

May

2011

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By Gil Longwell

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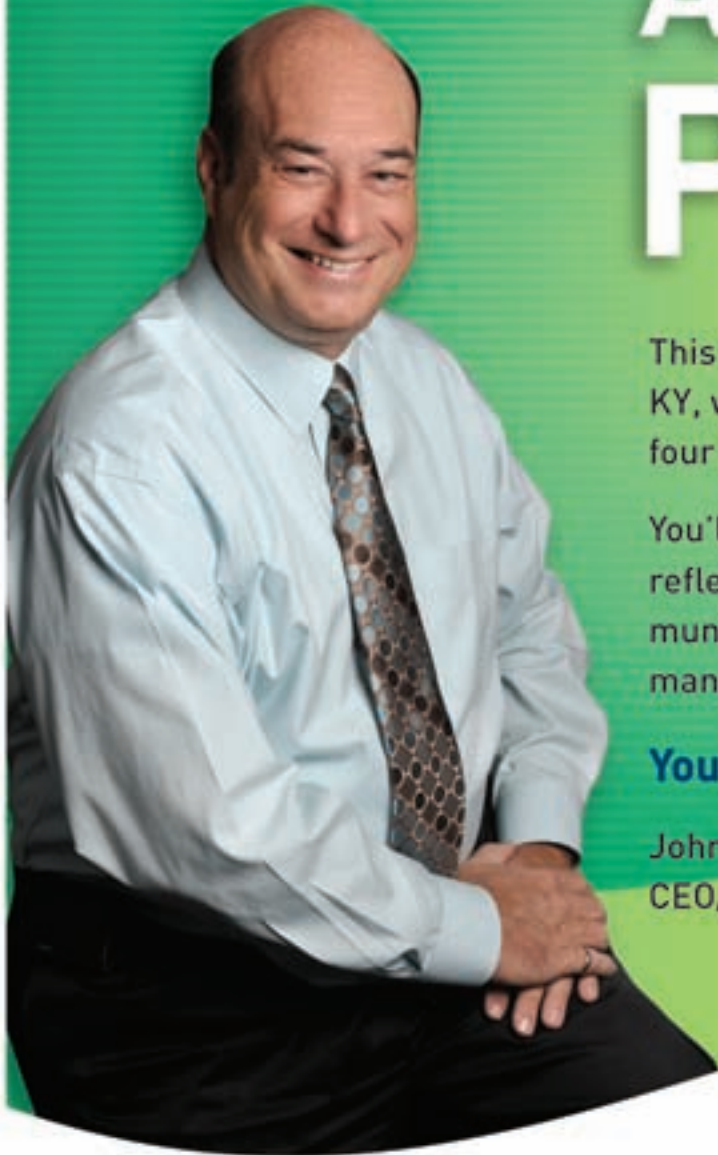
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Without the Big Toys

I'm responding to your column about being in the onsite business but not necessarily with earth-moving equipment (Breaking Ground, *Onsite Installer*, March 2011). When I met with a business counselor back in 1985 or so to discuss what I could do to make my small construction business more profitable, he gave me two choices: grow or specialize.

Heeding his advice was simple. I was not ready to grow any larger than I already was. So I specialized in septic system troubleshooting and repairs. In a vacation area here in the mountains of New Hampshire, many folks would find themselves in trouble when the toilet in their second home backed up.

Sometimes the initial solution was simply a frozen line or root buildup that could be solved immediately, but often the repair would be more involved and require the small equipment that had become my trademark. If I needed larger equipment I could call on any number of local guys with far larger toys.

Occasionally, when I need something for a large or very specialized job, I rent from my local equipment dealer. I've already passed the typical retirement age with no intention of throwing in the towel for a while. My business has evolved, primarily into private road and driveway repair and maintenance. I have several tractors, but nothing over the four tons that I can haul behind my 1-ton truck.

After 20,000-plus hours on utility-sized equipment I've become a rea-

sonably skilled operator, but it is my problem-solving skills, whether it be for septic systems, wet basements, or washed-out roads, that keep my services in demand and my overhead low.

Russ Lanoie
Conway, N.H.

It Depends on the Market

I was reading your article in the March issue of *Onsite Installer* inviting discussion on whether it is better to own your own equipment or job out the digging portion of the work. I believe the decision would have to be based on the market a company serves.

In our service area, if we tried to make a living doing only technical service and O&M, we would have to expand our service area exponentially, and even then we would have a tough time being profitable, since the large majority of systems in this area are standard gravity-fed systems. However, in areas with a very high population base and a high number of complex systems, a strictly O&M shop, such as Residential Sewage Treatment in the feature article, definitely has its place.

In our market, we are forced to keep all onsite services in-house to be a viable competitor in the industry. We do pumping, system installs and repairs, drain cleaning, jetting, and camera inspections.

Owning all of the basic equipment allows a company to control the market they serve. A large majority of customers in the onsite sector are basically one-time customers. While it is true they may use our services more than once over a number of years, it will likely not be more than once every three years or more. This means that each and every customer is very valuable, especially in areas with a limited population base. If we subcontract or refer work to a competitor, most likely the customer will call that competitor if he needs the same service in the future.

We are a very small company but still own a complete basic assortment of necessary equipment, including a vacuum truck, backhoe, mini-excavator, dump truck, sewer and drain cleaning machines, and jetting and video inspection equipment. We rent small specialized items like concrete saws, compactors, jackhammers, and core drills. We also occasionally rent larger excavators, skid-steer loaders, and other heavy machinery as necessary.

As a footnote, I really appreciate the *Onsite Installer* magazine, especially the issues that feature basic one- or two-man backhoe outfits such as ours. We have been involved in the building construction industry for as long as I can remember, but the builder's trade magazines feature projects and companies that are so complex or large that they are hard to relate to, thus the magazines seldom get much attention.

I appreciate your willingness to portray the onsite industry for what it is: Primarily small to mid-sized backhoe services installing mostly standard systems along with a number of more complex systems. Please keep your focus and continue to make the publication something that we as small businesses can relate to.

Kendall Unruh
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Taking it National

An Onsite Wastewater Summit in June gives onsite professionals a great opportunity to see the big picture of the industry in which they work

By Ted J. Rulseh, Editor

Onsite treatment is in many ways a local business. A typical installer deals with state or even county-level regulations. You can buy all necessary supplies from a local distributor and machinery from a local dealer.

You can pretty much do business without ever crossing the county line if you wish, or certainly without going out of state. There just isn't much need to spend time and money traveling to national onsite conventions.

Or is there? Onsite issues are definitely on the radar at the U.S. EPA. State regulations are changing, and what happens in the state next door may soon happen in your state. Technology changes, too, and a new treatment system just being tested in another part of the country may one day solve problems for your customers.

Besides all that, there's a national installer credential now. There's talk of things like model performance codes and regional codes.

Maybe the business isn't really as local as it seems.

To the summit

If you've been thinking maybe it's time to explore the onsite world beyond your backyard, the best opportunity you've ever had is right in front of you. Three national associations are planning an Onsite Wastewater Summit in Columbus, Ohio, June 18-20.

The collaborators are:

- The National Onsite Wastewater Recycling Association (NOWRA), of course representing onsite professionals.
- The State Onsite Regulators Alliance (SORA), whose members include regulators from all 50 states, plus the U.S. Territories, Native American tribes, and Canadian provinces.
- The National Environmental Health Association (NEHA), purveyor of the Certified Installer of Onsite Wastewater Treatment Systems national credential, and host of the Summit as part of its 75th Annual Educational Conference & Exhibition.

First time together

For the first time, these groups are coming together to give their members and friends a big-picture view of the onsite industry, not just in the sense of geography but in the sense of viewpoint. In Columbus, you'll have industry professionals of all stripes — site evaluators, system designers, installers, local and state regulators, equipment manufacturers, service providers, researchers, and others — meeting in one place.

That can't help but be valuable. To cite just one of the ways: A leading tension in the industry is between those who build systems and those who enforce the regulations. Here's a chance for people on both sides of that divide to hear multiple observations and perspectives on what is working, and what isn't, and why. One certainly imagines that kind of sharing can lead to better regulations, better systems, a better environment, and more peace and harmony among professionals.

Time to travel?

The Summit agenda includes an array of educational presentations, a field trip tour of onsite systems being built around Columbus, a roundtable discussion of hot topics, a Wastewater Alley trade show exhibit hall, a skills competition, and a special seminar track for contractors, covering design and installation issues and their solutions.

Even leaving that aside, where else can you meet so many people with so many new ideas? It's bound to be refreshing, and the friends and connections you make could stand you in good stead for years.

Who knows when a chance like this will come again? Columbus is within a reasonable drive from a major share of the U.S. population. If you've been thinking about giving yourself and your business a bigger perspective, this is your opportunity. Consider making plans now for June 18-20.

