

February

2010

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**EXPO
ISSUE**

One- Stop Service

**McGovern & Co. handles
projects from inception
through final approval**

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PAID
U.S. POSTAGE
COLE
PUBLISHING

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February 2010



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- Profile: E.C. Bassett Construction Inc., Edgewood, N.M.
- Breaking Ground: Peat biofilters and drip dispersal
- Machine Matters: Choosing pickup truck tires
- Basic Training: The finer points of pumps

ONSITE installer

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Kentucky Exposition Center
Louisville, Kentucky

February 2010

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Enjoy this issue!

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Wives: It's Your Turn

What's it like to be part of a family contracting business? *Onsite Installer* invites you to share stories of how you contribute, and how you cope with the challenges.

By Ted J. Rulseh, Editor

Some years ago I started a book publishing business on the side and asked my wife, Noelle, to be in charge of sales.

She agreed enthusiastically, and so we embarked on the venture together. Unfortunately, there were a few problems with the arrangement. First of all, she had no experience in sales. Second, and far more important, there were times we didn't agree on what to do and how to do it.

It's one thing to disagree with your sales director, and quite another to disagree with your spouse. So things got delicate. It's hard enough at times to keep a marriage on an even keel, and when you add a business to the mix, well ...

So in the end I had to make a choice between the marriage and the business, and that was really no choice at all: I folded up the business.

All this is a way of saying I have at least a little empathy for the many

husband-wife teams who run onsite installation businesses together, and for spouses who may feel at times that their partners are more married to the business than to them.

Family matters

After nine years editing this magazine and attending the annual Pumper & Cleaner Environmental Expo International, I know how important wives are to installation and design businesses. (Yes, some companies are owned and run by women, but in the vast majority of cases, it's the husband on the front line.)

Wives play a variety of roles: keeping the books, answering phones, screening job applicants, fielding customer complaints, selling jobs, negotiating purchases, dispatching — everything right up to and including work in the field. Yet (I must admit this), our stories often understate their contributions.

So wives, now it's your turn. We'd like to tell *Onsite Installer* readers about the joys, struggles, satisfactions and frustrations of being part of a family business — even if not as a day-to-day participant but as a support system back home. We'd like to know:

- How do you balance work life with leisure time?
- How do you make sure you invest enough time with the kids?
- How often do you get away from the business and enjoy focused family time?

help other family business owners, such as those you meet each year at the Expo, to deal with the challenges they face.

Just send your thoughts and ideas to me at editor@onsiteinstaller.com. Or if you prefer, give me a call toll free at 877/953-3301. We look forward to starting some lively exchanges about how to mix business and family — happily and successfully.

In the meantime, plan to attend the special Women in the Industry seminar at the 2010 Pumper & Cleaner Expo in Louisville. It's a

We'd like to tell *Onsite Installer* readers about the joys, the struggles, the satisfaction and frustrations of being part of a family business — even if not as a day-to-day participant but as a support system back home.

- What happens when you and your husband disagree on an important business decision?
- How do you keep issues at work from spilling over into the household?
- What is the greatest part of owning and running a family business?
- What is the hardest part?

Learning from each other

Using information you provide, we will develop articles about the personal side of being a partner in a company as well as a marriage. By sharing your experiences, you'll

chance for women from all sides of the environmental service industry to come together, learn about issues they have in common, share ideas, and get acquainted.

Guest speaker Ann Fry will talk about, "The Regeneration Process: How to Re-energize, Re-purpose, Re-invent and Handle Everything!" Fry is an author, professional speaker, executive coach and corporate culture consultant who helps people connect to their passions and dreams. The event, on Thursday, Feb. 25, will be followed by a wine and cheese tasting. ■



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Safety Pan™ to Riser attachment with 6 vertical stainless steel screws.

Riser to Riser attachment with 6 vertical stainless steel screws.

Patent Numbers
5,617,679 &
5,852,901; other
pats. pending.

Riser Lid

with Molded-in gasket.
Available in 12", 16", 20" and 24" diameters.

Concrete Lid w/handle

Safety Pan™

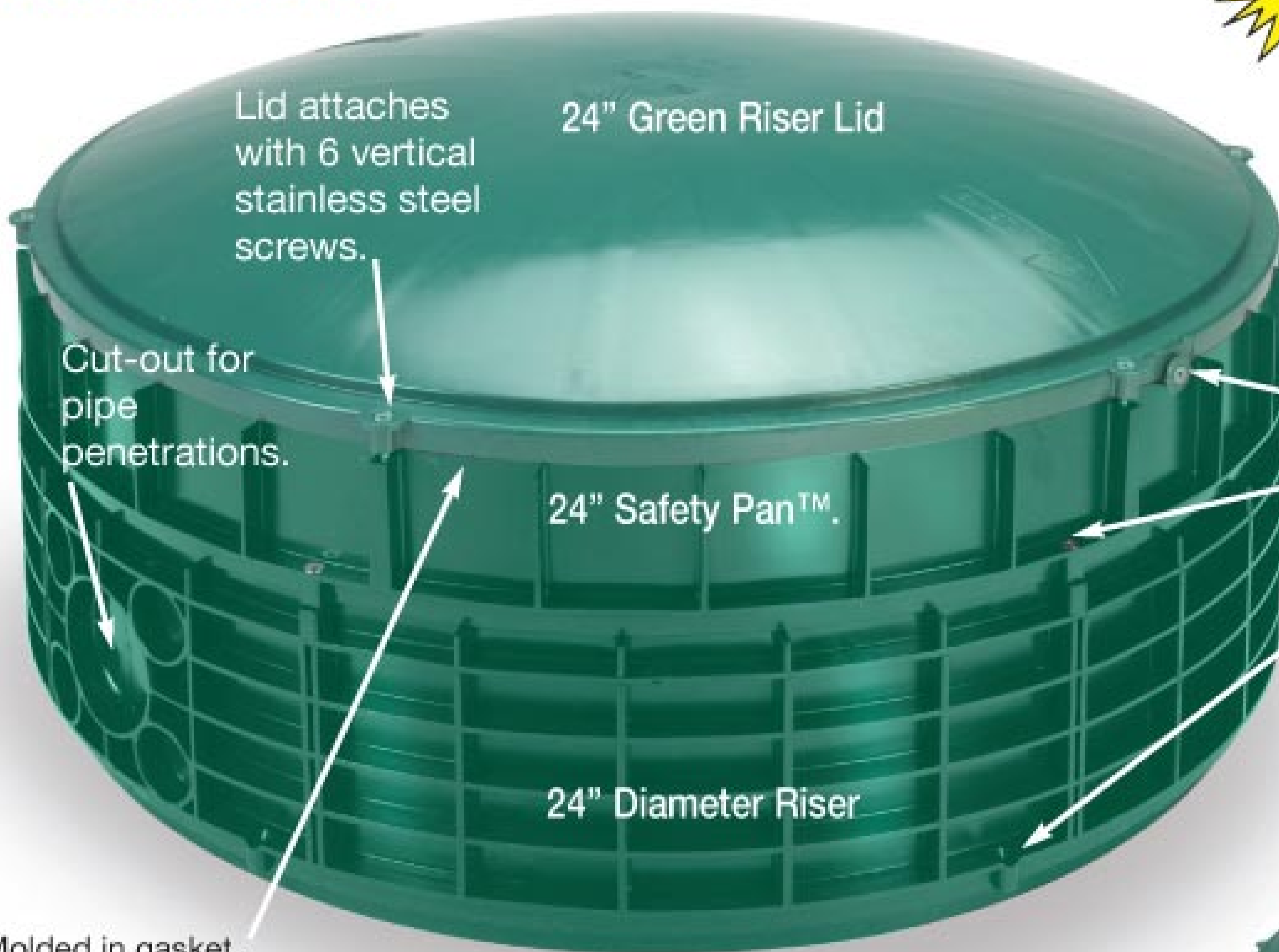
Safety Pan™ available in 16", 20" and 24" diameters.

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For septic tanks. Stackable in 6" increments. Available in 12", 16", 20" and 24" diameters.

Tank Adapter Ring

For mounting riser flush to top of tank when casting-in is not an option.



Available in 12", 16", 20" and 24" diameters.

Effluent Filters

Patent Numbers
6,319,403; D 431,629; other
pats. pending.

800 GPD
ANSI/NSF
Standard 46

4" Sch. 40 &
SDR-35

EF-4
4' Filter

EF-6
6' Filter



1500 GPD
ANSI/NSF
Standard 46

4" Sch. 40 &
SDR-35

244 ft. of
1/16" filtration
area.

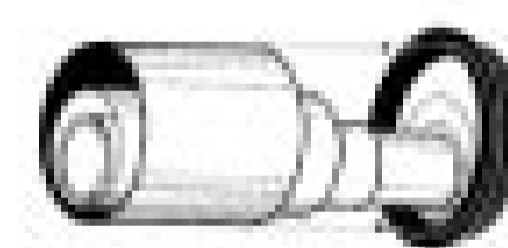
Gas/Solids
Deflector

One-Piece Tank Seal

For concrete Septic tanks and D-boxes.
Accepts pipes from 1-1/2" to 4".
Mounts with or without concrete flash.



TS-4-RUBBER TANK SEAL
(will hold 10psi)
TS-4PRO TANK SEAL
(will hold 5" vacuum)



Free Freight: 32c

Patent No's
5,624,123
& 5,711,536;



12", 17", or 20"

