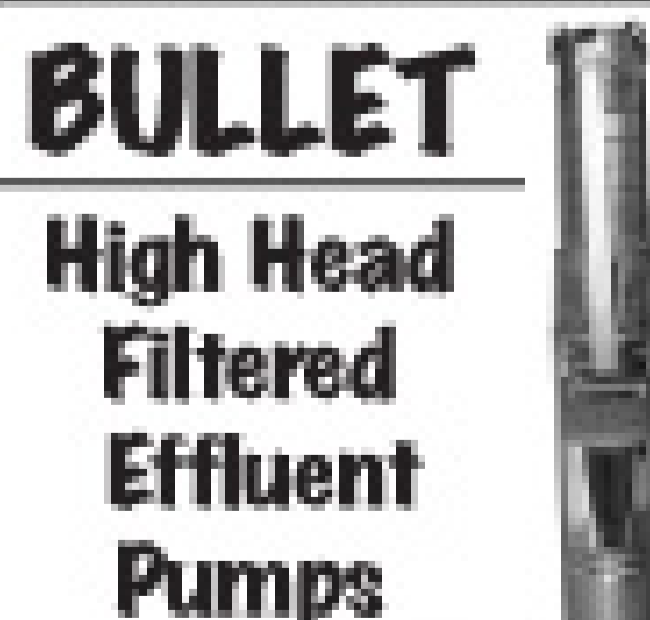
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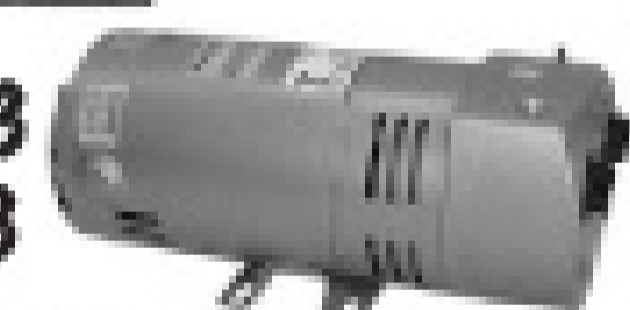
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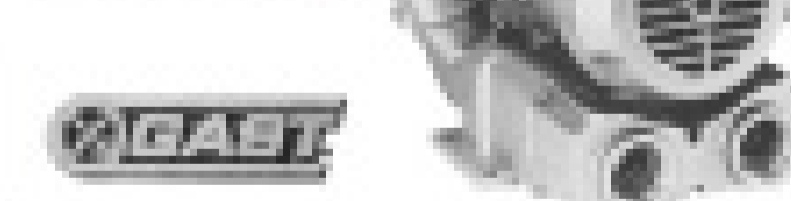
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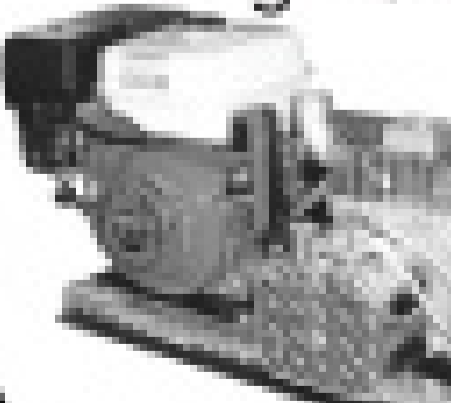


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October 2009

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Liberty Pumps named Cooper New England Sales its top representative for 2008 at the company's national sales meeting.

Bord Na Mona Marks 15 Years of Puraflo

Puraflo peat fiber biofilter wastewater treatment systems have surpassed 15 years of service in Alabama and Virginia. The system was first installed in Virginia in 1993.

Wieser Receives NPCA Certification for 20th Straight Year

Wieser Concrete Products Inc., Maiden Rock, Wis., received the National Precast Concrete Association plant certification for the 20th consecutive year. The company's plant in Portage, Wis., was awarded NPCA certification for the 14th straight year. To achieve certification, participants must pass an initial inspection and annual, unannounced on-site inspections by an independent engineering firm.