For more information about the Summit agenda and conference registration, visit www.nowra.org. ■

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Engineered Excellence

An in-house professional adds value as R.C. Worst deals with challenging installations and repairs in its two-state territory

By Gil Longwell

R.C. Worst & Company Inc., Coeur d'Alene, Idaho

OWNERS:

Ken and Allen Worst

YEARS IN BUSINESS:

57

MARKET AREA:

Idaho and eastern Washington

ANNUAL REVENUE:

\$5 million

SPECIALTY:

Complex systems for challenging sites

EMPLOYEES:

18

AFFILIATIONS:

Idaho Rural Water Association

WEBSITE:

www.rcworst.com



By inventing new products and finding innovative ways to deploy emerging onsite technologies, R.C. Worst & Company stays on the cutting edge of the onsite scene across Idaho and eastern Washington.

Allen Worst, company vice president, is part of the third generation of the Worst family involved in the business his grandfather, Robert Charles (R.C.), started in 1953. Allen's brother Ken is president. "We started as a general contracting company," Allen Worst says. "When R.C.'s son Jim, a mechanical engineer, joined the business, he was instrumental in developing a significant engineering capability that set us apart from our competitors."

This engineering skill brought a focus on water systems that incorporate pumps and control systems. When Allen came on board in 1994, the focus broadened to include onsite systems. Today, pump-involved

water or wastewater systems are the company's niche, and the firm seldom takes on projects that do not involve pumps.

In addition to onsite system installation, generally confined to a 100-mile radius from the main office in Coeur d'Alene, Idaho, the company sells onsite technologies, pumps and control systems to installers across its whole "inland northwest" service territory. R.C. Worst is an Orenco AdvanTex distributor. The business mix includes 40 percent new installations, 20 percent repairs, 20 percent service, and 20 percent design, component and system sales.

Flexible asset

Having a professional engineer on staff still provides a competitive advantage. Even when not required, regulators like to see a P.E. seal on designs and other system documents. While competitors use consulting engineers, Worst's engineer,

"We are involved in a very large number of onsite system installations, yet we simply don't do excavation. That is a fact many in the onsite industry find rather shocking."

Allen Worst

Ray Koberstine, P.E., stationed at the company office in Spokane, Wash., is always available to technicians and clients.

"When our wholesale technology customers, such as other installers, need engineering expertise, they can call on Ray's support," Worst says. The company can convert some engineering hours to billable hours or roll that expense into the cost for hardware sold.

"Either way, making our engineer's expertise available to our customers makes their projects and

OPPOSITE PAGE: Members of the R.C. Worst & Company team include, from left, Nathan Rogers, office manager; Mike Cordon, service manager; Scott Jessick, sales manager; Justin VanCleave, sales/design consultant; Joe Follini, service technician; Jacob Herkelrath, service technician; Allen Worst, vice president; Ken Worst, president; David Harris, warehouse; Andy Embry, service technician; Greg Hushman, sales associate; and Paul Karnitz, purchasing manager. (Photography by Sheena Dunn)

services more valuable to their end users," Worst says. "It is a win-win."

Perhaps the most unique aspect of Worst's installation business is the absence of earth-moving machinery. "We don't create large absorption area excavations that are typical of conventional systems," Worst says. "Because we are so focused on pump-involved systems, our greatest need is for a vibratory plow to introduce drip tubing for effluent dispersal."

The company deploys a 1999 Ditch Witch 410sx trencher but sees no need to carry the expense of other equipment beyond two forklifts and a number of pickups and service body trucks. The forklifts work on warehouse and manufacturing tasks at company headquarters.

Contractors handle excavations for AdvanTex systems and tanks the company supplies. "We are involved in a very large number of installations, yet we simply don't do excavation," says Worst. "That is a fact many in the onsite industry find rather shocking."

Overcoming climate

It gets cold in Idaho: Frost routinely extends to four feet deep. "We have seen drip system controls, sometimes called a headworks or hydraulic unit, freeze up when placed in shallow, open-bottom plastic enclosures," Worst says.

When that happens, no effluent is delivered to the drip tubing which, while technically frozen, is mostly empty because the tubing is self-emptying. The headworks is the most expensive component in a drip system, and when it freezes, the ice causes massive damage.



Allen Worst shows the company's patented continuous flush drip system headworks.

Recognizing this weakness, Worst called on the company's engineering expertise to redesign the headworks. Now the headworks is not placed in a separate enclosure but in the upper reaches of the dosing tank. In this relatively warm environment, freezing is all but eliminated, and effluent flow is uninterrupted. The warmer headworks location gives greater thermal protection to the supply and return lines at their connection points.

Worst identified another weakness in drip systems related to what he feels is inadequate drip zone backflushing. Using a fixed orifice, he can better control return flow, which in turn assures effective flushing.

"It's essential to ensure that each site-specific design maximizes the system's capabilities and assures continuous flushing," says Worst. "To accomplish that, we developed a software tool that correlates flush and dispersal needs and then specifies the emitter requirements and pump settings. The software also specifies delivery pressure, velocity, and flow rates. These can be incorporated into a permit and become permanent operation benchmarks.



Allen Worst, Andy Embry and Justin VanCleave of R.C. Worst and Tristian Bounds of Orenco Systems look over an Orenco AdvanTex treatment system.

The Volunteer Spirit

Allen Worst's work regularly takes him about 400 miles south from Coeur d'Alene, Idaho, to Boise, the state capital. While there, he has engaged the state legislature, testifying on various bills affecting the onsite industry.

He regularly attends and speaks at meetings of the state Department of Environmental Quality Technical Guidance Committee, which has a significant role in developing statewide regulations. "This committee also has the responsibility to fast-track the introduction of emerging onsite technologies and techniques through inclusion in the Technical Guidance Manual," he says.

Worst and the DEQ leadership share a belief that onsite practitioners need more educational opportunities. Worst has no problem identifying training inadequacies, yet he does not dwell on what isn't.

Rather, he focuses on developing an onsite association that can fill the training void and raise the skill levels in every

facet of the onsite industry. Site evaluators can benefit from basic knowledge of soils and more advanced topics like the movement of water through the landscape. Professional engineers, installers, system technicians and even homeowners are on his list of trainee candidates. "Everybody can benefit from better training," he says.

Worst believes more knowledgeable practitioners make better problem solvers, and when collaboration solves problems, the solutions have the best chance of success. Worst is part of a small group that is taking steps to establish an Idaho onsite association. The goal was to make an official announcement by spring 2011.

It was his volunteer role that first introduced Worst to drip irrigation, a technology he has since embraced and improved. He believes giving back will benefit the industry and ultimately will help him and his brother/partner take the business to a higher level.

"Making our engineer's expertise available to our customers makes their projects and services more valuable to their end users. It is a win-win."

Allen Worst

"Substituting a fixed orifice device eliminates the customary solenoid valve or flow-control ball valve. Without an adjustable valve, there is no opportunity for the homeowner, vibration or an inadvertent hand movement to alter the intended delivery pressure or volume." The somewhat less accessible location in the dose tank also reduces the likelihood of homeowner tinkering, Worst observes.

Mandate brings opportunity

Reaching beyond installation, R.C. Worst & Company created Idaho Onsite Services to serve the owners of every AdvanTex treatment system in Idaho. Allen Worst is president of that entity. The new company was a response to a state regulation requiring every owner of an advanced system to take part in a management program. Idaho Onsite Services charges the homeowner an annual management fee.

To overcome the challenges of distance and travel time, each system is equipped with the VeriComm monitoring and notification system from Orenco. It is programmed to notify Idaho Onsite Services of a system failure. The alarm buzzer at the property is delayed for 24 hours.



Tristian Bounds of Orenco Systems (right) explains the AdvanTex AX20-RT treatment process.

technician, handles all headworks manufacturing. Keeping the inventory in good order and the supply bins stocked are Paul Karnitz, purchasing agent, and Dave Harris, warehouse manager.

Behind the scenes, but essential to smooth operations, office manager Nathan Roger coordinates the clerical support work of Roberta Harms and Nicole Swicki. Scott Jessick leads the sales efforts of Justin VanCleave and Greg Hushman.

Ken Worst is responsible for accounting and is the IT guru. Allen Worst focuses mainly on sales, though customer and industry educational outreach is also

"This gives us time to evaluate the trouble codes, give a courtesy call to the homeowner and, in most cases, guide them through a series of corrective actions," Worst says. "The high-flow-rate alarm has let us identify many leaking toilets, which the owner fixes. Enabling owners to address simple issues lets them avoid the cost of a site visit."

Likewise, when the system reports a hardware problem, the technician can be sure to have the necessary parts on board when traveling for the repair. This same technology calls in a monthly status report to the Idaho Onsite Ser-



Andy Embry installs drip tubing with a Ditch Witch 410sx vibratory plow.

vices office. The system is fail-safe: If the call never comes in, the absence of a status report in itself conveys the message, "I am not communicating, please check on me."

Depth and redundancy

Eighteen employees are regularly assigned to the onsite aspects of the R.C. Worst enterprise. "Some job titles are nontraditional for an installer business, but because we are both a manufacturer's representative and a manufacturer, they are both appropriate and essential," Worst says.