Tested to 10" vacuum

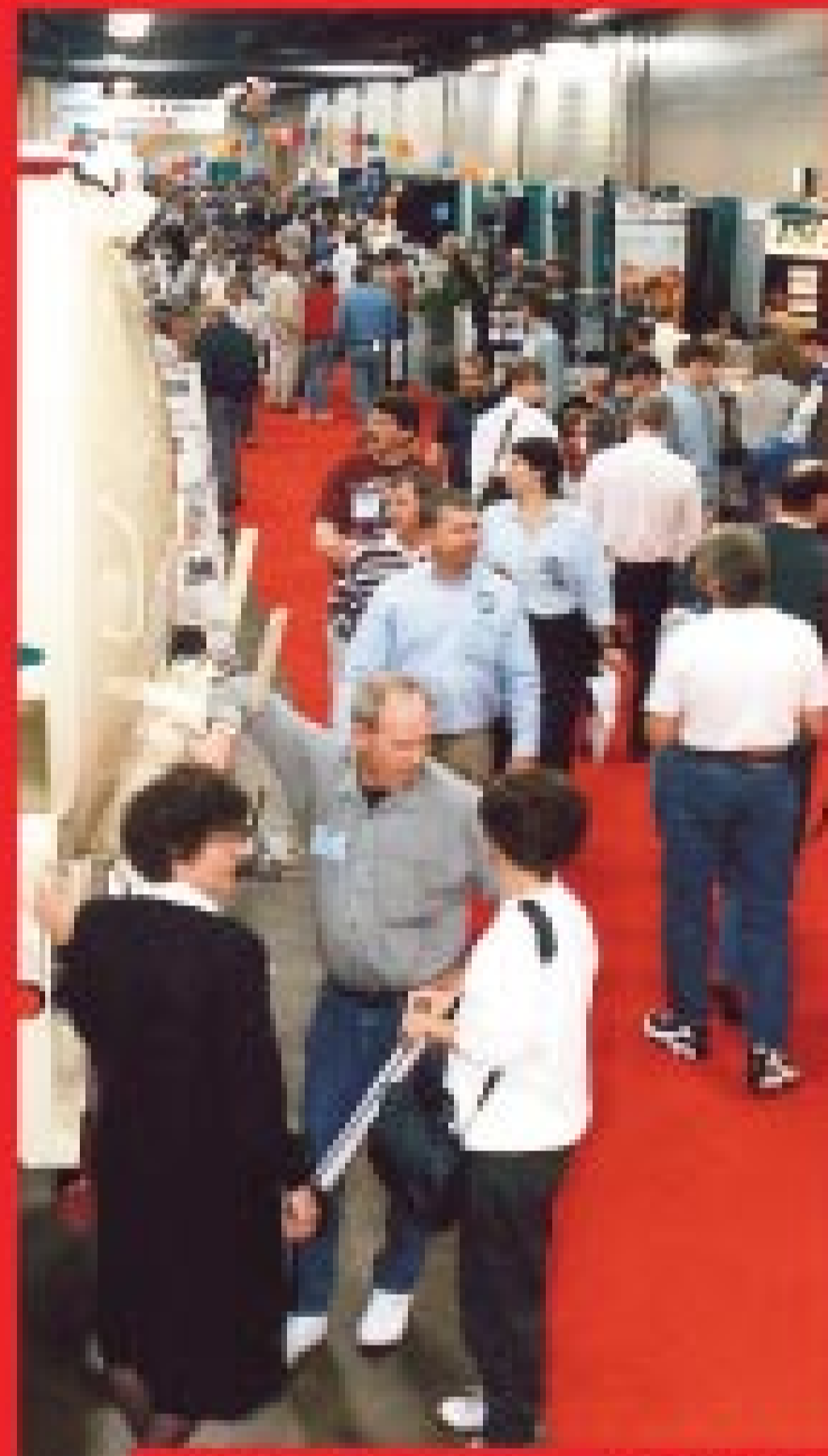


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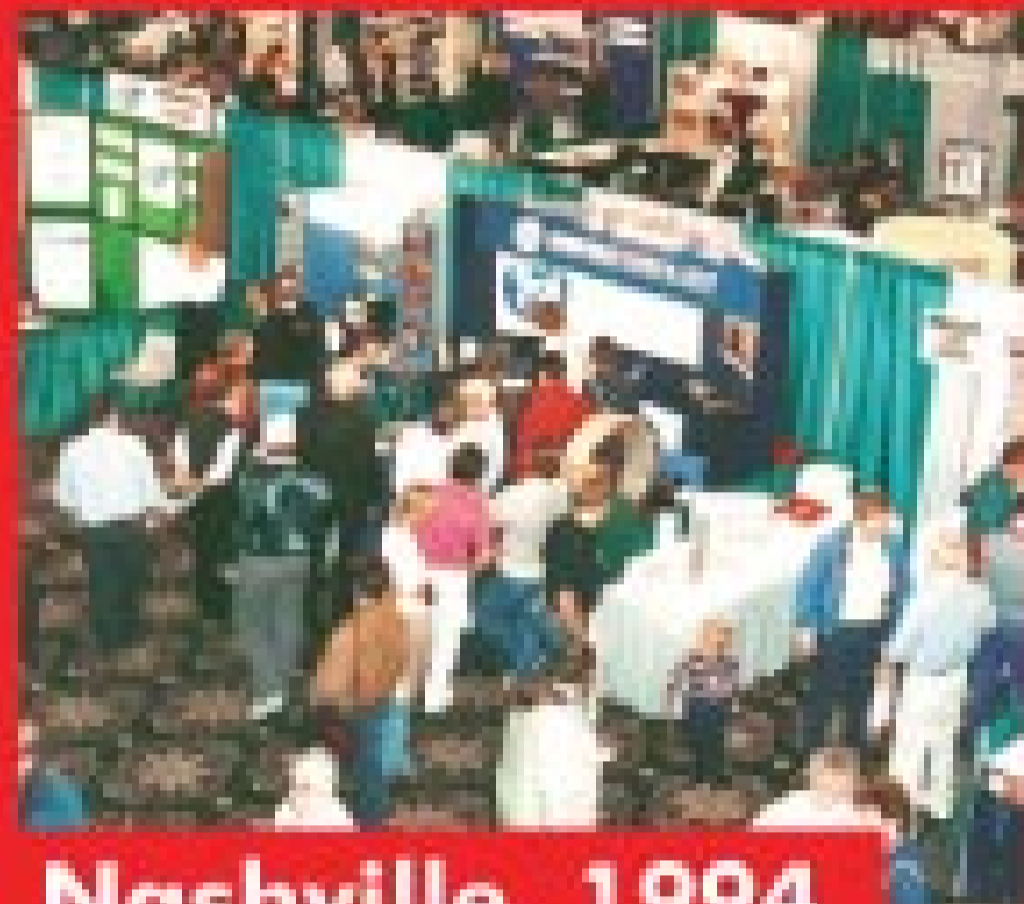
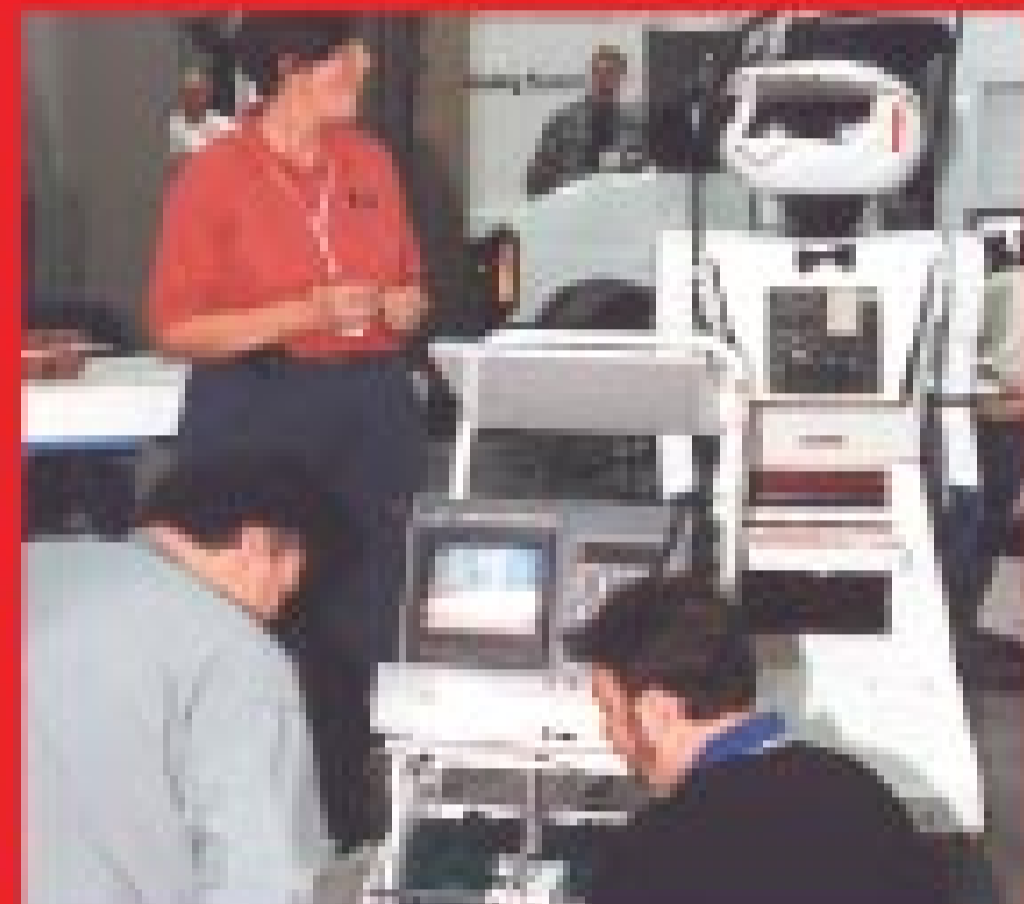


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TO THE 2010 PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL!



Nashville, 1996



Nashville, 1994



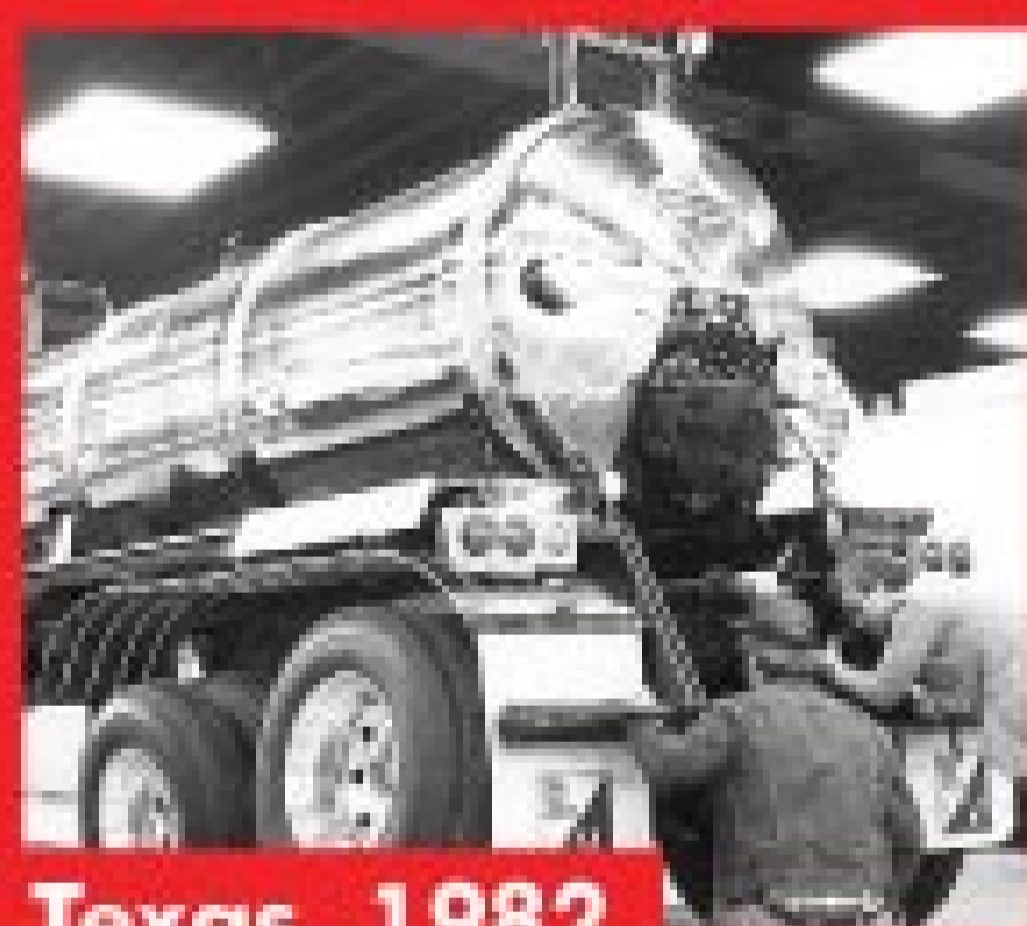
CELEBRATING

30 years

1981-2010



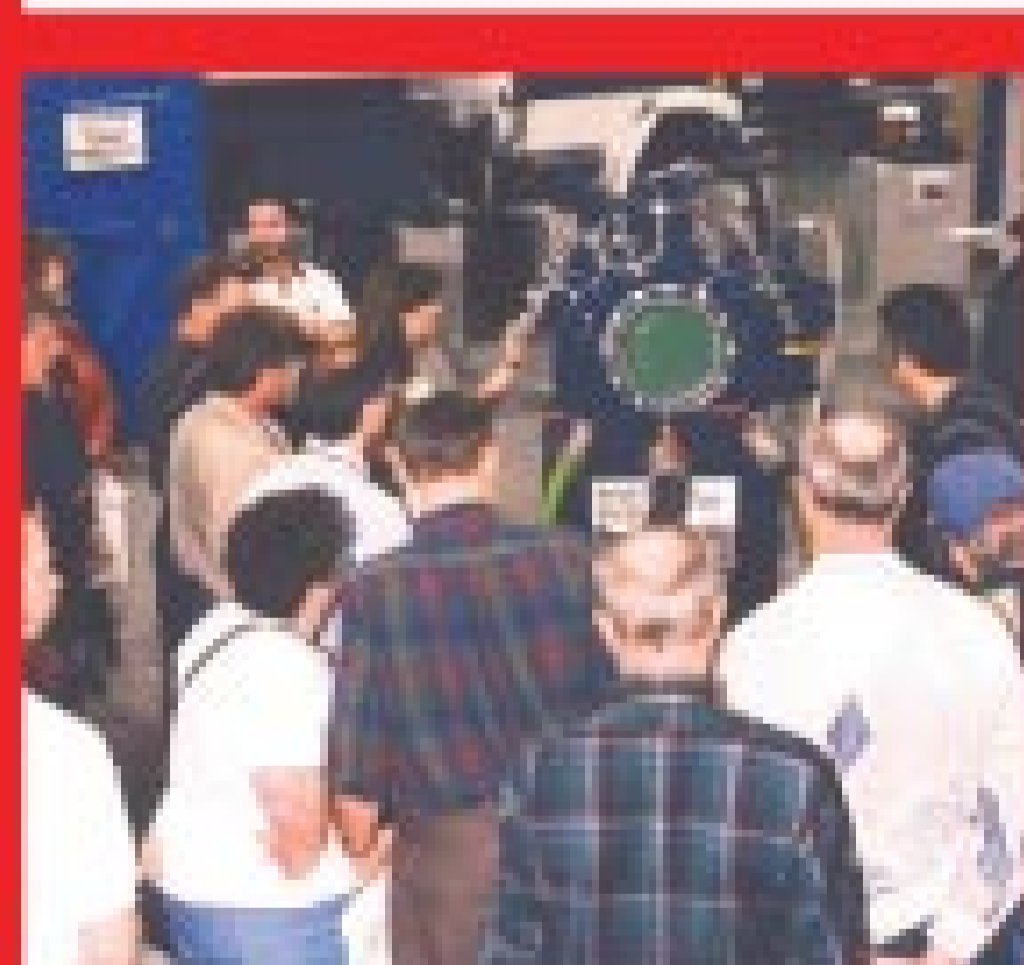
First Show in Nashville, 1981



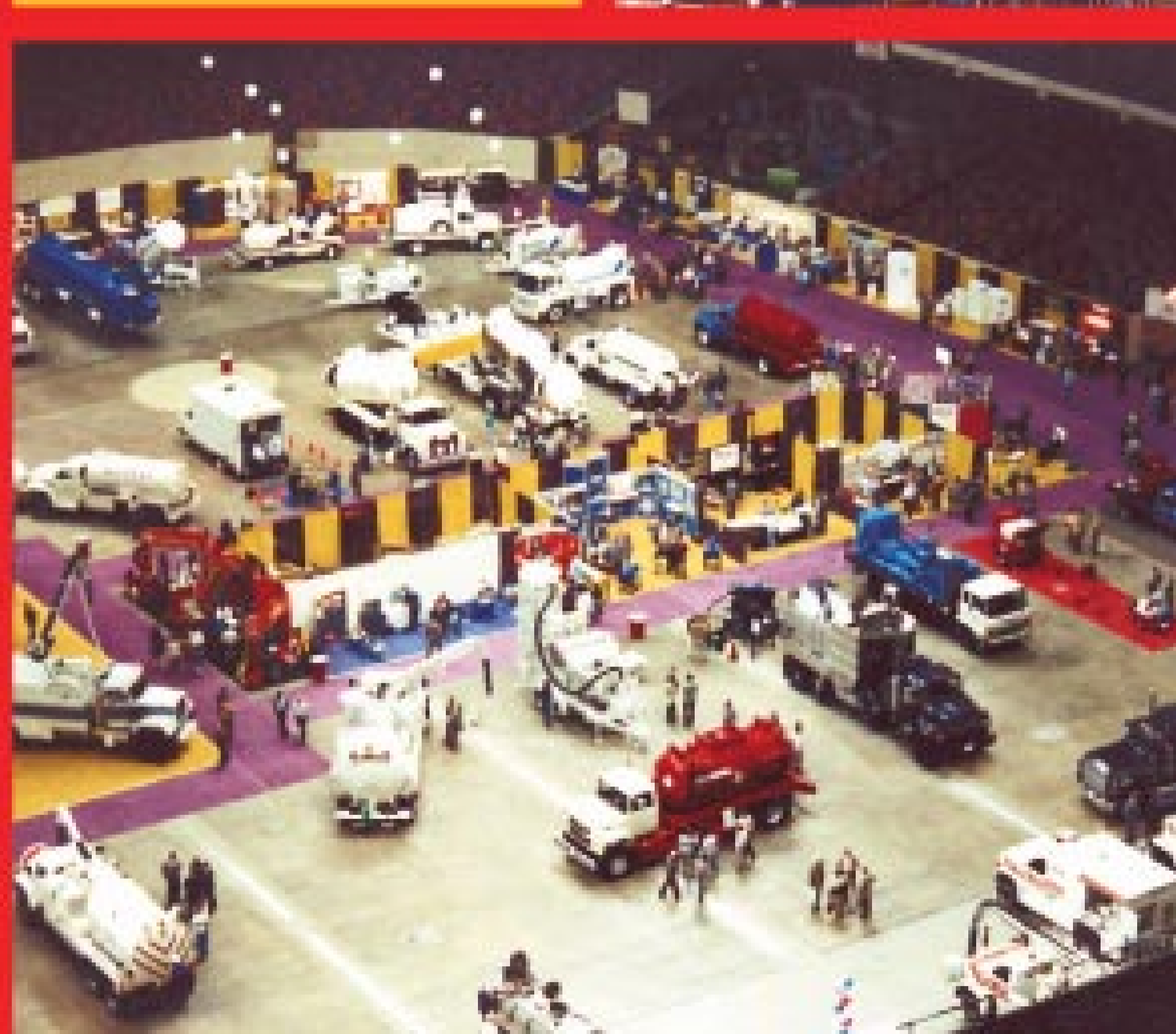
Texas, 1982



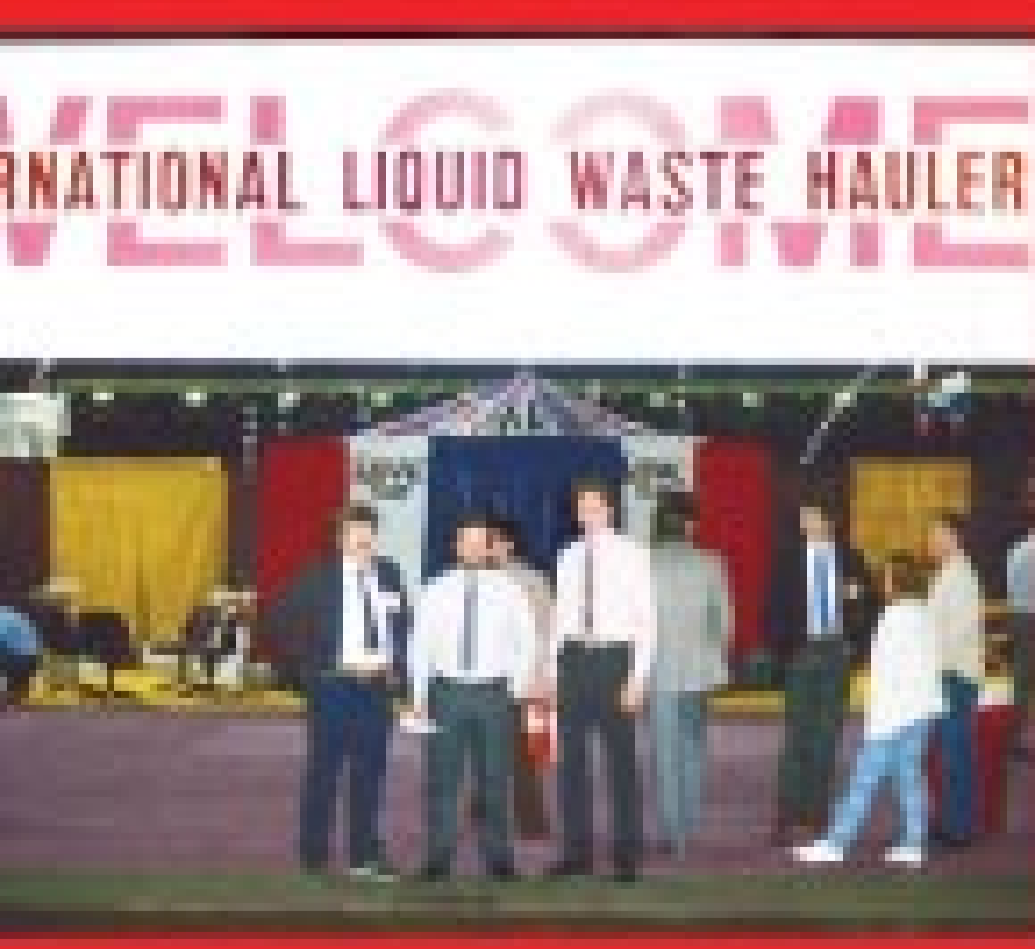
Nashville, 1985



Nashville, 2004



Superdome in New Orleans, 1987



Mississippi, 1983

► Call 1-866-933-2653 for information about the 2010 Expo!