Bio-Microbics Receives Technology Merit Award

Bio-Microbics Inc. received the Technology Merit Award in the water/wastewater category for its BioBarrier Membrane BioReactor technology from the *Environmental Business Journal*.

Zoeller Launches Web Site, Branding Initiative

Zoeller Co. launched a new Web site, www.zoeller.com, for its corporation and four product brands. The site includes product pages, news and events, literature, as well as new logos for all brands.

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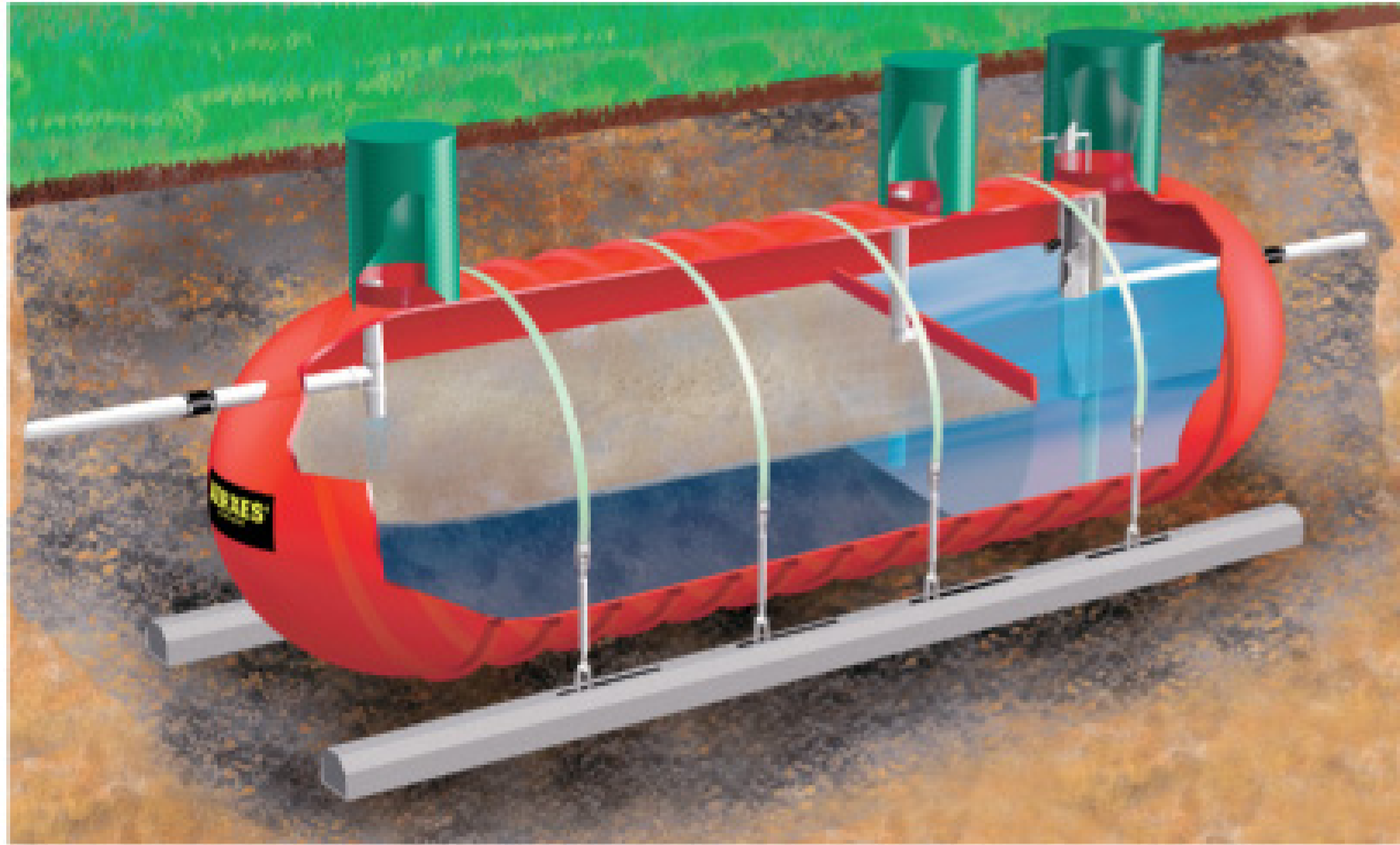