Service technicians Andy Embry, Joe Follini, Eric Halliday, and Jacob Herkelrath handle new installations, respond to service calls, and carry out O&M activities designed to minimize service calls. They are guided by service manager Mike Cordon. Gary Wilson, assembly

close to his heart. Two tasks he deeply believes in are advancing professionalism in the onsite industry and building homeowners' knowledge about the systems that support their homes. These fit nicely with the goals of his family's three-generation business, making work life rewarding.

The ability to refine techniques and design solutions to overcome site challenges has positioned the business for a sound future. ■

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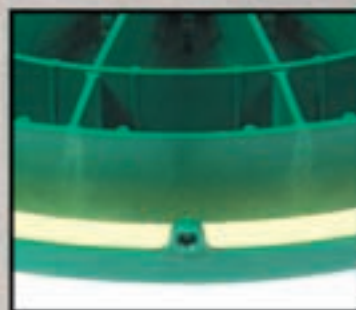
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Jim Anderson and Dave Gustafson are connected with the University of Minnesota onsite wastewater treatment education program. Dave is extension onsite sewage treatment educator. Jim is former director of the university's Water Resources Center and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

Placing the Tank

Proper installation procedures can ensure that the septic tank and related piping remain intact and provide long, reliable service

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

In the past two issues, we have reviewed definitions of sewage tanks and the design considerations for septic tanks. This month we begin a two-part series on the steps to follow for a good tank installation.

Any installation procedure should start with safety requirements. All excavations should comply with OSHA standards and must be done so as to prevent sidewall collapse. This means keeping the spoil pile at least two feet back from the edge of the excavation.

The tank should be inspected for soundness before placement. Concrete tanks should have a smooth surface and be free of cracks, holes or exposed rebar. A quality plastic tank should have uniform wall thickness and be free of deformation or holes.

Proper shoring or excavation boxes should be used where necessary, or the sidewalls must be excavated back at the proper angle for the soil type.

As a boom truck or other machine handles the tank, workers must stay clear of the unit and must never be under the tank. Lifting slings must be placed in the grooves of concrete tanks or attached to lift-

ing rings. On polypropylene or fiberglass tanks, slings must be placed at the appropriate manufactured locations.

Keep it sound

The tank should be inspected for soundness before placement. Concrete tanks should have a smooth surface and be free of cracks, holes or exposed rebar. A quality plastic tank should have uniform wall thickness and be free of deformation or holes. The tank dimensions should be known beforehand so the excavation can be made to the proper depth and width.

Be sure that the building stub-out elevation is consistent with that required to install the tank and that the soil treatment components are at the correct elevations. The tank inlet must be set to provide a slope of 1 to 2 percent (1/8- to 1/4-inch drop per foot of run) on the house sewer line. Failure to provide this slope will result in freezing and plugging problems.

Proper compaction of the underlying soils and bedding materials is critical to minimize later settling and problems with the piping at the inlet and outlet. To reduce the extent of future settling, properly evaluate the original soil, bedding materials, depth to groundwater, backfill materials and potential stress loads — then take actions as appropriate.

The tank should be placed on firm and evenly compacted soil and



A sound concrete tank with watertight riser connections.

with the soil level in all directions. The bottom of the tank excavation should be completed so that the vertical load is borne by the tank walls and not the tank bottom. Coarse bedding material should be used if the bottom of the excavation contains rock, or if required by the manufacturer's specifications.

The excavation depth is determined by the tank dimensions and by the need to add coarse material to bed the tank. In sandy or gravelly soils, the original soil may be suitable for this bedding. Otherwise, bedding must be hauled to the site. The material needs to be level to avoid differential settling or instances where the weight of the water causes a crack in a concrete tank.



A spray-on insulation can keep the tank from freezing and act as a seal of the seams.



Excavating to a level base allows for the tank to stay watertight.



Concrete septic tank and pump tank with concrete risers. Piping from the house has been laid on the proper grade. The trench for the outlet piping has not yet been dug.

Installing baffles

Most tanks come with baffles; but in some instances the installer is expected to install the baffles. The most common type of baffle for the inlet and outlet involves the use of sanitary tees and solid piping. They are attached directly to the inlet and outlet piping. Many two-compartment tanks also have sanitary tees for baffles.

A standard PVC connection needs to be made. Pay attention to where the piping is attached. The joint of

the pipes should rest on unexcavated soil, so it is important not to over-excavate the hole for the tank in the long direction. It is also important for the piping from the baffle to extend far enough out the opening to allow for connection on solid soil.

There are other types of baffles. In concrete tanks, they are often cast as a part of the tank. As the connection is made between either the inlet or outlet piping, it is important to leave enough space, particularly at the inlet, to allow

solids to enter the tank and drop without hanging up or plugging the piping. Typically, this is a space of 4 to 6 inches.

Most areas now require the use of effluent screens. These typically include a housing that acts as the sanitary tee. Alternatively, filters can be sized so that they fit directly into a standard tee. If these filters are used, an alarm must be installed so that the owner receives an early warning when the filter is becoming plugged — before sewage shows up inside the house!

For all tanks, the pipe penetrations must be watertight after backfill. At the point of penetration, the flexible boot seals should be used. This, along with supporting any joints adequately with natural soil and backfilling with care, will ensure that the piping stays put and that the tank remains watertight and resistant to root penetration.

The piping across the excavation at both the inlet and outlet should be schedule 40 PVC or stronger to avoid any deflection problems.

Freeze prevention

In places like Minnesota, where we live, freezing can be a problem. Here, the tank may need to be insulated. If the top of the tank is less than 2 feet beneath the surface (often the case in Minnesota), the tank must be insulated. Any risers should also be insulated to a minimum R-value of 10.

The foam board insulation material needs to be resistant to water absorption, so the most appropriate materials are similar to those used to insulate the exteriors of poured concrete foundations or block wall basements.

The most common method involves placing insulation board on the top of the tank and the tank lids. This, with 2 feet of soil cover, should provide enough insulation. Spray-on insulation can supply some additional benefits for seams or openings.

Next month we will cover the backfill process, tank access considerations, and watertightness testing. ■

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Virginia Acts on Nitrogen Reduction

By **Scottie Dayton and Doug Day**

The Virginia state EPA-approved Watershed Implementation Plan includes nitrogen-reducing onsite systems and pumping of septic tanks every five years. Implementation would require legislation approved by the General Assembly.

Secretary of Natural Resources Doug Domenech called the plan the most far-reaching and ambitious ever devised to clean up state rivers and the Chesapeake Bay. Clarke County supervisors said such legislation would open the floodgates for alternative onsite systems without regard to local hydrology and other concerns. They hope to gain oversight and control of systems where local environmental conditions are not favorable.

Minnesota

The Mille Lacs County board adopted an onsite ordinance that requires a point-of-sale compliance inspection before selling properties with septic systems. Previously, only those installed along lakes or rivers required an inspection. The county has about 600 onsite systems.

Montana

The Lewis and Clark City-County Health Department proposed two options on how homeowners with onsite systems could meet county maintenance standards. They could file paperwork detailing household water use and septic system pumping history to help determine how often the system should be pumped.

Or, they could hire county-certified inspectors to check their systems every four years and base a pumping schedule on the results. The guidelines would take effect over the next three to five years, targeting more vulnerable groundwater areas first. The guidelines would be the first of their kind in the state. Visit www.co.lewis-clark.mt.us.

Ontario

As of last January, non-agricultural source material to be land-applied must be evaluated for pathogen content, odor potential, nutrient value and metals content. Applying treated septage based on nutrient requirements for crop growth instead of hydraulic loading rates will require significantly more land, according to the Ontario Ministry of Agriculture, Food and Rural Affairs.

Alabama

John S. Young, the court-appointed receiver operating Jefferson County's sewer department, proposed a monthly clean-water tax on residences and businesses with onsite systems to help reduce the county's \$3.2 billion sewer debt. About 142,000 households are sewered and 105,000 have septic tanks, the environmental services department says.

Maryland

The Bay Restoration Fund Advisory Committee proposed doubling the annual flush tax from \$30 to \$60 per household. House Environmental Matters Committee chair Maggie McIntosh said she would introduce the legislation. The revenue is needed because the estimated cost to upgrade the state's 67 wastewater treatment plants doubled from \$750 million in 2004 to almost \$1.5 billion in 2010, and to meet stricter U.S. EPA guidelines. The increase would apply to households with sewers or onsite systems.

Florida

While the Office of Fiscal Accountability and Regulatory Reform allowed new standards for septic tanks in the Florida Keys to advance, the governor signed legislation delaying implementation of a law requiring septic tanks to be

inspected every five years.

The law, which went into effect on Jan. 1, is delayed until July 1. Two legislators filed a bill to repeal it.

Georgia

Athens-Clarke commissioners will not start a utility to regulate septic tanks but instead launch an education program urging homeowners to have their systems pumped more often. The program, recommended by the Legislative Review Committee, will notify property owners and real estate agents that tanks should be pumped every three to five years. It will record where the tanks are, who owns them, and how old they are.

Ohio

The Geauga County Residential Infrastructure Revolving Loan Fund Program will help residents with low or moderate incomes pay for onsite system repairs. The loan requires consumers to pay 25 percent of the cost, then make monthly payments for the balance — about \$50 a month.