SCHEDULE OF EVENTS

WEDNESDAY

February 24, 2010

- Education Day - All Day - No Exhibits
- More than 40 Educational Sessions
- Networking: 5 - 7 p.m.



THURSDAY NIGHT

INDUSTRY APPRECIATION PARTY

FEBRUARY 25TH, 2010

5 p.m. at the COLE Pub



25¢
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THURSDAY

February 25, 2010

- Certified Onsite Installer Course
- Educational Seminars: 8 a.m. - 12 noon
- Exhibits Open: 9 a.m. - 5 p.m.
- Women in the Industry Seminar: 9 a.m. - 12 noon
- Women's Wine & Cheese: 2 - 4 p.m.
- Industry Appreciation & Networking Party: 5 p.m. - 25¢ Tap Beer and Other Refreshments



SATURDAY

FEBRUARY 27, 2010

5 p.m. approximate

FRIDAY

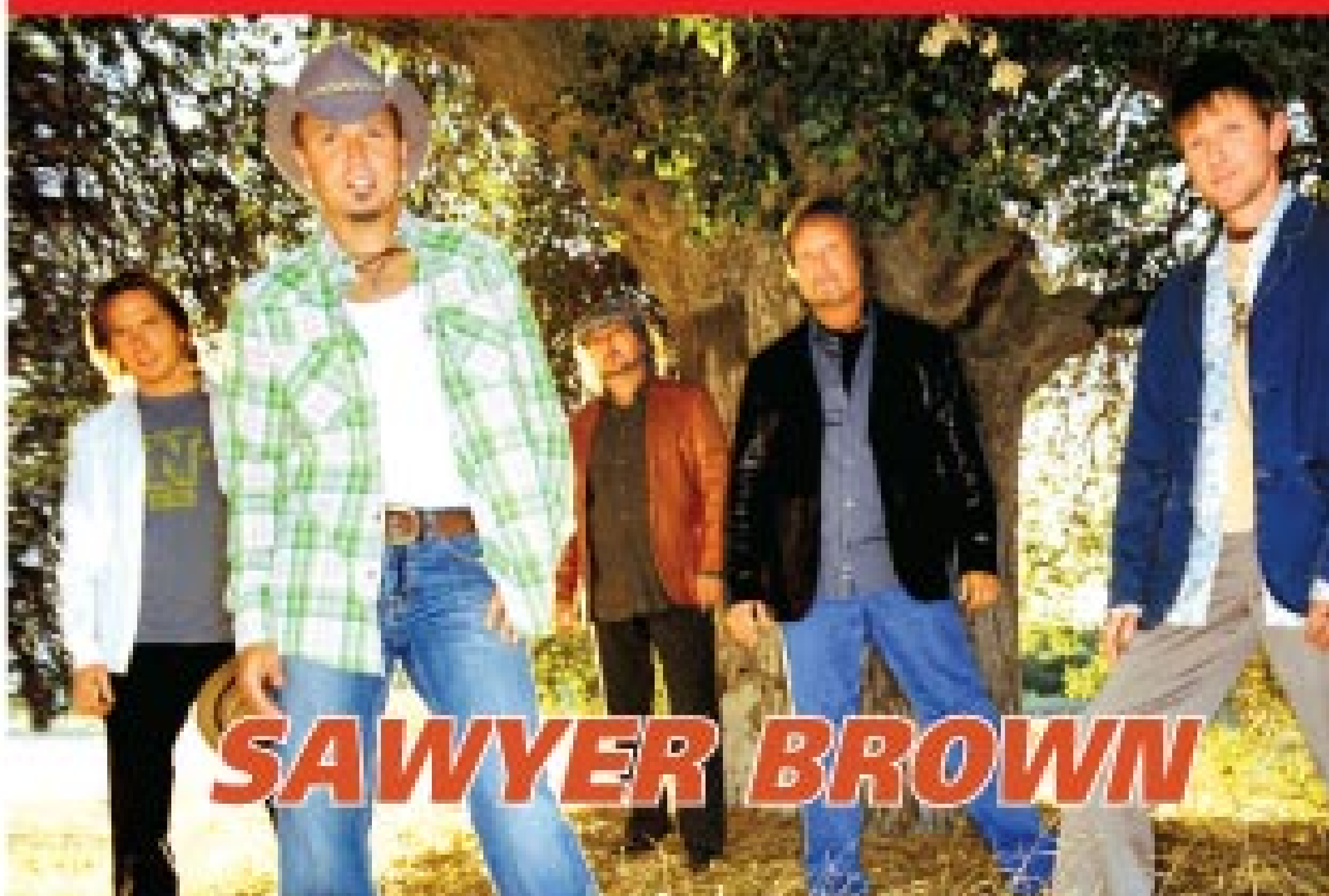
February 26, 2010

- Educational Seminars: 8 a.m. - 12 noon
- Exhibits Open: 9 a.m. - 5 p.m.

SATURDAY

February 27, 2010

- Exhibits Open: 9 a.m. - 3 p.m.
- Saturday Evening Jam: 5 p.m. - Phil Vassar & Sawyer Brown



► Exhibits open at 9 a.m. on Thursday!

About Shortcuts

To the editor:

I am responding to the column, "Who Cuts the Corners?" (*Onsite Installer*, December 2009). As an installer for more than 25 years, I have seen many jobs where not only were corners cut but outright fraud was practiced by installers. I could list all the shortcuts taken, from shortened trenches, to missing rock depth, and many more, but I am sure everyone knows them and has run into the shoddy workmanship practiced by some unscrupulous individuals within our industry.

Yes, the homeowner is one party involved in the Cheap Charlie jobs. When bids on work come within a couple hundred dollars, there may not be much difference in the finished job if all things are balanced. But when jobs vary by \$500 to \$1,000, there has to be something missing.

Here, the first red flag should go up, but when price is the only consideration, and not long-term performance of the system, who is to blame if later the system fails? On all designs I do, I also include an estimated bid form listing all materials needed: risers, drop boxes, type of pipe, drainfield material used (chambers, rock, graveless tube, fabric, insulation on pipes) in the system.

I tell the homeowner to be sure to give the copy (one without price) to anyone else who they may have bid on the job, to be sure any other bids they get include those same items, and to compare the bids completely.

New rules that require the installer to follow the design can help, but then the final inspection needs to be checked against the design. Also, the designer's plans need to be followed, and any changes must be reviewed and approved by the designer and the inspector. The reputation of the installer, and his willingness to own any changes made without authori-

zation, needs to be questioned by the final inspector and the homeowner.

I have inspected systems at the time of sale where I wonder how they were ever approved. On comparing the system to the as-built drawing filed with the local unit of government, only some similarities were present. Systems where there should have been risers added to the tank were found to have none. Drainfield inspection wells that should have been present were not.

I have gone back to systems I designed and bid, but where I did not get the job, only to find many things changed: parts missing (risers, drop boxes, tanks size changed) or other modifications made. I have also seen where pumps have been downsized from high-capacity to just the standard unit, or pumps replaced with a big-box sump pump rather than effluent pump.

On talking to government inspectors on some of the problems, the standard answer seemed to be a shrug of the shoulders and a, "Well, when I inspected, it wasn't finished, and I didn't go back." Here the blame can be put on the contractor as well as the inspector for short-changing the homeowner.

To be a solid industry where the public health comes first, we need cooperation between the contractors and the inspectors — not as adversaries but working together to install a system that will meet the needs of the homeowner and the public for many years.

In addition, every system should consider the cost ratio. Systems should meet the demands placed on them, but also give performance at the lowest cost. Why price systems with items that are not needed just to increase income, when we will eventually run into the argument the "big pipe" municipal system is cheaper than an onsite system?

I have done site evaluations on property for prospective buyers where I have estimated the cost of system against certain locations. I have told individuals where to site

the house to get a proper gravity system. I have also advised against a given lot because of cost of mound or other alternative system where poor soil conditions will not allow a low-priced system. I tell the prospective owner to take the extra thousands of dollars it will cost for a septic system and invest it in a different property.

Orin Koeckeritz
Afton, Minn.

On Target

To the editor:

I agree 100 percent with this article ("Who Cuts the Corners?" *Onsite Installer*, December 2009). I am an onsite installer from Minnesota. Recently, our license fee increased from \$100 to \$200 per year. The Minnesota Pollution Control Agency enclosed a comment form with my license renewal.

I replied that I felt the fee increase was good — if there were more teeth in enforcing the rules. In my opinion, if a licensed business does not follow the rules (for example, they bypass inspections, or move the drainfield away from the designed area), their license should be revoked immediately.

We all attend the same schools and we all know the rules. The guy who doesn't follow the rules is the same guy who works the cheapest. It gets old bidding against him. I believe tougher enforcement would make the "cheap Charlies" go away. I do enjoy reading *Onsite Installer*.

Don Ramberg
Ramberg Excavating
Pine City, Minn.

Another Culprit

To the editor:

I think you left someone out of the argument of who is responsible for cutting corners (*Onsite Installer*,

December 2009). What about the less-than-reputable builders — the ones who get the homeowner to tell the health department they are building a two-bedroom house with no garbage disposal, only to build a four-bedroom with disposal?

Then, when the house is built and they are ready to install a septic system, the builder tells the homeowner I am trying to sell him a more expensive system than he needs, just to make more money. I would bet from my experience that the builder of the new house in your article probably told the homeowner not to get the health department involved, but he wasn't the one the health department had to battle.

What about the builder who builds on to a house to add bedrooms for the new owners because there are more people living in the house now and they need more room? Then when that system fails, was that the original installer's fault? Or the regulator's? Or the homeowner who did not get good advice because he trusted a builder who did not care about the septic system failing after he had his money and was gone?

Of course you can argue that the homeowner should have educated himself so he could make better decisions, and if so, it's the homeowner's fault. We also need to educate the builders on the importance of the septic system.

Perhaps the question is: Should we do as the electric utilities do with their Energy Star certification? They have guidelines the builder must meet to be able to advertise Energy Star homes. It does a good job of educating homeowners on the importance of spending a little money now to get a more efficient home to save them money in the future on utility bills.

With the green building movement, should we be doing a better job of teaching about our importance in protecting the environment? I have found that most people I have put in systems for are glad to have someone explain how

they can help the environment by maintaining that system. It is a lot easier to get people to do the right thing in regard to their systems when they are educated about the impact their decisions have on the environment.

Maybe we should do a better job on a national scale of getting a brand that builders could use to sell their homes. If we can help builders have something to differentiate themselves from the competition, then we have an ally in getting homeowners to understand the importance of septic systems.

Should we be selling systems on lot-by-lot basis? Or should we be selling the environmental importance? I am trying to figure out a way for my business to separate itself from the other installers here. I want to be a business that not only puts in systems but also helps homeowners understand that when you do not live on sewers, you are in control of your environmental impact.

Jeff Harrod,
president and owner
Harrod Excavation Inc.
Salvisa, Ky.

What About the Building Administrator?

To the editor:

I read with much interest your article, "Who Cuts the Corners?" (*Onsite Installer*, December 2009). Of particular interest was your example of a homeowner who considered himself above the law or not subject to it.

I have been a regulator for over 30 years, working for county health departments. I have seen many instances where homeowners have tried to repair or install an onsite system themselves. Sometimes the system works very well, sometimes not so much. In the end, most homeowners realize the importance of having a professional install the system, especially if it requires anything more than a septic tank and gravity drainfield.

That being said, the homeowner in your story hired a contractor who had the same mindset. Neither

was interested in maintaining a healthy environment, nor were they much concerned with the health of the neighbors or of the homeowners' own family.

In any case, you missed the real reason this problem exists, and you did not identify who is really to blame for these situations. The National Building Code requires that before any building permits are issued, all environmental permits must be obtained.

Therefore, in your example, the blame does not lie with the homeowner, who can always claim ignorance of the health regulations. It does not lie with the installer (although if he is competent, he should not take the job, as you pointed out).

The blame here really lies with the building administrator (BA), assuming the homeowner had a building permit. Before issuance of the building permit, the BA should have a copy of all environmental permits on his desk. That may include a sewage permit, well permit, soil erosion permit, and possibly others.

We have had a great deal of success in opening the lines of communication with township building officials throughout the county. They have risen to the challenge presented by homeowners who may feel that they can get away with something.

I do not mean to infer that there are no dwellings built today that have not gone through the regulatory gauntlet. But the numbers have dropped immensely. Thirty years ago there may have been 30 to 40 homes constructed in any year without health permits. I would doubt this occurs even once a year now.

It has been very clear that as regulators, reaching out to other regulatory offices, local or state, has a tremendous impact on the quality of the various programs and also on the public's view of these programs and the benefits of orderly and proper installation of wastewater treatment facilities.

We have been working side by side with the excavators in our county for many years, and I can say with some pride that getting to know these folks has been a pleasure. I would hope it has also improved the final product that we are all responsible for. Thanks for tackling the tough questions!

John Johnson
registered sanitarian III
Allegan County (Mich.)
Health Department

About Regional Codes

To the editor:

I read the article, "Regional Codes Have Merit" (*Onsite Installer*, October 2009) and Paul Miller's letter to the editor in response, and I have a comment on enforcement.


States and counties can get around the issue of having to enforce the regulations on watertight vessels and onsite water tests with county personnel by requiring the designer to write a final letter indicating that the tanks have been tested for watertightness, and that a representative of the designer has witnessed the test and accepted that the tank is watertight.

The state and county can make it a policy that no site is approved until the final designer's letter is received. This achieves three out-

comes. First, it relieves the counties of having their personnel run around to sites to witness watertightness tests. Second, it makes the designer responsible to ensure that the tank is tested. If the tank leaks in the future, at least the owner has someone to question and possibly retrieve costs from.

Third, if the county withholds a certificate of occupancy or a final county approval for the system until the designer's letter is received, the designer has a hold over the client to get paid for the design and inspection work in a reasonable time.

Bob Wright, P.E.
onsite wastewater system
design engineer
Lakewood, Colo. ■



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

Massachusetts Residents Look for Onsite Alternative to "Big Pipe"

By **Scottie Dayton**

Chatham Concerned Taxpayers sponsored a meeting with the intent of finding a wastewater solution that is less expensive than the \$300 million sewer system and treatment plant upgrade currently being planned.

Addressing the crowded room were Valerie Nelson, Coalition for Alternative Wastewater Treatment director and former Gloucester city councilor, environmental consultant Patrick Lucey of Victoria, B.C.; Jim Kreissl, former EPA wastewater expert; environmental engineer Pio

Lombardo of Newton, Mass.; and state representative Matt Patrick, D-Falmouth.

The best system for Chatham, according to Kreissl, is a mixed system of neighborhood cluster systems, onsite nitrogen-removing septic systems, and a small sewer system. Kreissl estimated that it would cost each taxpayer about \$60,000 to connect to the new sewer system, including the cost of building the plant and extending the sewer lines. Treating wastewater using nitrogen removal technology,

however, would cost each taxpayer about \$20,000 and connecting to medium-sized cluster systems around \$15,000, by his estimate.

Permeable reactive barriers and nitrogen removal technologies are not yet permitted, but Patrick says he and other members of the Cape Cod legislative delegation plan to encourage the state to step up its investigation and approval of the technology so that towns like Chatham can consider a full range of options.