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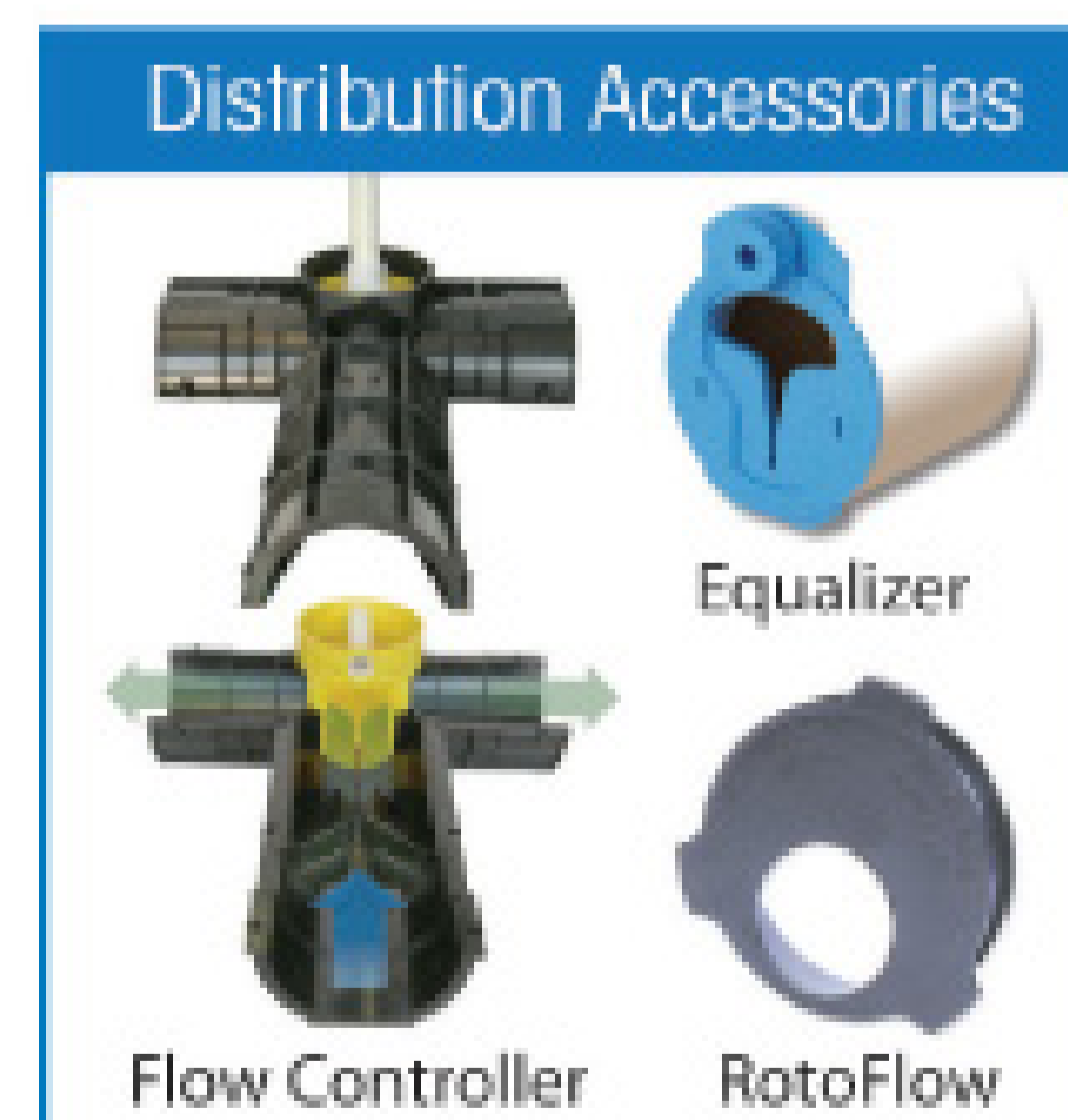
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