Rhode Island

Portsmouth answered the state Department of Environmental Management insistence upon a \$40 million sewer system by creating a Wastewater Management Ordinance requiring inspection of onsite systems. The inspections, begun in March, will help the Wastewater Management Commission plan the replacement of failed systems with technologies tailored to properties or suitable for cluster systems. The ordinance requires cesspools to be replaced within five years or within six months of sale.

Illinois

An ordinance passed by the Lake of Egypt Water District gave residents 60 days to pay their sewer

bills or the district would remove their leased septic tanks and place a lien on the property. Customers pay a monthly \$25 sewer fee. Once tanks are removed, customers will have to pay up to \$5,700 to have them reinstalled.

Massachusetts

A lottery in Carver decided who had the first shot at \$400,000 in Community Development Block Grant money for homes with structural or septic system deficiencies. Numbers were assigned to homes, then selected in a random drawing to determine the order of review. Projects and applicants must meet certain criteria.

Texas

During the latest legislation session, the Texas Onsite Wastewater Association helped defeat a bill requiring onsite sewage facility authorized agents to purchase a \$2 million liability insurance policy before renewing their licenses. The association has received word that the legislature will reintroduce the bill or one like it.

South Dakota

The state budget would eliminate programs in the Department of Environment and Natural Resources that oversee septic tank regulations and other water issues if legislators cannot find federal money to offset the loss of state money.

Indiana

The New Year brought new septic regulations. Besides changes in definitions, the section covering the size and makeup of a dispersal area has been rewritten. Polyethylene is now an approved material for a septic tank, but cast-in-place and concrete block are now prohibited materials for tanks.

Scum storage capacity must be

12.5 percent of the liquid depth of the tank, instead of 15 percent. Concrete distribution boxes must be made of material with a compressive strength of 4,000 psi, up from 3,000 psi. The text of the rule with changes highlighted is available on the Indiana State Department of Health website.

Maine

The Division of Environmental Health changed rules governing septic systems. The changes are avail-

able on the department's website.

The new Subsurface Wastewater Disposal Training Center in Maine hosted its first training session in October. Developed by the Maine Association of Site Evaluators and Maine Rural Water Association, the center includes five scaled down installations. The training center was built on MRWA property in Richmond. ■



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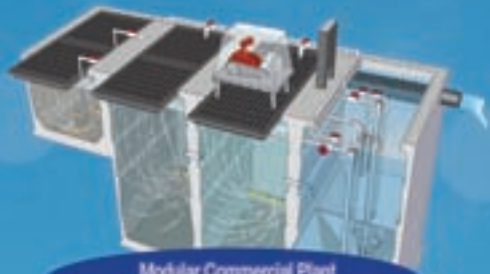


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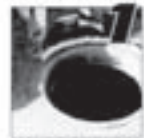
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What Do You Think?

Onsite Installer welcomes industry professionals to offer their perspectives on this issue. Please send your comments to editor@onsiteinstaller.com.

Why Do They Break Down?

Here's a practical explanation for hydrogen sulfide erosion in septic tanks — and why some tanks are affected and others not

By Josh Swedlund

It is a fact of chemistry and physics that hydrogen sulfide gas will be produced in all septic tanks as organic waste decomposes and breaks down. The big question is why this seems to affect the integrity of some concrete septic tanks and not others.

Hydrogen sulfide is heavier than air, so it generally affects the concrete just above the waterline in the lowest part of the system. If the gas cannot escape the structure, the level will slowly rise and begin to affect the concrete higher above the waterline.

The waste from every residence or business will produce hydrogen sulfide at different rates, depending on the organic volume of the waste, the temperature, and the retention time in the structure. Regardless of the rate of hydrogen sulfide production, if the gas can flow out of the structure along the waste stream, then the gas level in the tank should never build up to the point where it damages the concrete.

Running downhill

Think of it this way: hydrogen sulfide is heavier than air, so when it first begins to develop, it will lie right on the surface of the water. Being heavier than air, it will flow downhill, just as water does. So in a properly installed septic system, it will flow from the first tank into the second tank, and from there in a gravity system it will flow through the outlet pipe to the drainfield and be dispersed into the soil.

Many people believe this gas follows the plumbing system back toward the house and out the roof vents. This is true of other gases in the tank, especially methane, which is lighter than air. But getting hydrogen sulfide to exit the tank via the roof vents would be like trying to get water to flow 10 to 20 feet uphill — it's just not going to happen.

To escape, hydrogen sulfide needs to be able to flow out to the soil treatment area. Gases will follow the piping back from the drainfield to escape through the house vents, but this will not hinder the flow of hydrogen sulfide to the drainfield, just as it does not hinder the flow of the wastewater. Hydrogen sulfide flowing out of the tank in a properly functioning system will be in the very bottom of the pipe, letting the other gases flow over it in the other direction.

Flow blockages

The reason the gas attacks some tanks and not others is that in the systems being attacked, the gas is not able to flow freely to the soil treatment area and disperse into the soil. The flow could be stopped by a number of things, such as:

- A sag in the outgoing pipe.
- A pipe pitched in the wrong direction.
- A pipe pitched too steeply and inserted too far into the tank.
- An overloaded drainfield.
- Roots in the outlet line.

- Overly saturated or compacted soils.
- Heavy biomat.

In other words, a hydrogen sulfide buildup could be caused by anything that hinders that gas from entering the soil.

This problem is likely to be more prevalent in today's systems installed under current codes. In the 1980s and earlier, mottled soils and groundwater were not much of a concern to installers when putting in septic systems. Mound systems were not very common, and far fewer pump tanks were being installed on trench systems.

In that era, you simply hooked onto the sewer line leaving the building and installed everything deeper from that point. Drainfields were installed as deep as they needed to be to keep the water flowing. This way in older septic systems, the hydrogen sulfide always had an easy escape route from the tank to the drainfield. That is most likely the reason the problem of tank erosion seemed less prevalent then.

What about pump tanks?

Next question: Why is the gas not reacting in all pump tanks? After all, the gas is trapped inside those tanks. The only explanation I can give is that in pump tanks the water level is always moving.

It is actually bacteria that cause the breakdown of the concrete, and this happens right on the surface. The water level in a pump tank is

almost always moving up or down, and the reactions that break down concrete cannot occur underwater. So the rinsing action of the water level rising and falling, along with the bacteria becoming submerged as the tank refills, must be hindering the rate of concrete degradation.

There is also increased airflow in and out of the tank during the pump cycles that may contribute to the slowing of the hydrogen sulfide attack. Hydrogen sulfide is present in pump tanks, so in time the tank will start to show signs of decomposition just above the high waterline. But this breakdown could take much longer to appear because the gas is not kept at a high level for an indefinite amount of time.

If this theory is correct, there are two ways to solve the problem of concrete breakdown. The first is to figure out why the hydrogen sulfide gas is not able to make it to the soil treatment area and disperse into the soil. The second is to protect the septic tank from the gas by impregnating the concrete with protective additives or installing a chemical resistant liner. ■

About the author

Josh Swedlund owns Midwest Trenchless Technologies in Belle Plaine, Minn., a company that focuses on sewer and septic system maintenance and rehabilitation. He can be reached at swedlundmidwest@frontiernet.net.



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Compact Alternative

A system using combined treatment and dispersal piping provides a solution for a house on a small creekside lot

By **Scottie Dayton**

The owner of a four-bedroom home in Rochester, N.Y., noticed some wet spots on his 15- by 10-foot drainfield. As the civil engineer for a township, he understood the implications of leaking leach lines next to a creek. The system was 40 to 50 years old.

The only solution he found on the Internet appeared to be an advanced treatment unit, which was beyond his budget. Looking for a more affordable alternative that did not require a maintenance contract, he found Meyers Environmental in Fairport, N.Y., a company noted for dealing with difficult sites and soils.

Meyers owner Justin DaMore visited the quarter-acre lot and saw only one possible site for a replacement system: a 40- by 70-foot area behind the house. "Property lines and trees limited access and ruled out using large equipment," he says.

"This was a logistics nightmare."

DaMore had met David Presby, inventor of the Advanced Enviro-Septic (AES) system, and had toured his factory in Whitefield, N.H. DaMore suggested the system, which uses a passive combination treatment and dispersal pipes, and the homeowner agreed to try it. The catch was persuading county regulators to accept the technology.

Barry Zink, Meyers project manager, designed the system with Sean McGuigan of Presby Environmental. The team then created a strategy that classified the system as a pilot project. Its success enabled the technology to expand throughout the state.

Site conditions

Soils are loamy topsoil and silty clay with a percolation rate of 15 minutes per inch. The water table is 18 inches below grade. After the



Crew members top the bed with 6 inches of System Sand. A Dirty Bird birdbath from BS Design Corp. will camouflage the lower vent pipe. (Photos courtesy of Meyers Environmental)

septic tank, the ground slopes in a 3:1 pitch.

System components

Zink and McGuigan designed the system for 600 gpd. Major components are:

- Existing 1,000-gallon concrete septic tank.
- 280 feet of AES treatment pipes from Presby Environmental Inc.
- 60 tons of System Sand.