Ontario

The Ministry of Environment proposed major changes to the Canadian CSA B66 standard involving liquid level depth and air space requirements on prefabricated septic tanks. The proposal also introduces an Equivalency Test Protocol that allows new tank designs to be tested side by side with standard tanks to show that they are equivalent in functionality. The year-long test is conducted by a third party. If accepted, the changes will bring a greater variety of septic tank configurations to regulators and homeowners.

Oregon

A proposal by the state Department of Environmental Quality will raise most onsite system application fees by 40 to 60 percent. The new fees will take into account raising costs through 2015, and do not affect the fee schedules for counties that administer the program themselves.

New Jersey

A proposed ordinance by the New Jersey Highlands Council would require municipalities within the Highlands region to license,

mandate pumping and inspection every three years, and impose fees on residential onsite systems.

In a letter to John Weingart, the council chairman, assemblyman Michael Doherty, R-Warren and Hunterdon, writes, "The Highlands Council's proposal is far more stringent than those proposed by the state Department of Environmental Protection and other model ordinances, and clearly establishes an unfunded state mandate, as well as the precedent of the licensing of residential properties." The proposal applies only to municipalities within the Highlands region. Doherty plans to gather support to stop the imposition of the fees and rules that single out the Highlands region.

Virginia

A proposal by the Three Rivers Health District in Saluda would regulate the operation and maintenance of alternative systems, establish performance requirements, and specify horizontal setbacks for the systems. It also would require all owners of alternative systems to hire a licensed operator to inspect, sample, and maintain the system. ■



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Donald Thompson, co-owner of McGovern & Co., operates a Case 590 backhoe to set a 1,250 gallon precast septic tank as operator Tom Brown (left) and laborer Justin Cunningham assure proper placement.

One-Stop Service

PHOTO BY GILL LONGWELL

McGovern & Co. Excavating handles customer projects with professional care from inception to final regulatory approval

By Gil Longwell



McGovern & Co. Excavating Inc., Kennett Square, Pa.

OWNERS: William McGovern and Donald Thompson

YEARS IN BUSINESS: 22

MARKET AREA: 75-mile radius

SPECIALTY: One-stop service from site evaluation to final approval

BUSINESS MIX: 75 percent new construction; 15 percent repairs; 10 percent inspections and evaluations

EMPLOYEES: 10

AFFILIATIONS: Pennsylvania Septage Management Association

WEB SITE: www.mcgovernseptic.com

“Can you help me? Can you fix it?” Bill McGovern heard these questions almost every week in his septic tank pumping business.

While pumping tanks, he regularly uncovered needed repairs that generate the questions from customers. For years, he referred customers to an installer friend, Donald Thompson. But then he decided he couldn't ignore an obvious growth opportunity. And Thompson, a skilled installer, saw that the infrastructure McGovern had would let him move to the next level. So, together, they formed McGovern & Co. Excavating Inc.

Located in Kennett Square, Pa., about 40 miles west of Philadelphia and 15 miles north of Wilmington, Del., the company serves parts of Pennsylvania, Delaware and Maryland. Founded in 1987, the company employs 10 people and operates from the same office and with the

same administrative support team as McGovern's pumping business, Wm. P. McGovern Inc.

A matter of trust

Then and now, pumping customers seek McGovern's expertise when they have onsite system problems. And homebuyers and builders now look to McGovern Excavating to install new systems. “Our customers trust our judgment, and they

opment planning meeting in the office or in the field.

Rapport building begins during the first customer contact. The tone and tenor of a conversation with the office staff lets customers know they are dealing with the right company. Sometimes the staff has to help customers understand what service they are seeking, and sometimes customers know what they need before they call. “Whatever

“When one organization coordinates a project from a what-if dream to the reality of ‘Wow,’ there are very few cracks into which details can fall and be lost.”

Randy Dietterick

tell their friends and neighbors,” McGovern says. This trust evolves from positive, collaborative relationships, often nurtured over an open septic tank while discussing solutions to a problem, or at a predevel-

the situation, we take care of customers' needs,” says Randy Dietterick, general manager.

As McGovern, Thompson and Dietterick see the need or opportunity, they educate the customer.



PHOTO BY JOEL PLOTKIN

Above: Randy Dieterick, general manager (left) inspects a stormwater grading project completed by operator John Gebhart (right) with his Case 850K dozer. Right: Donald Thompson, co-owner, installs the inlet lines for a trench system using chambers from Infiltrator Systems Inc.



PHOTO BY GIL LONGWELL

This willingness to give knowledge away solidifies the customer connection and builds trust. "A customer's trust generates far more business than a full-page Yellow Pages ad," says McGovern. Sixty to 65 percent of the installation and repair business comes directly from pumping contracts. The balance comes by word-of-mouth from former customers.

Demand-driven services

Since 1987, McGovern's response to customer requests for new services has followed the same pattern. Identify and understand the opportunity. If it is a good fit and offers profit, add it to the service menu.

McGovern's home turf, Chester County in southeastern Pennsylvania, administers that state's onsite system regulations through the Health Department. Landowners seeking permits can designate McGovern & Co. as their agent for onsite interactions with the county. This role helps the landowner and the county streamline site evaluation. The one-stop approach to site evaluation, design, permitting and

installation is in direct response to demand.

"The Health Department's Sewage Enforcement Officer (SEO) evaluates the site while we handle the logistics of deep probe excavation and perc testing," says Dieterick. If the soils dictate alternate system locations or configurations, he explores those with the SEO on the spot.

Bringing an understanding of the landowner's goals and concerns, and an understanding of siting requirements, McGovern personnel can satisfy both regulator and land-



Co-owner Bill McGovern (right) gives operator Tom Brown the engineering specifications required for an ADS pipe installation.

PHOTO BY JOEL PLOTKIN

In Partnership With Himself

Just as Bill McGovern's installation business has gained customers from his pumping business, now the pumping business welcomes referrals from the installation business. This symbiotic relationship lets each company's employees excel in their areas of expertise, and at the same time deliver the services each customer needs.

McGovern finds that to be a successful business model. Both businesses identify customer wants, which represent new opportunities. The cross-business linkage

can be direct and immediate. For example, in most jurisdictions, to get a holding tank permit for a business, a pumping contract must be in place. McGovern & Co. has the solution to both needs.

Sometimes, the transition takes longer — often until a new septic tank's first pumpout is due. Knowing when to send the friendly pump-out reminder is itself a significant advantage. Sending customers a reminder from a name they trust can be a real door opener.

owner. "We have found that both parties appreciate the value we add to this process," says Thompson. Other installers have mimicked the service.

In a recent year, 94 percent of landowners who started the permit process with McGovern as their agent continued the relationship through installation to final approval. That retention rate includes projects

that fell through because of unsuitable sites, changing economic conditions or other external factors.

It is also common for landowners to move their projects to McGovern & Co. during the site development process. "We are in constant communication with the landowner, building the trust and the relationship," Dieterick says. Lack of communication from other

"When we have responded to our customers' requests for help, our business has grown and has been successful."

Bill McGovern



PHOTO BY GIL LONGWELL

Donald Thompson drills each chamber end plate before installing the inlet lines.

installers has been a factor for owners who switch.

Natural next steps

The company includes system design in the one-stop package. "The more work we can bring under our roof, the more profitable we are," McGovern says. Landowners also benefit when their site evaluator is also their designer and installer. "When one organization coordinates a project from a what-if dream to the reality of 'Wow,' there are very few cracks into which details can fall and be lost," notes Dietterick.

Not long ago, McGovern brought



Donald Thompson inspects the lifting harness to assure safety in lifting a manhole assembly.

PHOTO BY JOEL PLOTKIN

notary services in-house. Now, rather than send skilled technicians off site to get their signatures to be notarized, they stop by a support person's desk to sign forms, which are notarized on the spot. This saves time and avoids interruptions in the flow of service to customers.

Both of McGovern's enterprises provide service in seven counties. As more of these jurisdictions add maintenance and management to owners' responsibilities, Wm. P. McGovern (the pumping business) has added those to services. In the firm's metropolitan marketplace, onsite system inspection as a part of a real estate sale is also in demand. McGovern & Co. added that service in the mid-1990s, and it now accounts for about 10 percent of the onsite work.

Keeping busy

McGovern's seven-member field crew works on about 100 systems per year. Thompson is the lead equipment operator. Foreman Rick Pruett and Tom Brown are also operators. Brown focuses on site evaluation and perc testing, and he is cross-trained to handle most jobs.

Justin Cunningham and Andrew McGovern, Bill's youngest son, serve double duty as drivers and laborers. Dietterick prepares all bids, is involved in nearly every phase of every project, and is a willing mentor to the less-experienced employees.

In the office, Lynne McQuiston

manages secretarial duties and Judy Yeatman coordinates excavating projects. McGovern's other office staff members help as needed with customer telephone contacts. Helen McGovern, Bill's mother, was in the office on the day he opened the first company's doors. Today, at 84, she still provides live and telephone customer service.

The equipment roster has grown from a single pickup truck, backhoe and dump truck in 1987. The current fleet includes three 2006 Case backhoes (two model 580s and one model 590), a 1972 Case W14 loader, a 1998 Case 1840 skid-steer, and a 2003 Case 850K dozer. Supporting and servicing these machines are three 6-wheel dump trucks, two 10-wheel dump trucks, and a tri-axle dump truck. All this and numerous pickups and other equipment keep full-time mechanic Dave Yarnall occupied.

Always growing

The company keeps growing in part by staying abreast of trends. Pennsylvania, for example, is changing the way stormwater is managed. Development-wide approaches are being replaced with lot-by-lot solutions. When soils must support primary and alternate onsite system sites and stormwater management measures, coordinated approaches become more critical.

About seven years ago, McGovern & Co. added stormwater management planning and implementation

services. "It made sense to incorporate all aspects of a site's water management strategies into our one-stop approach," McGovern says. It was a natural and logical expansion, and now the company offers a complete package of earthmoving services. "Unlike excavators who also install onsite systems, we have always been onsite installers," says Thompson. "Now we are a full-service excavation company as well."

McGovern & Co. broke ground when it became Chester County's first approved installer of chambers from Infiltrator Systems Inc. The company has installed a wide range of absorption areas, from drip irrigation, to elevated sand mounds, to conventional beds and trenches. The company also repairs systems installed by others.

Sacrifice nothing

McGovern acknowledges that in a down economy, business is not as robust as it once was. "Slow times are not a reason to compromise or sacrifice standards, or risk one's good name," he says. The company has been successful, in part because it maintains high standards. McGovern is holding the line on prices and will not cut corners to save money or land a job.

"A good reputation is too hard to get and too easy to lose," says McGovern. His partnership with Thompson started when they recognized that a customer's request for help was an opportunity for growth. Although built during a robust economy and with roots in the onsite industry, the company now installs all underground utilities for homes that will be served by centralized sewage collection and water supply services.

"When we have responded to our customers' requests for help, our business has grown and has been successful," McGovern says. Regardless of the immediate purpose, McGovern & Co. will move the earth to make it happen: "We can help, we will help, we do help." ■

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

Placing the PVC

Piping is a critical element of onsite systems, yet its importance is often overlooked, with severe consequences for system performance

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

This year in *Onsite Installer* we will visit all parts of an onsite wastewater treatment system. This month we focus on a component that is extremely important but often overlooked, and that is the piping.

There are several applications for piping in an onsite system. First, there is the building sewer that connects the system to the house. Second, there is piping from the septic tank to another pretreatment device, the pump tank, or the soil absorptions system. Third, there is the supply pipe from a pump tank to the distribution network. Finally there is the distribution piping in the soil treatment area.

PVC dominates

For now, we will focus on the building sewer. In the past, a number of piping materials have been used for this purpose, including clay, Orangeburg and cast iron. These materials have given way to plastic polyvinyl chloride (PVC).

In installing piping, first make sure the materials are not defective or damaged. Pipe with defects such as cracks, or pipe that has been weakened by long-term exposure to sunlight, may no longer be watertight and may invite in root intrusion, leakage, or infiltration of clear water into the system.

For a building sewer, the pipe should be at least 4 inches in diameter to accommodate toilet paper

and large solids. Because of the solids, there are maximum and minimum slopes needed to deliver the raw sewage to its destination. The minimum slope ensures that sewage runs down the pipe without slowing down, resulting in clogs. Conversely, if the slope is too great, there is a risk of the water and solids separating, solids accumulating, and the pipe plugging.

For 4-inch PVC piping and a building sewer less than 50 feet long, the minimum slope is 1 inch in 8 feet, or 1/8-inch per foot, and the maximum is 1/4-inch per foot. For sewers longer than 50 feet, the slope should be 1/4-inch per foot.

Provision for cleaning

A cleanout should be installed at the wall outside the home so that the pipe can be cleaned or jetted from the outside, keeping any spills or problems outside the home. The cleanout should be made with a full Y branch fitting and should extend at least 2 inches above grade.

The cleanout should be the same size as the pipe it serves. The distance between cleanouts in 4-inch pipe should not exceed 100 feet (or 50 feet for pipes 3 inches or smaller). The riser pipe of the cleanout should be of the same pipe material. The cover or plug should be a raised nut or recessed socket threaded for removal.

You need to be familiar with state and local codes affecting set-



A cleanout installed outside the house on the building sewer makes it easier to jet the line from outside the house. Cleanouts should extend at least 2 inches above grade.

All plastic pipe should be placed on a solid base with the proper slope. The base can be granular fill or, where appropriate, natural unexcavated soil. If the soil is excavated and then backfilled, it should be compacted in 6- to 12-inch lifts.

back distances. The main issue is to make sure drinking water pipes and sewer pipes are separated. To facilitate this, different colored piping is used: blue for drinking water, green for wastewater, and purple for treated wastewater to be reused for irrigation. Setback requirements and methods to ensure separation will vary — it is your job to know these requirements.

Tight joints

Another safety concern is making sure the pipe is watertight and does not leak raw sewage or invite root intrusion or infiltration of surface water into the system. This requires proper gluing techniques and, upon completion, a pressure test before the piping is backfilled.

To provide watertight connections, the gluing or solvent welding

of the sewer pipe is a five-step process:

- Prepare the pipe, making sure it is clean and not damaged.
- Cut the pipe to length with a square end.
- Deburr the end with a file or a knife.
- Bevel the cut end 10 to 15 degrees with a file or a reamer.
- Apply the primer and cement to both ends and twist one-quarter turn.

When using pipe lengths with spigot and bell ends, the pipe should be oriented so the flow travels from the bell end to the spigot end.

Proper location

The final concern is proper piping location and installation. All plastic pipe should be placed on a solid base with the proper slope. The base can be granular fill or, where appropriate, natural unexcavated soil. If the soil is excavated and then backfilled, it should be compacted in 6- to 12-inch lifts.