System operation

Wastewater flows by gravity to the new treatment field. Treatment occurs in perforated plastic pipes with a white Bio-Accelerator geotextile fabric along the bottom exterior surface, and a surrounding layer of green plastic fiber mat and black geotextile fabric (see Figure 1). Ridges in the pipe allow effluent to flow

uninterrupted around the circumference and cool the liquid to ground temperature. Skimmer tabs at each perforation retain grease and suspended solids, protecting the outer layers from clogging.

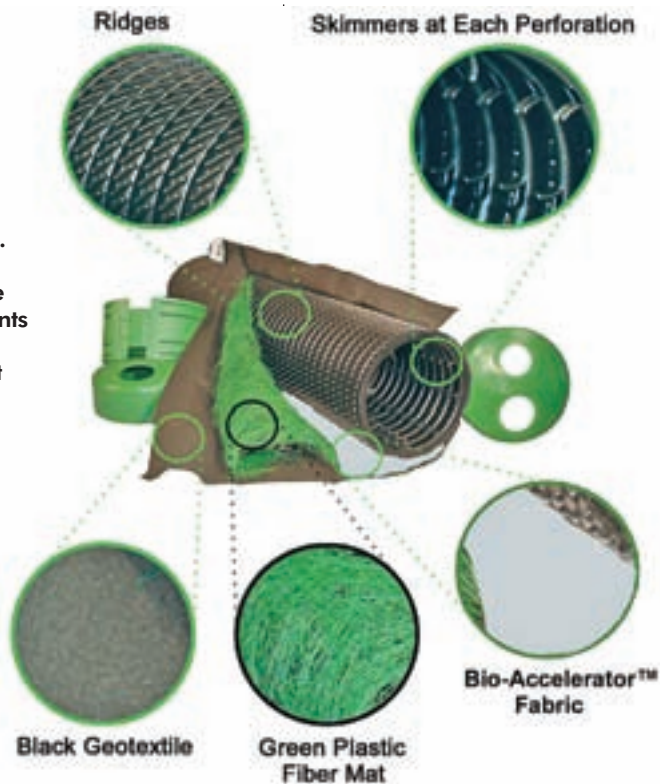
The Bio-Accelerator filters additional solids, speeds up treatment, facilitates quick startups, provides added surface area for bacterial growth, promotes even distribution, and protects outer layers and receiving surfaces from clogging. The mat of coarse green fibers further filters the effluent as it passes into the outer geotextile layer and grows a protected bacterial surface.

The System Sand bed wicks liquid from the geotextile fabric while transferring air to the microorganisms. The technology provides a huge bacterial surface to break down solids, while ample air supply and fluctuating liquid levels

System Profile

Location:	Rochester, N.Y.
Facility served:	4-bedroom home
System designers:	Barry Zink, Meyers Environmental, Fairport, N.Y.; Sean McGuigan, Presby Environmental
Installer:	Justin DaMore, Meyers Environmental
Site conditions:	Loamy topsoil and silty clay, percolation rate 15 minutes per inch, water table 18 inches below grade
Type of system:	Passive combination treatment and dispersal system
Hydraulic capacity:	650 gpd

FIGURE 1. Diagram shows the components of the treatment system.



Workers assemble 10-foot sticks of treatment pipe into seven 40-foot-long rows on 18-inch centers. The pipes snap together using a coupler fitting with a tab and slot.

increase bacterial efficiency. Third-party testing proved that the system treated effluent to less than 2 mg/l TSS and CBOD and to 218 CFU/100 ml fecal coliform.

Installation

The first challenge was convinc-



Offset adaptors cap the ends of the pipe. They accept a 4-inch PVC 90-degree elbow that connects to a short length of pipe to join two rows.

ing Monroe County regulators to accept the technology. The trust Zink had developed over the years with Jeff Kosmala, P.E., senior public health engineer, and Joseph Friser, P.E., associate public health engineer, helped fast-forward the project.

To introduce the product, DaMore invited regulators, engineers, and installers to a training session where Presby displayed the treatment pipes and explained how they worked. Afterward, Kosmala and Friser granted DaMore permission to install the system as a pilot program provided his company and the homeowner assumed responsibility if it failed. They agreed to do so.

“We had to monitor the system,

but not test the effluent,” says DaMore. “AES achieved NSF/ANSI Standard 40 Class 1 Certification and Bureau de Normalisation du Québec Advanced Secondary certification in Canada. That satisfied the regulators.”

The next challenge was finding a source for sand that met the exact specifications and sieve sizes of System Sand. “The sand is the system’s lungs,” says DaMore. “It provides a controlled intake of oxygen and a mechanism for releasing gases. Even when the systems are vented, like this one, the correct System Sand is still important, since oxygen also flows through the ground and into the pipes.”

ASTM C-33 concrete sand with no more than 2 percent passing a number 200 sieve, meets System Sand specifications.

The third challenge was logistics. Zink took measurements, staked out the 42- by 12-foot treatment site, and plotted how to transport the sand to the rear of the system. “I worked out how to maneuver the tracked mini-excavator to reach the sand and deposit it in the middle of the bed,” he says.

On the first day, his four-member crew created a driveway made of 6-foot plastic-injected molded mats (AlturnaMATS) for the dump trucks and machinery. They scarified 6 inches of the treatment site using the excavator bucket, then

replaced the septic tank’s outlet baffle, as the tank was otherwise in good condition.

“We didn’t retrofit an effluent filter because the treatment system removes solids so efficiently that a filter is an unnecessary expense,” says DaMore. “Furthermore, as the filter collected solids, it would restrict the flow of oxygen through the system between the high vent on the house and the low vent in the treatment site.” The crew abandoned the original drainfield.

Trucks delivered the dry System Sand the next morning. To achieve the required 24-inch separation from the groundwater, the crew added 6 inches of sand to the treatment site. They then back-filled with sand to extend the bed 12 feet, sloping the toe at a 3:1 pitch. “This eliminated a constructed mound in the backyard, for the homeowner’s youngsters,” says DaMore.

The Bobcat skid-steer deposited the sand on the edge of the treatment site while the excavator arm spread it around. “I had two guys raking the surface and shooting grades,” says DaMore. “It’s criti-

A Bobcat skid-steer deposits System Sand on the edge of the treatment site, while the excavator arm spreads it around. Six inches were added to elevate the system 24 inches above water table.





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The finished treatment area with the Dirty Bird birdbath camouflaging the lower vent pipe.

"The sand is the system's lungs. It provides a controlled intake of oxygen and a mechanism for releasing gases. Even when the systems are vented, like this one, the correct System Sand is still important, since oxygen also flows through the ground and into the pipes."

Justin DaMore

cal that the rows are level."

Coupler fittings with a tab and slot joined the 10-foot sticks of piping. "Everything snaps together very easily," says DaMore. To hold the seven 40-foot-long rows of pipe on 18-inch centers, workers staked them, then dumped buckets of System Sand across the lines at intervals. Workers used a laser level to set the rows, as variations beyond one-half inch could affect system performance.

The men mounted the lower vent pipe on the last row, then added sand until it was level with the crowns of the pipes. To camouflage the vent, DaMore installed a 4-inch Dirty Bird birdbath (BS Design Corp.).

The next day, the crew topped the bed with 6 inches of System Sand, then added topsoil and seeded it. Meanwhile, trucks delivered corrugated pipe and 100 cubic yards of No. 2 stone for curtain drains at the bottom of the slope and along the right side of the treatment site. Installing the drains the required 10 feet from the system left little space between them and

the property line, so workers had to move the stone in wheelbarrows.

That fall, the system was unaffected by heavy rains, and the backyard was drier than the homeowner had ever seen it. According to DaMore, the AES system saved the man at least \$10,000 when compared with the cost of an aerobic treatment unit.

Maintenance

Maintenance consists of pumping the septic tank every two years. ■

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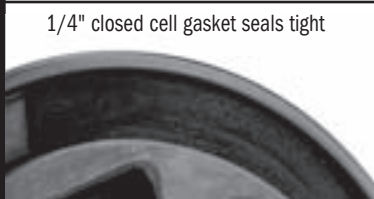
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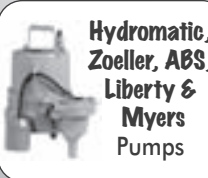
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netafim@netafimusa.com
www.netafimusa.com
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info.abs.usa@cardo.com
www.absgroupusa.com
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626-962-2116 • Fax: 626-962-2177
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www.alita.com
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Gorman-Rupp Company
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grsales@gormanrupp.com
www.GRpumps.com



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laurie.pfaff@libertypumps.com
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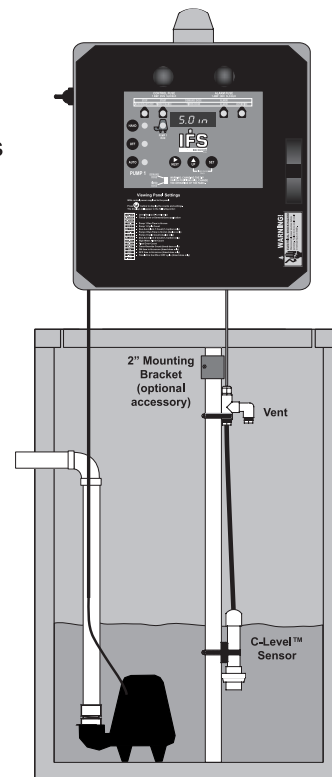
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www.netafimusa.com
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www.premiertechaqua.com
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Amarillo, Texas sewer, drain & plumbing business established in 1976. Owner wants to retire, so take the keys to a 2004 Sprinter outfitted with all of the equipment you'll need to run this business. Price includes real estate with 80x100 shop/office on two city lots. Good gross, good profit, financials available with signed non-disclosure. **Offered at \$495,000.**

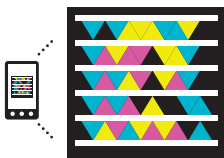
Chicago-Area Biosolids, Land Application, Dredging and Industrial Services Business.

Established in 1985, owner is retiring. Reputable business includes real estate servicing the entire Chicagoland area with sludge and biosolids disposal and treatment services. Real estate and shop included with sale valued at \$750,000, business grosses in excess of \$3 million annually, \$6.3 million in equipment and assets including several TerraGators, Vac Trailers, dump trailers, loaders and much more. **\$4,900,000.** Huge potential, good profit and priced right. Non-disclosure Agreement required, all P&L statements, list of assets, and financials available to qualified buyers.

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WANTED. Very serious and well qualified buyer looking for sewer, septic or industrial business in Dallas, Texas area. Must be grossing between \$500,000-\$1,000,000. All inquiries are kept confidential.



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Giving a Lift

Pump tanks and related components must be designed and installed with an eye toward convenience for the maintenance and service provider

By Kit Rosefield

For those riding the Treatment Train for the first time, welcome aboard the systematic process of evaluating the components of an onsite wastewater treatment system. In our series so far, we have discussed the wastewater source, the septic tank, and the gravity soil treatment area (drainfield).

Now let's look at a pump tank and its role in a pump-to-gravity system. There are many types of pump tanks, including lift stations, process tanks, recirculation tanks, surge/equalization tanks, internal pump basins, and dosing tanks. Dosing tanks may be either pump- or siphon-operated. Here we'll look at the basic dosing pump tank typically used in a pump-to-gravity system.

Considering options

There are a number of pump tank options, depending on the designer. In some cases, small-diameter (24- to 30-inch) vertical pump basins are specified. These work well for demand-dosed systems but lack one consideration: power outages



A pressure manifold is another method of pressure dosing to the soil treatment area. (Photos courtesy of Kit Rosefield)

and storage volume. A thoughtful design factor is at least 24-hour storage to prevent overflows.

When selecting a pump tank, recognize the needs of the service provider to establish and verify gallons per inch for the sake of draw-down and dose volume. Square concrete and vertical cylindrical tanks are easy to calculate, but round buoy or horizontal cylindrical tanks make it difficult to determine gallons per inch unless the manufacturer provides a calibration chart.

Why is this so important? One of my favorite designers has driven into my head, "It's all about the dose!"

A typical pump tank consists of the tank itself, a pump, the discharge assembly, liquid-level controls, and a control panel. No matter the tank material (concrete, plastic, fiberglass), the tank must be fitted with access risers.

Also important is a watertightness test to ensure a good seal at the access risers and all other tank plumbing connections. Leaks at any connection may allow inflow during the wet months, and as we all know, hydraulic overloading is the number one cause of failure of the soil treatment area.

A properly designed system includes an effluent screen in the septic tank. If no screen is installed, or if the design employs a combo (two-compartment) tank, a pump screen should be installed to prevent fouling of the pump or transfer of unwanted solids to the soil treatment area.



A properly designed system includes an effluent screen in the septic tank. If no screen is installed, or if the design employs a two-compartment tank, a pump screen should be installed to prevent fouling of the pump or transfer of unwanted solids to the soil treatment area.

Choosing a pump

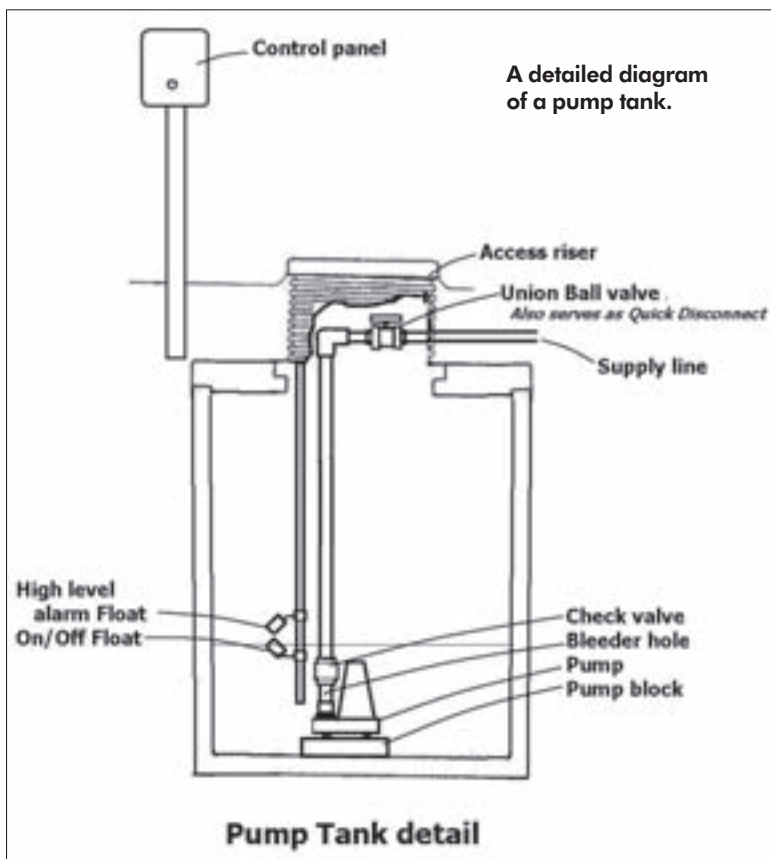
Two types of pumps are typically specified: high-head multi-stage or low-head centrifugal. Multistage pumps are often located in a flow inducer that supports the pump and helps control the liquid level in relation to the pump intake. Centrifugal pumps typically have short legs on the bottom but should always be positioned on a 3- to 4-inch block/pedestal to make sure no accumulated solids are drawn into the pump.

The discharge assembly should have a few key elements to ensure proper operation and serviceability. A check valve is typically located just above the pump to prevent backflow from the supply line and

reduce pump run time. Where freezing is an issue, drainback is desired, and a check valve might not be specified.

When a check valve is installed, it is important to have a small bleeder hole between the pump and the valve to prevent air lock and pump cavitation. Next in the discharge assembly is a quick disconnect to allow for pump removal and servicing. The most common quick disconnect is a union, but a camlock connector can be used.

Rubber couplers with band clamps or compression couplings are not recommended, as they will often self-disconnect under normal operating pressure. An isolation valve should be located after the



quick disconnect to prevent back-flow when servicing the pump or check valve.

And finally, a pump pull rope attached to the top of the pump is highly recommended, especially for centrifugal pumps, as they are heavy, and the discharge plumbing is offset and may break if used to lift the pump. A 1/2-inch or larger polypropylene rope is best, as it is strong and corrosion resistant. It also floats if it gets lost in the tank (and is less likely get sucked into the pump intake).

There are a couple of other considerations where the discharge line exits through the pump tank. As all serviceable points should be accessible from the ground surface, the discharge line must be properly fitted and aligned so as not to stress the plumbing and cause premature failure. It is also important to silicone-seal the grommet where the discharge line exits the tank riser to prevent possible inflow. (This is a good practice for all tank risers through fittings.)

Keeping control

Next let's look at the control system. There are many types of

liquid-level control devices, from ultrasonic to pressure transducers to control floats. All perform the same task, sending a signal or connecting a circuit to activate a timer or mechanical device, such as a pump, valve or blower.

For simplicity, let's talk about a two-float system with a pump on/off float and a high-level-alarm float. Here we may see one of two options for on/off floats. A wide-angle mechanical float relies on a ball inside the float housing that shifts back and forth as the float moves up and down, connecting a circuit and turning the pump on and off.

Vertical mechanical floats have an adjustable float that travels up and down on a shaft and activates a micro-switch. This is the most common high-level-alarm float.

Whatever the type of float, good corrosion-resistant fasteners must be used. We often see hardware-store-grade stainless steel band clamps used as float fasteners. Guess what: The worm drives on these clamps are not stainless and typically corrode away. Only good marine-grade band clamps are truly all stainless. Non-corrosive plastic

float fasteners also work well.

In well-designed systems, the floats are attached to a removable float tree that, with enough cord length, allows removal of the floats for testing and service. Whether the float cords are wired into an internal or external splice box or run through conduits to the control panel, the passages must be sealed to prevent unwanted gases from entering the control panel, where corrosion can cause irreparable damage. Use a sealant such as electrician's putty that can be easily removed for float replacement or repairs.