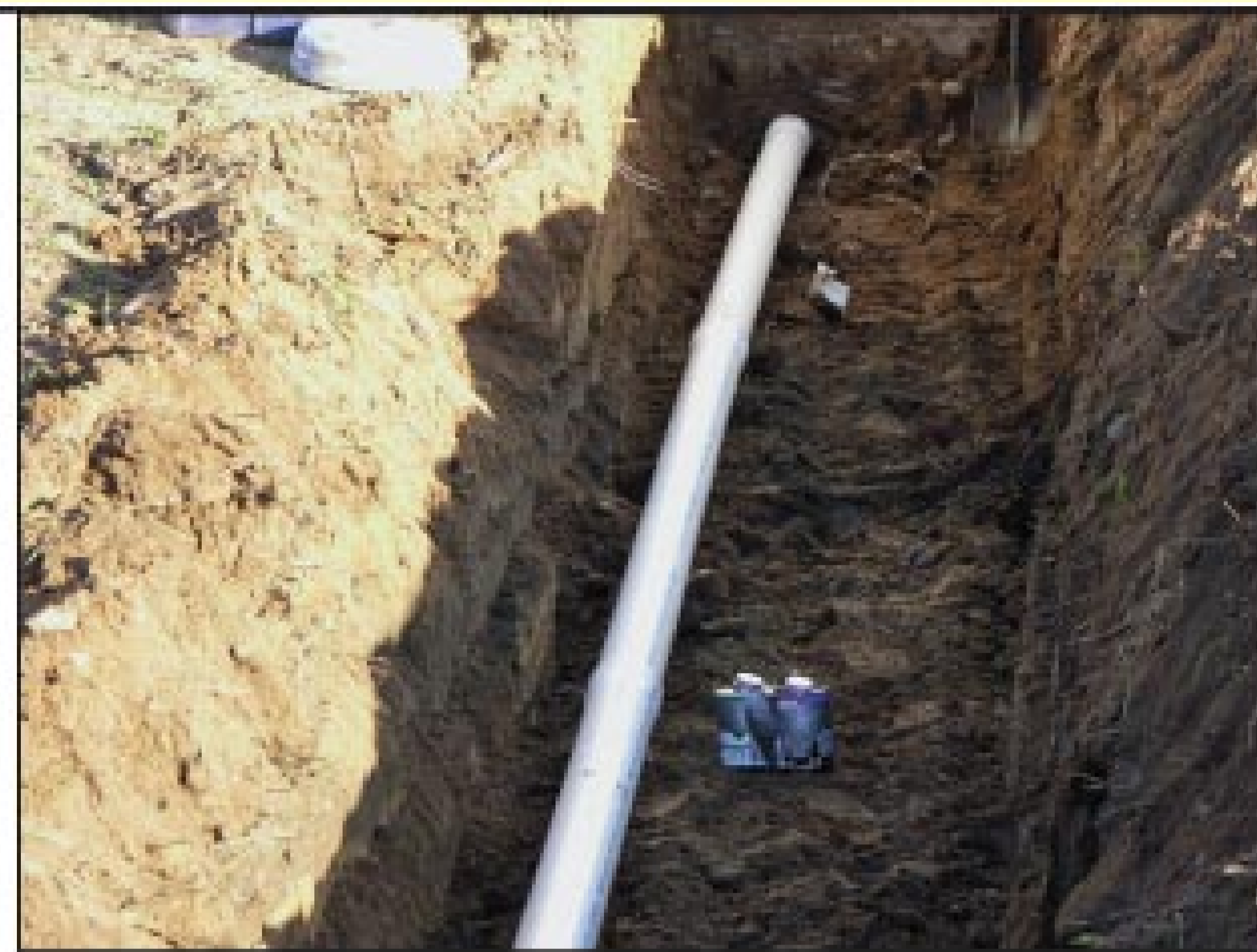
To allow proper backfilling around the pipes, the trench bottom should be three times the diameter

of the pipe — so for 4-inch pipe, the excavation should be 12 inches wide. It is important to lay the pipe on-grade with the proper slope and to make sure there are no bellies or dips. Check the grade frequently with a laser level during installation.

The excavation should follow the designed pathway for the pipe. Be careful not to over-excavate, as that will require additional work during backfill. If the excavation is in any organic material, such as peat, that material should be removed from the excavation. Then use sand or pea rock to bring the base to the required elevation.

Use a gradation that minimizes migration of materials when using rock for bedding and haunching. The key is to avoid any low spots in the pipe. During backfill, avoid having rocks or hard soil clods in the fill material, as these can crack the piping or damage the pipe connections.

In coming issues, we will look specifically at excavation and backfilling for the piping and at piping used in other specific or parts of the system. ■



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Triple Header

A secondary treatment unit with recirculating and dosing compartments enables a contractor to remediate a failed sand filter in southwest Oregon

By **Scottie Dayton**

Homeowners in Roseburg, Ore., wanted to stop the smelly water from ponding in their back yard. Two contractors advised the couple to poke holes in the liner of their sand filter. Instead, they sought a third opinion.

When Chris Semrau of North Bank Excavation in Roseburg arrived, he found the 18- by 20-foot sand filter in failure. The small fenced-in yard also held a swimming pool, dog kennel, equipment shed, detached garage/office, and four mature oaks. With no room to replace the sand filter, remediation was the only solution.

Semrau knew that Orenco Systems Inc. in Sutherlin, Ore., was looking for a site to demonstrate its AdvanTex AX20RT three-in-one treatment, recirculating, and dosing tank. Semrau called sales director Darren Simmie, and they teamed up to repair the onsite system. The unit's design enabled them to keep the existing septic tank and drain-

field, while its compact shape expedited installation and minimized disruption.

Site conditions

The 0.68-acre subdivision lot has 36 to 48 inches of loam over clay with some river rock. Because the repair used existing components, soils and test pits were unnecessary.

System components

Semrau designed the system to handle 500 gpd. Its major components are:

- Existing 1,000-gallon, single-compartment concrete septic tank made by Willamette Graystone, Roseburg, Ore.
- 4-inch effluent filter, model FTS0444-36 (Orenco Systems Inc.).
- 800-gallon AX20RT secondary treatment system with recirculation and dosing compartments (Orenco Systems Inc.).



Chris Semrau (operating excavator) and Scott Hammerschmidt of North Bank Excavation place the treatment unit into the excavation. (Photography by Jeff Ball)

- Biotube pump vault with 4-inch turbine 1/2-hp effluent pump (Orenco Systems Inc.).
- Universal flow inducer pump system with 4-inch turbine 1/2-hp demand-dose discharge pump.
- VeriComm telemetry monitoring system and control panel (Orenco Systems Inc.).

System operation

Wastewater gravity flows into the septic tank, then through a 4-inch ABS pipe to the 600-gallon recirculation compartment of the AX20RT, which uses packed bed filter technology. Every 20 minutes, the pump sends 8.5 gallons in 15 seconds to the top of the synthetic media. As the liquid trickles through hanging textile curtains, microorganisms remove impurities.

A recirculation splitter baffle at the bottom of the media sends 80



After plugging the inlet, outlet, and vent line, Hammerschmidt fills the treatment unit with water to check for leaks.

percent of the treated water back to the recirculation compartment and 20 percent to the 200-gallon dosing compartment. When the house is empty during the day, a low-level equalization check valve in the baffle directs all the treated water to the recirculation compartment. If the effluent pump receives no flow for 24 hours, the dosing cycle increases to 40 minutes. After 48

System Profile

Location:	Roseburg, Ore.
Facility served:	4-bedroom home
Designer/installer:	Chris Semrau, North Bank Excavation, Roseburg, Ore.
Site conditions:	36 to 48 inches of loam over clay with some river rock
Type of system:	Secondary treatment system with recirculation and dosing compartments
Hydraulic capacity:	500 gpd



Hammerschmidt double-checks the elevation to ensure that effluent from the septic tank gravity flows to the treatment unit.

72-inch-tall RT (recirculating tank) unit, he had to avoid undermining the concrete floor in the dog kennel and hitting the overhanging gutters. "I had a 2-foot soil buffer between the RT and sand filter, and from the inlet of the RT to the eaves," he says. "A detached garage/office was to the south. It was like working in a shoe box."

To everyone's surprise, the excavator bucket dug up the original 1-inch PVC Schedule 40 plumbing from the 450-gallon concrete dosing tank. "It ran backward out of the tank toward the house, made two tight 90-degree turns, then went out to the drainfield," says Semrau. "The silver lining was now we knew where it was and could tie in the RT's discharge line." Semrau excavated the supply line enough to verify that the bucket hadn't cracked or split it.

The excavator's 10-foot reach enabled Semrau to park back from the edge of the sand filter. "My biggest concern was having the

sand filter sloughing even more. Using a liquid transfer pump, Semrau pumped the effluent into the dosing tank, then programmed the control panel to pump down the tank. Most of the effluent drained from the sand filter and stopped trickling into the excavation.

When Semrau tried pulling back some of the sloughed sand filter, the excavator bucket grabbed the electrical conduit for the old control panel and yanked out the wires. Deciding it was time to decommission the dosing tank, the men filled it with sand, cut off the riser below grade, and backfilled.

Normally, the RT is installed 2 inches above grade. However, to maintain the correct elevation with the septic tank, Semrau installed the tank almost at grade. As a precaution against water possibly ponding, he laid perforated pipe and some drain rock around the lid, then ran the line to a drainpipe in the yard.

The control panel needed a phone line, but the junction box was on the opposite side of the home. "The electrician couldn't drill through the foundation because a stem wall anchored each new addition to the ground," says Semrau. "We had no idea what we were going to do until one of the men discovered a phone jack and power panel in the garage/office. They were perfect."

During the installation, two neighbors approached Semrau about their problem sand filters. The systems, all at the end of their useful lives, are prime candidates for remediation.

Maintenance

Orenco holds the two-year service contract and will continue collecting field data.

Twice a year, a technician takes effluent field samples to confirm performance, checks the effluent filters, cleans the laterals in the RT, checks the liquid levels, runs the pumps, and looks for signs of owner abuse. ■



Hammerschmidt plumbs a 4-inch ABS pipe from the existing septic tank's gravity line to the treatment unit.

hours with no flow, the dosing cycle increases to 60 minutes.

"One benefit of packed bed filter technology is that you don't need a colony of established microbes to achieve treatment," says Simmie. "Just pushing the effluent through the media produces an immediate reduction in TSS and BOD."

"I had a 2-foot soil buffer between the RT and sand filter, and from the inlet of the RT to the eaves. A detached garage/office was to the south. It was like working in a shoe box."

Chris Semrau

Sampling results show BOD at 6.4 mg/l and TSS at 5.9 mg/l. The on-demand 10-gpm discharge pump in the dosing compartment sends 40 gallons four times per day to the drainfield — two rock-and-pipe gravity trenches each 64 feet long on 10-foot centers.

Installation

Semrau and partner Scott Hammerschmidt removed the pump vault in the septic tank, then installed an effluent filter and a gravity outlet tee that plumbed to the recirculation compartment.

The only available place for Semrau's 15,000-pound KX160 Kubota excavator was on top of the sand filter. As he dug the 78-inch-deep hole for the 102- by 62- by

sand collapse and dump the machine in the pit," he says. "That's where the RT's shallow bury really helped. I removed two-thirds as much material when compared to a standard installation. That's a 33 percent reduction in spoil and digging time." The septic tank and RT were side by side and 50 feet from the drainfield.

After he dug the pit, the edge of the sand filter began sloughing, allowing the bellied-out liner to hang into the excavation. The men quickly installed the 900-pound fiberglass unit on 6 inches of compacted pea gravel, then backfilled to the mid-seam to support the liner.

The following morning, Semrau and Hammerschmidt found 8 inches of effluent in the excavation and the

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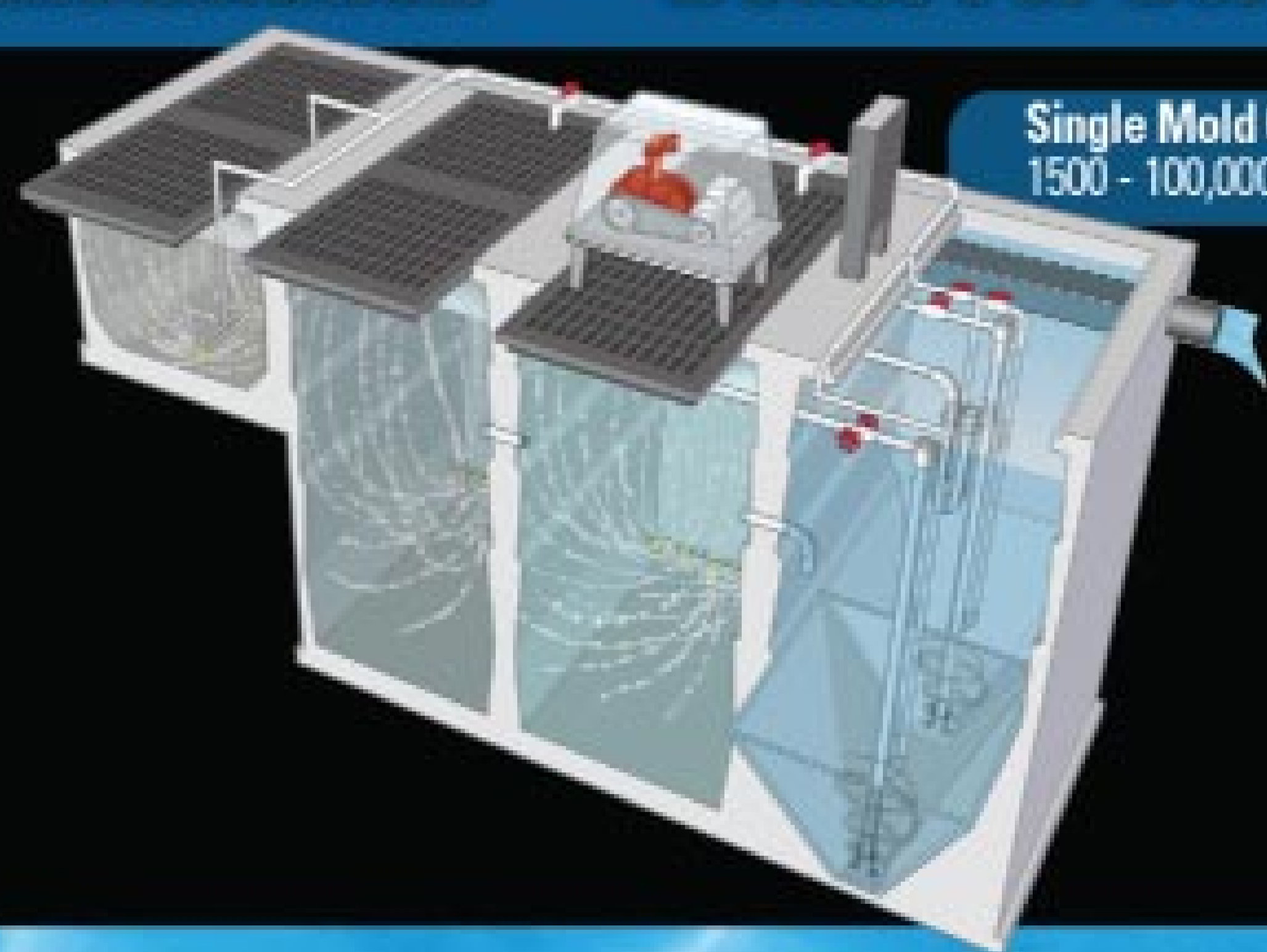
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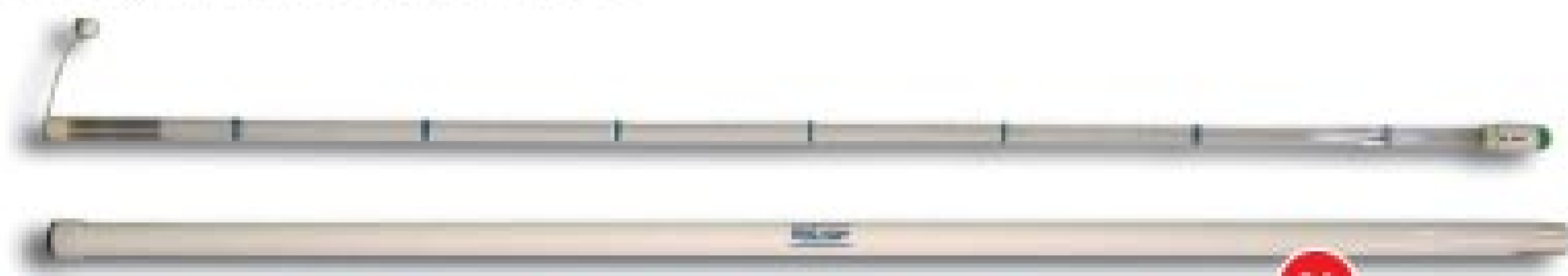
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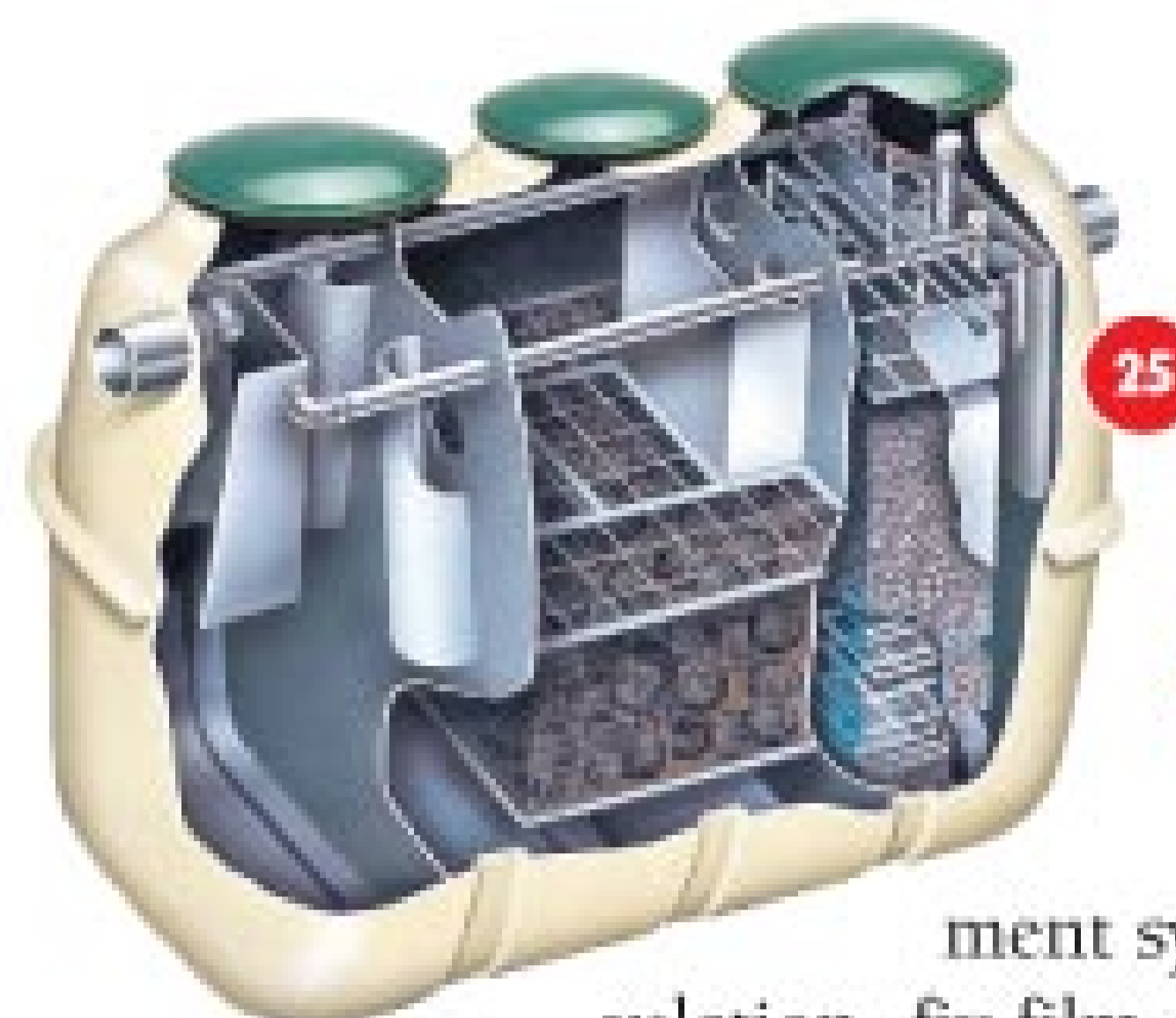
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The TruCore sludge sampler from Sim/Tech Filter Inc. enables samples to be taken quickly and without creating excessive turbulence due to restrictions created by valves, stoppers and flaps. The sampler has an inside diameter of 1 3/8 inches and nearly 10-ounce capacity. Made of polycarbonate and PVC fittings, the tube is clearly marked every foot and is available as a single 8-foot piece or two 4-foot pieces that slip together. An extension kit is available. **888/999-3290; www.simtechfilter.com; Expo booth 4176.**