Types of panels

Control panels also vary widely, from telemetry Internet-based to simple on/off functions (discussed here). Most panels have a few basic features that are valuable for long-term system performance monitoring. An HOA (Hand/Off/Auto) switch

method is to use a pressure manifold with valves or orifices to distribute the effluent equally. These and other distribution devices require routine inspection, verification of even distribution, and service and rebalancing.

In conclusion

So, let's recap the critical issues around the pump tank that can help or hinder the efforts of a service provider.

1. Has the tank assembly been certified as watertight?
2. Are all components accessible from the ground surface?
3. Is there a pump screen at or upstream of the pump?
4. If the pump is a centrifugal, is there a pump block/pedestal?
5. Is there a check valve if appropriate? And is there a bleeder hole below it?
6. Is there an appropriate quick-disconnect device?

A typical pump tank consists of the tank itself, a pump, the discharge assembly, liquid-level controls, and a control panel. No matter the tank material (concrete, plastic, fiberglass), the tank must be fitted with access risers.

assists in the routine maintenance of the system and allows testing of the pumping system.

One useful test for tracking pump wear is an amperage/voltage test. With baseline startup information on volts at rest, volts while pumping and current draw (amps) you can catch a pump that is beginning to struggle before it fails, so you can replace it during regular service, not in an emergency.

Most control panels can be fitted with an event counter and hour meter. These devices track how many times the pump starts and stops and record the cumulative run time, enabling you to calculate average daily water use and flow in gallons per minute. This helps verify if the system is being used according to design, and if perhaps the pump and supply system needs recalibration.

Last but not least is the method of pressure dosing to the soil treatment area. Various types of distribution boxes can be used in a pump-to-gravity system. Another

7. Is there an isolation valve?
8. Is the discharge plumbing properly installed and sealed?
9. Are the floats easily serviced and adequately secured?
10. Are all the float cords properly sealed to prevent gas transfer and corrosion?
11. Does the control panel allow proper testing and system performance verification?

To learn more about O&M on pump tanks and the variables only touched on here, check www.nawt.org for a training session near you. Next in O&M Matters, we'll look at media filters as final treatment and dispersal components.

About the author

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



Equaris Offers Greywater Treatment System

The three-tank Greywater Treatment System from Equaris Corp. features a series of wastewater treatment and filtration tanks. The surge tank provides flow control while the aeration tank produces aerobic conditions. The clarification tank returns settled solids back to the surge tank. Bacteria on the interior tank surface naturally clean the water. The rotationally molded polyethylene tanks are 26 inches in diameter and 51 inches high. A sludge removal system pumps solids from the bottom of each tank. **651/337-0261; www.equaris.com.**

SSPMA Offers Sizing, Installation Packet

A three-part packet on sewage pump sizing, installation and maintenance is available from the Sump and Sewage Pump Manufacturers Association. The packet also includes a pocket-sized calculator to assist installers in determining required sewage pump capacity, total dynamic head and basin size. The 32-page *Recommended Guidelines for Sizing Effluent Pumps* also is available. **847/559-9233; www.sspma.org.**

Zoeller Offers Effluent Turbine Filtered STEP System

The Effluent Turbine Filtered STEP System from Zoeller Pump Co. is designed for simplex or duplex applications in a single polyethylene pump vault. The flat-bottom design is made for free-standing applications. Pipe supports are available for suspended applications. The inlet is predrilled at the factory or can be blank for field customization. The deep-pleated filter offers a large surface area and can be easily removed for cleaning. The large, unobstructed area for float placement reduces the risk of hang-ups. **800/928-7867; www.zoeller.com.**



Biokleen Offers Bac-Out Septic Care

Bac-Out Septic Care from Biokleen combines live cultures and enzymes that break down household waste, grease, fats and other organic matter into minerals, water and oxygen. The product contains no artificial fragrance, color or preservatives and is safe for humans, animals and plants. **800/477-0188; www.biokleenhome.com.**

Clarus Offers Tru-Flow Splitter System

The Tru-Flow Splitter System from Clarus Environmental can split wastewater effluent flows of 1/10 to 30 gpm into two to five distribution lines. The splitter is constructed of lightweight and non-corrodible materials for easy installation and long life and has a 4-inch riser for inspection and maintenance. The system consists of a diverter basin and cover and diverter. The bubble level design allows for post-construction adjustments associated with distribution box settling. **877/244-9340; www.clarusenvironmental.com.**



Bio-Microbics Introduces MyFAST Treatment System

The MyFAST wastewater treatment system from Bio-Microbics Inc. is designed for commercial properties or a small community. The system features multiple FAST treatment units in one tank. The pre-packaged, high-performance, decentralized treatment system can handle flow rates up to 160,000 gpd. **800/753-3278; www.biomicrobics.com.**

Infiltrator Introduces Quick4 Plus Chamber

The Quick4 Plus High Capacity Chamber from Infiltrator Systems is designed for 36-inch-wide septic system installations. The 4-foot-long chamber has two center structural columns. Its Contour Swivel Connection provides advanced contouring capabilities for onsite septic system designs. The chamber can be used with the All-in-One 12 Endcap and All-in-One Periscope. **800/221-4436; www.infiltratorsystems.com.**



PumpBiz Introduces Propane-Powered Pump

The PortaPump propane-powered pump from PumpBiz Inc. is designed to remove standing water from golf course bunkers and fairways, flooded parking lots, sidewalks, or drain water from pits that need to be excavated because of pipe breakage or root damage. Able to pump up to 2,000 gph, the one-person unit is powered by a Honda 4-stroke, 35 cc engine. A larger unit, able to pump up to 16,800 gph, is available. **800/786-7249; www.pumpbiz.com.**

CSI Controls Introduces AlarmBot Post Alarm

The AlarmBot outdoor post alarm from CSI Controls features a clear 360-degree beacon and four alternating red flashing LEDs that signal when tank levels rise. The system also has a 95 dBA beep tone audible alarm that can be silenced using the on/test/silence switch. Operating on 12 volts, pump and alarm power can be separated. Other features include a universal plug and factory-sealed weather-proof enclosure. **800/363-5842; www.csicontrols.com.**



Control Works Introduces 331LC Duplex Control Panel

The 331LC digital level controller duplex control panel from Control Works Inc. is designed for 208-, 240- or 480-volt, three-phase pumps with overload protection of up to 32 amps each (10 hp max at 208 volts, 10 hp max at 240 volts and 20 hp max at 480 volts). Each panel has a CW6CDC 4-20 mA controller, solid-state alternator relay for run time, run lights, elapsed time meters, lag delay circuitry, seal leak lights, Hand/Off/Auto selector switches, alarm horn and high-level flashing red alarm beacon with dry contact for telemetry connection. **513/831-9959; www.controlworksinc.com. ■**

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SSPMA Reports Increase in 2010 Pump Sales

The Sump and Sewage Pump Manufacturers Association reported sales increases for pumps in 2010. Pedestal and submersible sumps, sewage and effluent pumps gained 10.5 percent; utility pumps increased 42 percent; battery-operated backup sump pumps gained 19 percent; multistage centrifugal effluent pumps increased 24.5 percent and submersible grinder pumps were up 32 percent.

CULTEC Supports Marine Corps Family Foundations

CULTEC is collecting donations at its Brookfield, Conn., headquarters until May 9 for the Wounded Warriors drive supporting wounded Marines at the National Naval Medical Center in Bethesda, Md., and the Summer Care Package drive to support Marines deployed in Afghanistan. For more information on the drives, call 860/224-7635 or visit www.cultec.com/charity.html.



From left, COLE Publishing owner Bob Kendall, Don Vermeulen, Ralph Macchio and Rick Howe.

Vermeulen Receives Major Industry Award

Don Vermeulen, retired owner of the Meyers Company, in Macedon, N.Y., received the Ralph Macchio Lifetime Achievement Award at the 2011 Pumper & Cleaner Environmental Expo in Louisville in March.

Vermeulen, with more than 50 years in the industry, recently sold his company, specializing in onsite system installation. The Macchio Award was given by COLE Publishing and COLE Inc., sponsors of the Pumper & Cleaner Expo.

"Don has shown a lifetime commitment to the things we all find important in this industry. That's professionalism and education," said Rick Howe, of Cape Cod Biochemical Co., who nominated Vermeulen. "Don is truly a gentleman, and he really exhibits everything that we would like this industry to be."

Howe said Vermeulen has always been on the cutting edge of industry technology and has continued to be involved in education conferences, from the Pennsylvania Septage Management Association to the Pumper & Cleaner Expo Education Day.

Heading into retirement, Vermeulen reinforced his interest in building industry professionalism. "The more knowledge we can share within the industry, the better we all will be, and all customer relationships will improve as a result," he said. ■

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Champion to Children

Members of the Indiana Onsite Wastewater Professional Association (IOWPA) helped New Song Mission, a Christian nonprofit organization, in building homes in Brown County for abused and neglected children. L.A. Brown of L.A. Brown Inc. worked to involve many other professional organizations. Dick Blazer, president of IOWPA, donated equipment and labor equaling more than \$10,000 to install a drip field.