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The Fusion Series wastewater treatment system combines anaerobic, aerobic, recirculation, fix-film and backwash processes. Pre-assembled, the drop-in systems can be adapted to existing systems and do not require septic tanks unless mandated by local regulations. The unit's small footprint and advanced treatment capability is designed for long-term sustainability. Its anaerobic and aerobic media never need to be removed or replaced. All system components are accessible from the surface with no specialized tools needed. **800/928-7867; www.zoeller.com; Expo booth 87.**

Ditch Witch Introduces RT45 Trencher

The RT45 ride-on trencher from Ditch Witch features a Tier 4i-compliant engine and choice of attachments, including a centerline or dual-position trencher, vibratory plow, rotary saw, combination trencher/plow and backhoe. **800/654-6481; www.ditchwitch.com; Expo booth 9048.**



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Handy Hook-Ups

Innovative attachments for skid-steer loaders offer economical ways to expand services while doing more work with fewer hands

By Ed Wodalski

The lagging economy has many contractors doing more with less this year. While cautious about big-ticket purchases, owners are looking to smart buys that maximize production through a diversity of services. Whether that means renting or buying, one economical alternative to a new machine is a versatile skid-steer attachment.

"We're seeing many skid-steer and compact track loader customers purchasing more attachments as an alternative to buying another machine," says Rick Harris, senior project manager at Terex.

"The economy is the primary driver of this trend. Skid-steer loaders and compact track loaders provide tremendous flexibility in applications and attachments," Harris says.

"The more attachments you have for your skid-steer, the more valuable it becomes."

Marv Haugen

"They provide a customer with something like a Swiss Army knife."

Whether for bread-and-butter septic system installations, or for fill-in excavating, earth-moving and landscaping, attachments can be a cost-effective way to stay efficient and prosper during a difficult time.

Securing the job

Larry Kapellusch, product mar-

keting manager with CE Attachments Inc. of West Bend, Wis., says business conditions may require contractors to become more aggressive in seeking work, taking on jobs outside their normal range. "And that's where attachments can make the difference in winning or losing potential bids," he says.

His company's popular tools include a side-discharge bucket, designed for spreading sand, mulch or aggregate from either side. When it comes to that "must-have" attachment, Kapellusch says that depends on the nature of the business and the geography.

"Typically, landscapers will be using augers for setting fence posts, for digging holes for planting trees and shrubs," he says. "If they're involved in building decks, they may be using an auger for setting the foundation columns."

Marv Haugen, owner/president of Haugen Attachments in Casselton, N.D., believes in the value of diverse tools. "If you have a skid-steer and you don't have a lot of attachments, you should be looking at attachments instead of buying another machine," he says. "The more attachments you have for your skid-steer, the more valuable it becomes."

Tillers and rock buckets

For versatility in landscaping, Haugen suggests adding a rotary tiller and skeleton rock bucket. "Skeleton rock buckets are great back-grading tools," he says. Designed for field



Side-discharge bucket



Auger



Skeleton rock bucket

rock picking, construction site pickup, landscape preparation and riprap or boulder work, rock buckets also work well for sifting rocks and debris.

Haugen also sees rising demand for industrial rod grapples for handling rocks and brush. The devices have independent twin grapples, industrial-grade cylinders, 1- by 1.5-inch flat bar tines spaced 3 inches on center, and a tooth bar with replaceable teeth.

Brooms, rakes and forks

Ron Peters, product manager for CE Attachments, says other time-saving and economical attachments are hopper brooms, auto rakes, tilt attachments, mini-backhoes, walkthrough pallet forks, grader rakes, and tree spades.

Hopper brooms offer a quick way to clean up a jobsite, sweeping materials into a bucket along a driveway or other hard surface, says Peters. These items are made to fit



Hopper broom



Auto rake



Grader rake



Backhoe

any make or model of skid-steer with a universal mount. Other broom accessories include gutter brushes that can be mounted on either side, as well as a dust-control system that includes a 25-gallon tank, pump and nozzles.

An auto rake is a multi-talented tool that can remove rocks from 3/4 to 6 inches in diameter, and break up clods and level soil at the same time. Spoil is deposited in a hydraulically controlled dump bucket.

For more precise grading or leveling, contractors might consider a tilt attachment that can tilt buckets 18 degrees or tilt trenchers for vertical cuts, even on hills. The mini-backhoe is designed for smaller jobs, such as trenches and footings. No stabilizers are required.

Historically, pallet forks have been among the most popular attachments, Peters says. Most owners get a set when they purchase their skid-steer. One unique feature to consider is a walkthrough

for models with a cab enclosure — that enables the operator to get on and off the loader easily.

"Another lower-cost attachment that you can get a lot done with is a grader rake," Peters says. Designed to scarify, smooth and level hard-packed soil, it can separate debris from dirt and soil, making it a

force or having a small labor force and dedicated attachments. "I don't think there's a magic formula here," he says. "If a contractor isn't purchasing attachments, he may be renting attachments from his local dealer or rental yard."

Proper maintenance also can ensure that you get the most work

"Skid-steer loaders and compact track loaders provide tremendous flexibility in applications and attachments. They provide a customer with something like a Swiss Army knife."

Rick Harris

handy tool for jobsite cleanup. There's also a tree spade that mounts to the front of the loader for transplanting trees.

Making the investment

When considering if an attachment makes economic sense, Kapellusch says contractors need to weigh the tradeoff of doing something manually with a large labor

out and longest life from your equipment. "The life expectancy of attachments will ultimately depend on the attachment itself, the type of work you're doing and how often you're doing it," says Lance Schjenken, attachment-marketing specialist at Terex ASV. "But basic, routine maintenance is easy to do and will really only cost you a little time." ■

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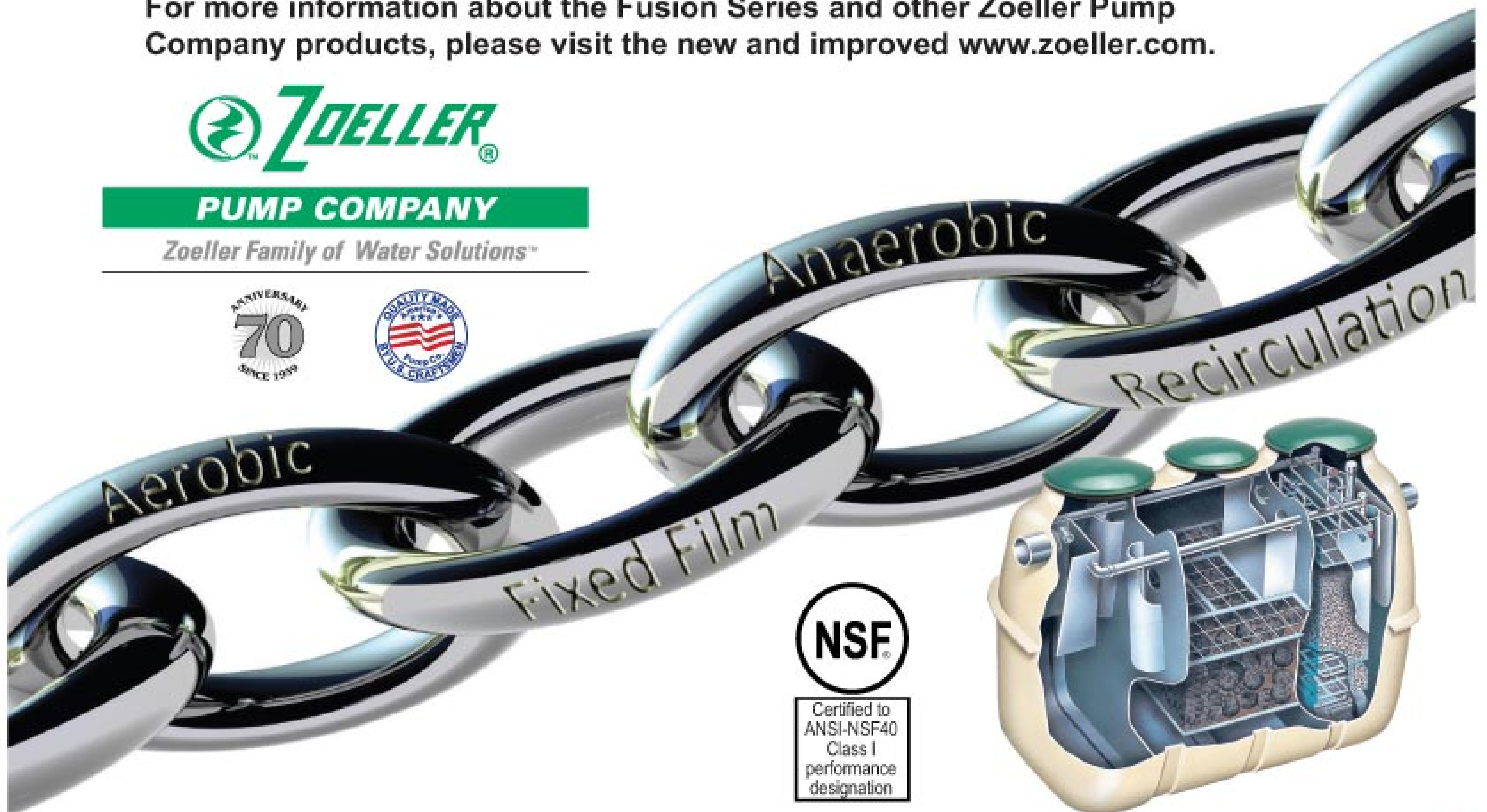
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Buried Treasure?

Good as-built drawings can be worth their weight in gold when diagnosing system trouble or planning new construction or development on a homesite

By Zan Ewing, R.E.H.S.

After the septic system installation is finished and everything nicely backfilled, the yard normally shows little evidence of the system you've just buried. You might see the tank manhole riser lids but probably little else. This is why an as-built drawing done at the time of installation, recording the system location, is one of the most important parts of the installation process.

This record will help those who come later to locate the system for a variety of tasks. The accuracy of the drawing is extremely important in saving time and effort finding sys-



Creating good as-built drawings requires practice. Two useful tools are a compass and an engineer's ruler.

tem components for maintenance or additional property development.

One of the obvious functions of the as-built drawing is as an aid to troubleshooting. The drawing can narrow down possibilities for the cause of the problem. A knowledgeable installer who receives a call to

help diagnose a problem will normally ask if there is a drawing of the system available. If there is, and it's a good one, it will greatly speed this diagnostic process.

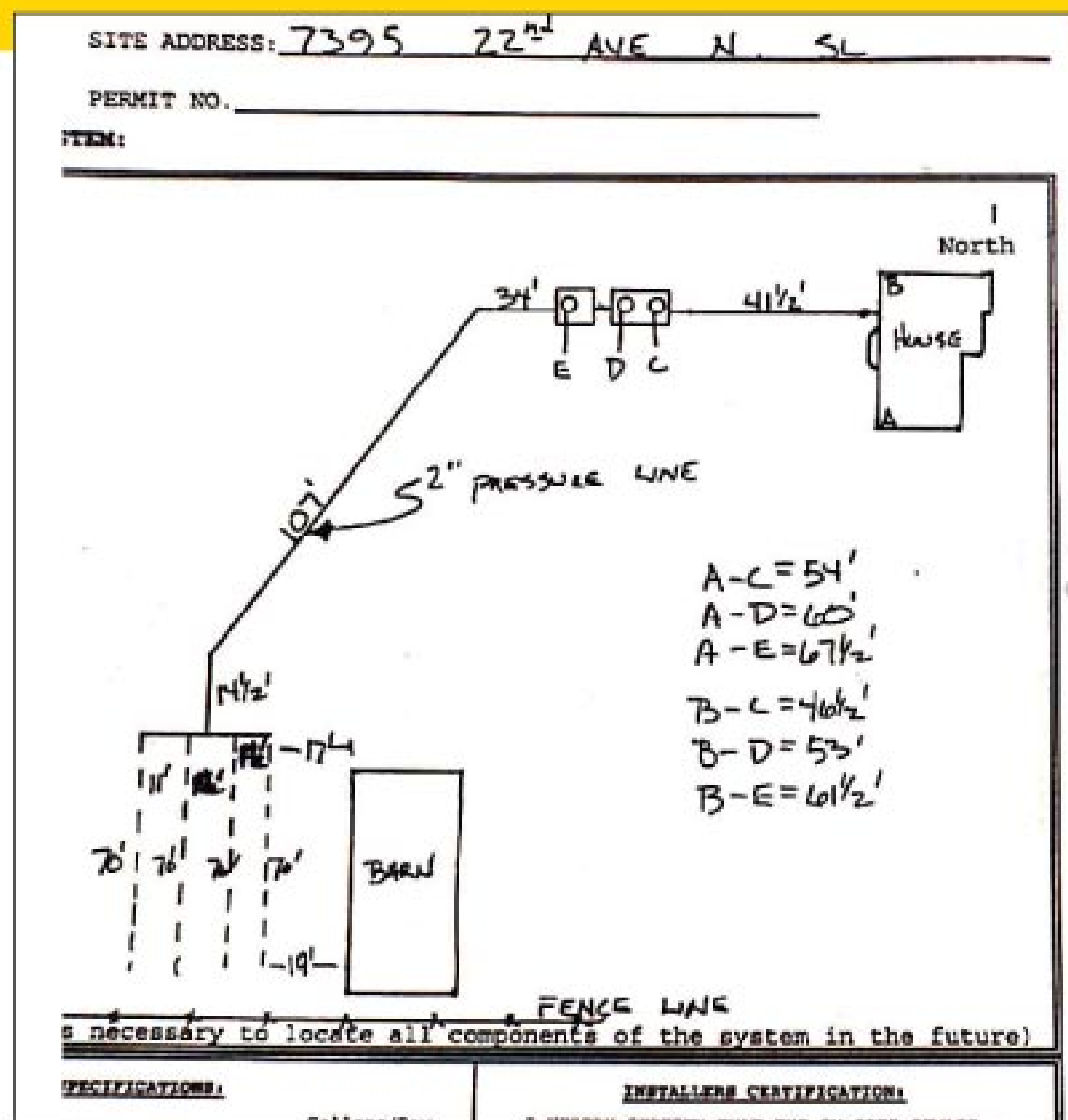
Better drawings

Through the years, the quality of these drawings has improved dramatically. That's probably a result of regulators demanding more from the contractors, and of installers taking the task more seriously. Today, as-built drawings are generally pretty accurate and provide detailed measurements of the system.

How can such a drawing help with troubleshooting? Here's an example. A number of years ago I was called by a homeowner who was convinced that he needed a new drainfield, as his was failing. He was having an outdoor event in a few weeks and was in a hurry to get the system replaced so his yard would be healed in time.

I stopped by the county offices, got the as-built drawing, and went to look at the site. I saw from the records that the system had been installed 16 years earlier and had five 100-foot lines. I also noted from the drawing that the drainfield lines were connected at each end with an up-and-over overflow fitting, plumbed in a serpentine fashion popular at the time.

As the uppermost line was obviously surfacing, this drawing helped me quickly diagnose the problem.



Here is a simple but clear method of creating a useful as-built drawing of an onsite treatment system installation.

It was not a failing drainfield but merely a dislodged overflow fitting, probably done during construction. The fix was quick and inexpensive and did little damage to the yard.

Adding on

Another common use of as-built drawings is as an aid when the owner is planning to do additional construction on the property, such as a workshop, house addition,

landscaping or lawn irrigation. I once had to replace a complete drainfield where the owner had dug a huge hole in his backyard for an in-ground swimming pool before getting his pool permit. He had jumped the gun with the excavation: the local permit procedure would have found a conflict between the proposed pool and the drainfield. This oversight added considerable cost to his pool.

Land use activities such as partitions, lot line adjustments and subdivisions are additional areas where accurate as-built drawings are extremely helpful. Developers seldom unknowingly partition off a well, roadway or buildings because they can physically see them. But septic systems are a different matter.

Like it or not, the septic system isn't on most people's radar screens unless the governmental process requires them to pay attention to it. And yet construction or other development work often requires a contractor to verify the system location ahead of time in order to avoid damaging it.

Special skill

Through the years, I have seen hundreds of as-built drawings, some very good, others virtually worthless. Like any other skill, drawing requires practice. You might be the best excavating contractor in the area, but also the worst at drawing.

I have known contractors who readily admit being hopeless at drawing and will have someone else, such as their wife, child or another employee, create drawings

oped by a local contractor and quickly adopted as the "ABC method." This involves taking permanent points on the site, such as building corners, wells, or property pins, and designating them on the drawing with letters.

The components of the system are also given letters and are shown on the drawing (see the accompanying diagram). From the designated permanent points, measurements are taken to system components, triangulating with at least two measurements. These measurements are shown on the plan in an out-of-the-way spot, placed along the edge of the drawing.

This technique avoids drawing a bunch of dimension lines and distances across the drawing, and so making it difficult to separate drawing lines from measurement lines.

Follow policies

Local policy and standards for what is expected in as-built drawings vary from place to place, but I find that making the drawing accurate and providing triangulation measurements trumps other requirements, such as drawing to scale.

The accuracy of the as-built drawing is extremely important in saving time and effort finding system components for maintenance or additional property development.

for them. They will go out and make a careful field sketch of the installation, taking as many measurements as they need, then take this information to someone else to make into a neat as-built.

The ultimate objective of the drawing is for someone in the future to be able to locate the system components quickly with minimum effort. We must always keep this objective in mind. Some components that should be easy to find from the drawing are the septic tank, the first distribution box, and the closest line to the building served by the system. Once these items are found, it's usually pretty easy to find the rest of the system, especially with a good drawing.

A very clean and accurate method for recording measurements on the drawing was devel-

Most folks find it much more difficult to draw in scale than to do a simple drawing that focuses on an accurate representation of the site. This means that if the tank is located off the southeast corner of the garage, it is shown on the drawing off the southeast corner. If two measurements are added from permanent points on the site, this tank can quickly be found, even if the drawing isn't to scale.

Another common error with as-built drawings is trying to show too much of the site. This makes the critical area you are trying to draw too small for much detail. If the property is five acres, we don't need to see a drawing of the whole property. That would make the septic system area the size of your thumbnail on the drawing.

It's better to focus on the septic

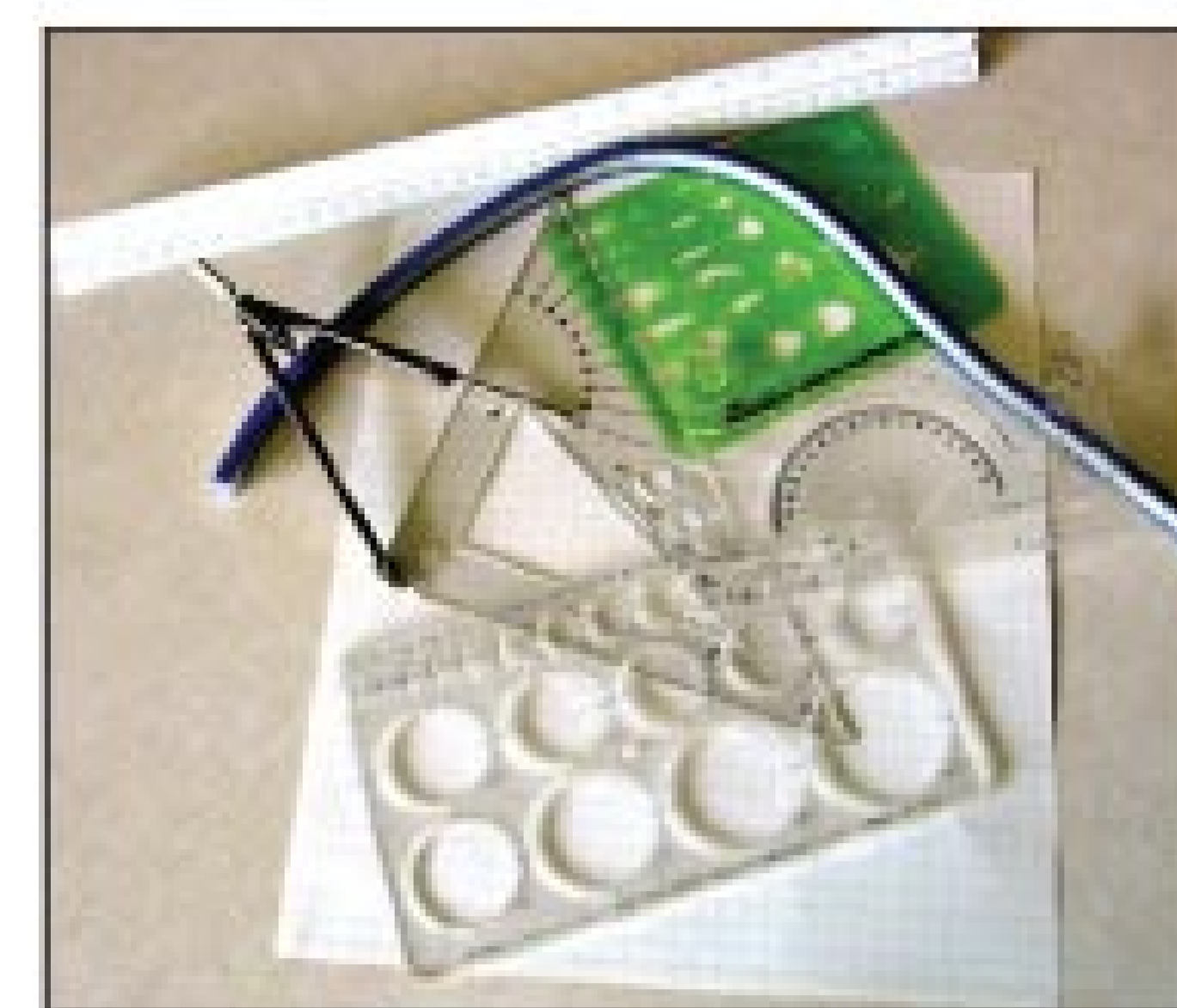
system area, adding enough detail to be clear. Include a north arrow and tie the system in to the house, well and other major features close by. That helps make the drawing clear enough to allow someone to locate the components quickly.

Helpful tools

Using drawing tools can be helpful. A number of templates can help you draw circles, squares and other shapes. There are north arrow templates and curve-making devices, all making for a more professional-looking drawing. Other tools, such as a drawing compass and engineer's ruler, are a must if local regulations require drawings to scale.

It's a good idea to make a practice drawing before you draw on the official form, as you will often make mistakes the first time through. Keeping extra drawing forms on hand can save you considerable time.

Practicing drawing techniques will help improve your skills. It will also make your final drawings more professional and, more important,



A variety of simple tools can enable installers to create professional-looking as-built drawings.

useful to those in the future who use your drawing as an aid to locating the system components.

Zan Ewing is a registered environmental health specialist with 35 years in the industry as a regulator, installation contractor and consultant. He is past-president of the Oregon Onsite Wastewater Association and a designer/consultant in Salem, Ore. He can be reached at ewingzan@aol.com. ■

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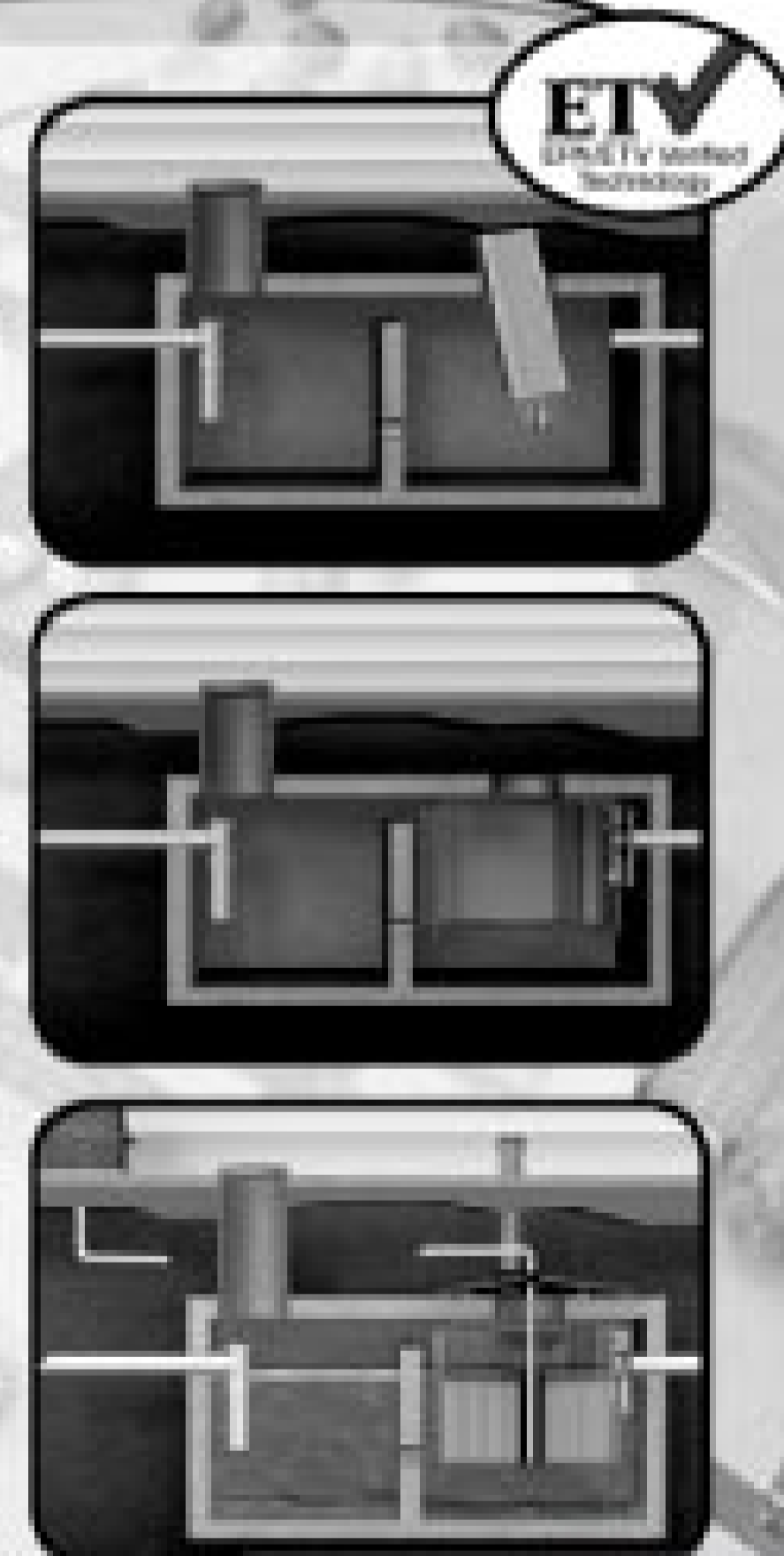
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INDUSTRY NEWS

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Premier Tech Installs First Ecoflo in State of Washington

Premier Tech Environnement installed its first Ecoflo wastewater treatment system in the state of Washington. The system was installed on the shores of Lake Mason for a homeowner who needed to improve his septic system in order to build a new home. Space requirements in the environmentally sensitive area had limited building options.

Osprey Biotechnics Opens Fungi Production Facility

Osprey Biotechnics Inc. has opened a fungal lab alongside its bacteria research and production facilities in Sarasota, Fla. The two businesses will operate independently of each other.

Advanced Enviro-Septic Receives NSF Certification

The Advanced Enviro-Septic treatment system from Presby Environmental Inc. has received certification under NSF International/ANSI's Standard 40 for wastewater treatment devices. The passive, non-mechanical system provides combined treatment and dispersal and requires no media replacement. ■

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Preceding the Sale

Installers provide insights about proper procedures for conducting onsite system inspections in advance of real estate transactions

Question:

Can someone tell me the steps to performing a septic system inspection that would certify a system's working condition? Inspections are being required by lending institutions before they allow a mortgage. From what I've seen, the procedures seem to be arbitrary and determined by the contractor. How does it work?

Answers:

I'm actually pleasantly surprised someone has asked this question. The very first step should be a visit or call to the local health department to get a copy of the sewage and well permits (and location drawings). In more than 20 years, I have never known a real estate inspector to ask the local health department for records.

The next step is to visit the site

(yes, there are those who don't even do this). Locate the septic tank — a soil probe is useful for that purpose. Locate the well. Be sure you understand the kind of treatment system you're evaluating. (I had a real estate inspector dye-check an aeration system and fail it because dye appeared in the ditch).

We don't certify anything. Our letter to the lending institution or buyer is a clear description of what we found, where the system is located relative to the house and other landmarks, and lastly a disclaimer that this is simply a snapshot of what we found on the day of the inspection.

"This report indicates the condition of the above onsite wastewater treatment system at the time of the inspection. It does not guarantee it will continue to function satisfactorily." We do not guarantee that the system will not fail tomorrow. No one can make those kinds of guarantees. This Web site provides a great deal of worksheets and information: <http://septic.umn.edu/professional/worksheets/index.html>.

We dig up the tank, then find the box and do a water test on the laterals to see if they are working. We pump the tank and box, put a filter in the tank we have to bring to code and then call for inspection. That's the rules here or the bank won't take the loan. ■



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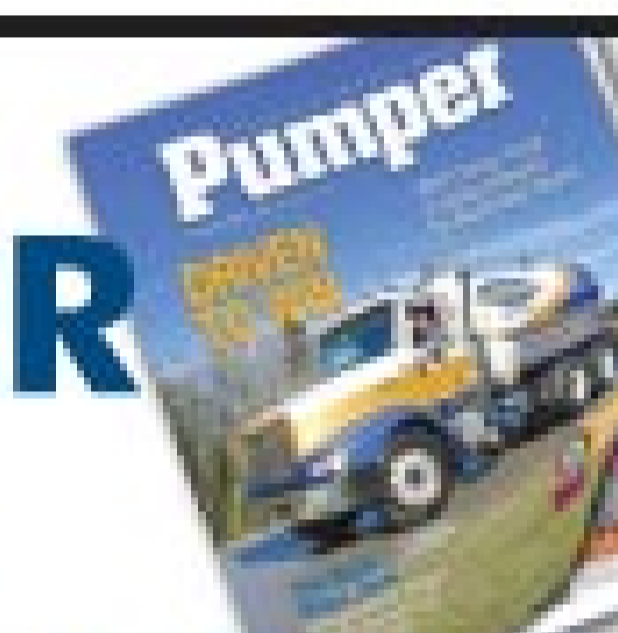
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FOWA Scholarship Recipients

The Florida Onsite Wastewater Association awarded Bob and Joan Lynch Scholarships to Jonathan Savage and Katie Parr.

Savage, son of Mike Savage, projects manager for the Professional Services Office, Everglades and Dry Tortugas National Parks, majors in engineering and computer science at Virginia Tech. Parr, daughter of Sherrill Parr, FOWA director of financial and business management, is studying business and accounting at Florida State University.

Ashley Rose Snyder, granddaughter of Hank Vanderveen, who received the 2006-07 Bob and Joan Lynch Scholarship, graduated cum laude in 2009 with a Bachelor of Science in biology from Pepperdine University.

Teaching Homeowners

The Arizona Onsite Wastewater Recycling Association Homeowner Septic Education course presented in Yavapai County trained nearly 350 homeowners about their onsite systems.

The program was professionally video recorded, and the association will make it available to state libraries and through the Internet. Gila County health officials also asked AzOWRA to present the program. For more information, call Lowell Fagen at 928/778-7575 or e-mail Lou Brown at azowraloub@gmail.com.

AzOWRA also wrote a Code of Conduct covering general obligations, obligations to others, and obligation to professionalism, and is asking members to sign it.

Aging Population

Last summer, the Washington Onsite Sewage Association hosted five public sessions to gather ideas on how to keep the professional licensed designer population robust as a significant number approach retirement.

Evaluation of comments enabled the WOSSA board to make recommendations for updating regulations, including changing what is considered acceptable training to enter the industry and allowing the

state Department of Licensing for Onsite Designers to accept persons with broader education to qualify for the designer exam.

Other suggested changes included starting an apprentice program and allowing designers to design stormwater infrastructure on the same properties as residential onsite systems. WOSSA will contact several legislators for sponsorship and to time the introduction of the suggested updates into the next legislative session.

WOSSA worked with Indian Health Services to develop a two-hour onsite training program for Nisqually Indian Tribe homeowners. Association members also partnered with Clallam County Health Department to certify homeowners to inspect their own systems.

The association's radio show, Septic Solutions, answers listener questions. James Converse asked various industry professionals and practitioners what they viewed as the major challenges facing the onsite industry, then summarized their replies in an article published in the WOSSA fall newsletter (www.wossa.org/newsletter.html).

CALENDAR OF EVENTS

Feb. 4-5

Ohio Water Quality and Waste Management Conference, University Plaza Hotel, Columbus. Call Karen Mancl at 614/292-4505 or visit <http://setll.osu.edu>.

Feb. 4-6

Alberta Onsite Wastewater Management Association Convention and Trade Show, River Cree Casino, Edmonton. Call 780/489-7471 or visit www.aowma.com.

Feb. 17-18

Nebraska On-Site Waste Water Association Conference, Embassy Suites Hotel, Lincoln. Call 402/476-0162 or visit www.nowwa.org.

Feb. 22-23

National Onsite Wastewater Recycling Association Installer

Academy & Roe-D-Hoe, Kentucky Exposition Center, Louisville, Ky. Call 800/966-2942 or visit www.nowra.org/academy.html.

Feb. 24-27

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

March 22-23

Tennessee Onsite Wastewater Association Conference and Continuing Education Workshop, Embassy Suites and Conference Center, Murfreesboro. Visit www.tnonsite.org.

March 22-25

National Onsite Wastewater Recycling Association Technical Conference and Exposition, St. Louis, Mo. Call 800/966-2942 or visit www.nowra.org.

March 29-30

Granite State Designers and Installers Spring Septic System Conference and Expo, Radisson Hotel in Manchester, N.H. Call 603/228-1231 or visit www.gsdia.org.

TRAINING & EDUCATION

Constructed Wetlands Link

During the last 20 years, LaGrange County, Ind., installed more than 300 constructed wetlands treating 150 to 50,000 gpd. Now installers, homeowners, designers, and regulators will find relevant information on these bio-enhanced treatment systems at <http://lagrangecountyhealth.org/constructedwetlands.aspx>.

Educational Presentations

The Arizona Onsite Wastewater Recycling Association Education Committee developed presentations and education programs. Its Realtor education program is approved for three hours of continuing education by the state Department of Real Estate.

The Homeowner Septic Education course covers how onsite

systems function. The Member Recruitment presentation is for contractor, designer, and pumper organizations. To recommend a group that would benefit from these presentations, call Lowell Fagen at 928/778-7575 or e-mail Lou Brown at azowraloub@gmail.com.

Soil Morphology Course

Randy Miles of the University of Missouri will offer a soil morphology course that qualifies individuals for the Missouri Department of Health and Senior Services-approved soil evaluators list if enough people express interest. Call him at 573/882-6607 or e-mail MilesR@missouri.edu. Please respond by Feb. 1, 2010.

Minnesota

The University of Minnesota Extension has these classes:

- March 8-10 – Introduction to Onsite Systems, St. Cloud
 - March 11-12 – Installing Onsite Systems, St. Cloud
 - March 18-19 – Installer Continuing Education, Sauk Centre
 - March 19 – Pipelayer Certification, Sauk Centre
 - March 30-April 1 – Advanced Design and Inspection of Onsite Systems, Part 1, Mankato
 - April 6-8 – Basic Design of Onsite Systems, White Bear Lake
 - April 13 – Design Continuing Education, St. Cloud
 - April 14 – Inspector Continuing Education, St. Cloud
 - April 15 – Troubleshooting, Owatonna
 - April 20 – OSHA Competent Person/Pipelayer Certification, St. Cloud
 - April 26-28 – Introduction to Onsite Systems, Mankato
 - April 29-30 – Installing Onsite Systems, Mankato
- Call Nick Haig at 800/322-8642 (612/625-9797) or visit <http://septic.umn.edu>.

New Hampshire

The Granite State Designers

and Installers Association is offering its Certified Septic Evaluator training program on:

- April 20, Bow
- May 1, Rochester

Call 603/228-1231 or visit www.gsdi.org.

Pennsylvania

The Pennsylvania Septage Management Association is offering an Inspector Certification course March 30-31 at Reading. Call 717/763-7762 or visit www.pasma.net.

Washington

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

- March 11 – Design Siting
- March 17 – Subsurface Drip Design, Moses Lake
- March 24-25 – Exam Review
- April 7 – Maintaining Onsite Systems
- April 15 – Pumper
- April 21-22 – Wiring Control Panels

- May 5 – Electrical Control Panels
- May 6 – Installing Mounds and Sand Filters
- May 13 – Design Siting, Centralia
- May 19 – Evaluating and Repairing Onsite Systems, Bremerton

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

Wisconsin

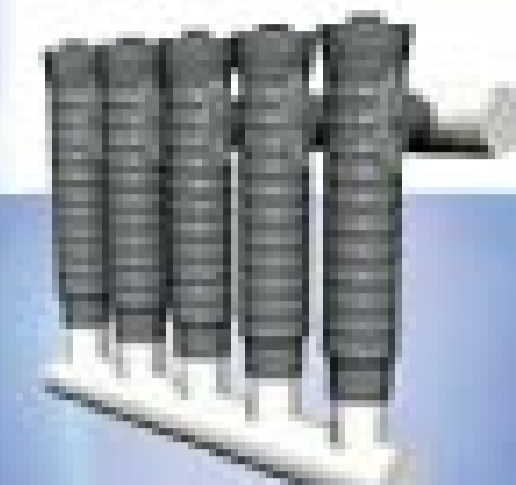
Wieser Concrete Products Inc., will hold a series of seminars in Wisconsin for professionals in onsite wastewater treatment installation and maintenance. The seminars are designed to meet continuing education requirements for installation contractors, sanitarians, system designers, and others in the field. Each full-day seminar begins at 8 a.m. The seminars will be held:

- March 9 – Fond du Lac
- March 11 – Rhinelander
- March 16 – Milwaukee
- March 18 – Maiden Rock
- March 23 – Portage
- March 25 – Shell Lake

For more information, call 800/325-8456. ■

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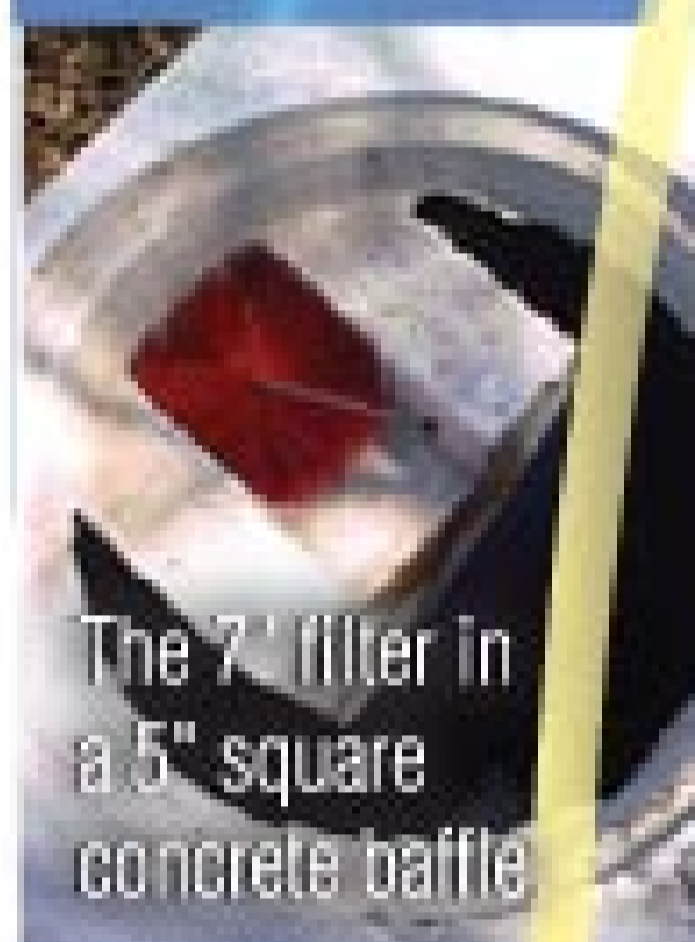


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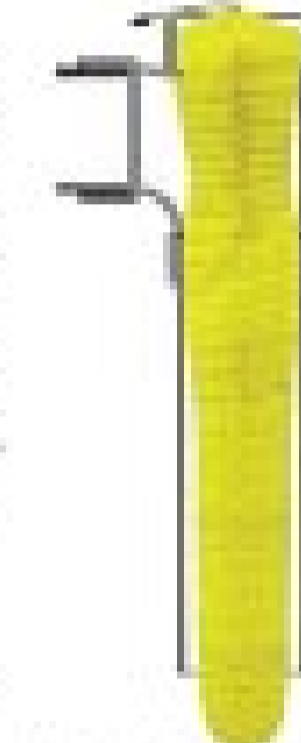
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Just for Women

A first-time seminar at the 2010 Pumper & Cleaner Expo will help women in the industry handle their roles effectively

By **Scottie Dayton**

For the first time, women attending the 2010 Pumper & Cleaner Environmental Expo in Louisville will find a workshop designed around their unique needs as contributors to family businesses and as members of the industry.

Ann Fry, an author, professional speaker, executive coach, and corporate culture consultant, will show women how to manage their roles

with joy and enthusiasm and spend less time living in "that place called stress." Her Women in the Industry seminar runs from 9 a.m. to noon on Thursday, Feb. 25, and will be followed by a wine and cheese tasting.

'Great multitaskers'

Fry's specialty is helping people feel happy and fulfilled through her presentation: "The Regeneration Process: How to ReEnergize, RePurpose,

ReInvent and Handle Everything!" Women will learn how to create balance in their work and personal lives, tap into their sense of humor, and figure out how to take care of themselves amid everything else they have to do.

"Women, the great multitaskers; they can handle everything," says Fry. "They also are excellent at reaching out to and talking to each other, and offering support and suggestions. Then why are so many stressed out, exhausted, frustrated, and annoyed?"

Through hands-on activities with partners or small groups, and a mini workbook, Fry will help women diagram everything that is on their plate, then find ways to

"I guarantee that women will leave the room energized, with a new direction and purpose."

Ann Fry

master the different kinds of stress. "One playful activity I use is having a lady talk while another listens," says Fry. "The person talking is downloading her stress — one experience or event that ate her lunch recently — in a fun, outrageous way. The exercise teaches how important it is to release stress from your system and not keep it bottled up."

Positive thinking

Another activity focuses on perfectionism and how it can drive the perfectionist and everyone around her crazy. Most women, being nur-



A seminar for women in the industry will be offered for the first time at the 2010 Pumper & Cleaner Expo.

turers and caregivers, say yes to everyone and everything, Fry says. Her exercises center around helping them say no without inducing a guilt trip.

"The perspective people have on events carries a lot of weight on how they are handled," says Fry. "By using a little positive thinking and seeing the humor in things, I will teach women how to look at situations less seriously. If you can put an episode in perspective, you can handle it."

Fry admits that the reinventing portion of her workshop can scare women. "They hear the word and think it means quitting their job, leaving their family, and moving to China," she says. "Reinventing actually means changing how you deal with things and adjusting your attitude."

"We'll look at some steps to reinventing yourself, such as being willing to do a few things differently. For example, you should stop doing things that are not working for you and start doing things that are more helpful."

"By the time we reach this point in the presentation, everyone will know what those things are in her life. I guarantee that women will leave the room energized, with a new direction and purpose." ■



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