Soil scientists Gary Hudson and Randy Staley installed the manifolds and drip tubing. Scott Rexroth of Clear Water Environmental Systems oversaw the project, created the drainfield layout, and helped install the tubing. Brown employees installed 1,000 feet of perimeter drain. Jay Ingram provided a backhoe and Dave Wagler helped with labor. Vermeer of Indiana donated 8,500 feet of drip tubing and loaned a vibratory plow. Buchner Distributing of Kokomo and Francesville Tile Co. provided 1,300 feet of tile with sock for the perimeter drain.

Built in three phases, nine traditional family homes will nestle in a neighborhood setting with a future horse barn, a school, and a two-acre pond. Each home will have house parents, a teacher/mentor, and six to eight children.

Septage and Soil Studies

The Ontario Association of Sewage Industry Services (OASIS) made presentations to the Township of Tiny and is developing initiatives to help citizens address their septage issues.

Since 2005, OASIS urged the Ministry of the Environment and Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) to conduct a soil sample study to gather facts about the impact of applying untreated septage to land. Some members volunteered to have their sites sampled. In fall 2010, researchers took domestic septage samples and soil samples. The study will compare the concen-

tration of pharmaceuticals, personal care products and antibiotics, some human pathogens, flame retardants, metals, nutrients, and organic matter in land-applied and control samples.

OASIS members serve on the Biosolids Utilization Committee and the Ministry of Municipal Affairs and Housing Technical Committee. Colleen Swider, OASIS executive director, pursued the Ministry of Labour to discuss proposed regulations requiring wheelchair accessible portable bathrooms on all government-funded municipality construction sites.

Wisconsin Elections

Christopher Fellner of Fellner Septic & Soil in Sturgeon Bay; Tony Birrittieri of Petersen Supply in Fredonia; and Sue Schambureck of Madson Tiling & Excavating in Manitowoc were re-elected to the Wisconsin Onsite Water Recycling Association board of directors. Fellner and Birrittieri will serve two-year terms and Schambureck will serve a one-year term.

Clay Vander Leest won the 2011 Robert Lindner Memorial Scholarship. Vander Leest, the son of Dan Vander Leest of Sturgeon Bay, is studying soil science specializing in waste management at the University of Wisconsin-Madison. Samantha Johnson, daughter of Chris Johnson of Burlington, won the Gretchen McQuestion Scholarship. She plans to study human resources and education. WOWRA has awarded \$107,800 in scholarships to 97 students since 1991.

CALENDAR OF EVENTS

June 9-10

Arizona Onsite Wastewater Recycling Association Onsite Wastewater Educational Conference, Radisson Suites, Tucson. Email Suzanne Ehrlich at suzanne.ehrlich@co.yavapai.az.us.

June 15-17

North Carolina Septic Tank

Association Symposium, Sea Trails Resort, Sunset Beach. Visit www.ncsta.net or email ncsta@earthlink.net.

June 16

Utah On-Site Wastewater Association mini-conference on pressure distribution system design, operation, and use in Salt Lake City. Call 435/797-3155 or visit <http://uwrl.usu.edu/partnerships/training/uowa.html>.

June 18-20

National Environmental Health Association, National Onsite Wastewater Recycling Association, and State Onsite Regulators Alliance joint Onsite Wastewater Summit and NEHA 75th Annual Educational Conference and Exhibition, Columbus, Ohio. Visit www.neha2011aec.org/wastewater.html.

Aug. 4-6

Florida Onsite Wastewater Association Conference and Trade Show, Daytona Beach Convention Center, Daytona Beach. Call 407/937-2228 or visit www.fowaonsite.com.

Aug. 27-28

Georgia Onsite Wastewater Association Conference and Industry Exhibit, Callaway Gardens, Pine Mountain. Call 678/646-0379 or visit www.onsitewastewater.org.

TRAINING & EDUCATION

Land Application Workshop

The Pennsylvania Septage Management Association, National Association of Wastewater Transporters, Mid-Atlantic Biosolids Association, and the Pennsylvania Water Environment Association will sponsor a Land Application Workshop June 22-23 in Carlisle, Pa. While anyone may attend, the intention is to educate sewage enforcement officers and state Department of Environmental Protection employees that land application is a safe, neat, and clean operation.

After morning classroom sessions, attendees will be bused to a live demonstration of land-applied biosolids from an anaerobic digester and lime-stabilized septage. The demonstration site is next to 300 houses. Owner Bill Neidigh screens the septage, then adds lime before the mixture goes to a 300,000-gallon storage tank. He retains a contractor to apply the material before the crops are planted or after harvest.

The second day is for those who want to learn more about the U.S. EPA Part 503 requirements and actual operations including calculating loading rates and record-keeping. For more details, visit www.psmna.net or www.nawt.org.

NAWT

The National Association of Wastewater Transporters has these training sessions:

- June 8 – Inspector Training and Recertification, Tucson, Ariz.
- June 22-23 – Land Application Workshop, Carlisle, Pa.
- July 21-22 – Inspector Training and Certification, Sonora, Calif.

For Pennsylvania classes, call NAWT at 800/236-6298 or visit www.nawt.org. For Arizona classes, call Kitt Farrell-Poe at 520/621-7221. For California classes, call Kit Rosefield at 530/513-6658 or visit www.cowa.org.

Alabama

Licensing classes are the joint effort of the Alabama Onsite Wastewater Association (AOWA) and University of West Alabama (UWA). Courses are at UWA Livingston campus unless noted otherwise.

- June 1-3 – Basic Installer
- June 23-24 – Continuing Education, Dothan
- July 7-8 – Pumpers
- July 20-22 – Advanced Installer I

The first day of continuing education classes is for installers and the second day for pumpers and portable restroom operators. Call the training center at 205/652-3803 or visit www.aowatc.uwa.edu.

Arizona

The Arizona Onsite Wastewater Recycling Association and University of Arizona Onsite Wastewater Education Program are sponsoring the NAWT Inspection Training and Recertification course on June 8 in Tucson. Call Kitt Farrell-Poe at 520/621-7221 or email kittfp@ag.arizona.edu or visit www.ag.arizona.edu/waterquality/onsite.

California

The California Onsite Wastewater Association is offering the NAWT Onsite Inspector Training and Certification class July 21-22 in Sonora. Call Kit Rosefield at 530/513-6658 or visit www.cowa.org.

Iowa

The Iowa Onsite Wastewater Association is offering a Site Evaluations and Soils course on June 17 in Emmetsburg. Call Alice Vinsand at 515/225-1051, email execdir@iowwa.com or visit www.iowwa.com.

Minnesota

The University of Minnesota Extension has these classes:

- June 1-3 – Soils, Alexandria
- June 7-8 – Inspecting Onsite Systems, Waseca
- June 15 – Soils Continuing Education, Forest Lake
- June 21 – Soils Continuing Education, Worthington
- June 22-24 – Soils, Mankato
- June 29 – Soils Continuing Education, St. Cloud

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

Missouri

The Missouri Smallflows Organization is offering these CEU courses:

- June 28 – Selling the System to the Site Conditions, Sedalia
 - June 29 – Media Filters, Sedalia
 - July 19-20 – Operations and Maintenance, Liberty
- Call Tammy Yelden at 417/739-4100 or visit www.mosmallflows.org.

New England

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

- June 2 – Installing Advanced Onsite Systems
- June 2 – Innovative and Alternative Technology Field Training, Peckham Farm
- June 8 – Soil Basics for the Onsite Wastewater Contractor
- June 16 – Hands-On Component Installation
- June 23 – Bottomless Sand Filter Design and Installation
- July 13 – Microbiology for Wastewater Professionals
- July 14 – Surveying Techniques for the Wastewater Professional
- July 20-21 – Advanced Soil Morphology

Call 401/874-5950 or visit www.uri.edu/ce/wq. For soil courses, call Mark Stolt at 401/874-2915 or email mstolt@uri.edu.

North Carolina

North Carolina Soils and On-Site Wastewater Training Academy has the following webinars:

- July 14 – Global Positioning and Geographic Information
- Aug. 4 – Soil Survey in the 21st Century

Call Joni Tanner at 919/513-1678 or visit www.soil.ncsu.edu/training.

North Carolina Septic Tank Association has an Installer, Inspector, Pumper, and Land Application class June 15-17 at Sunset Beach. Visit www.ncsta.net or email ncsta@earthlink.net.

The North Carolina Pumper Group and Portable Toilet Group are holding the four-hour seepage management training and three-hour land application seminar on June 18 in New Bern. Call Joe McClees at 252/249-1097 or visit www.ncpumpergroup.org or www.ncportabletoiletgroup.org. ■

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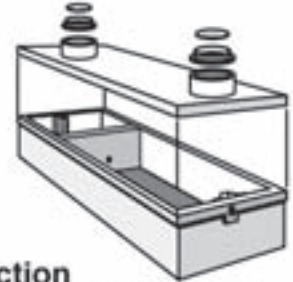
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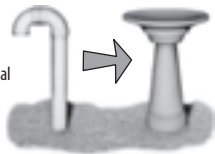
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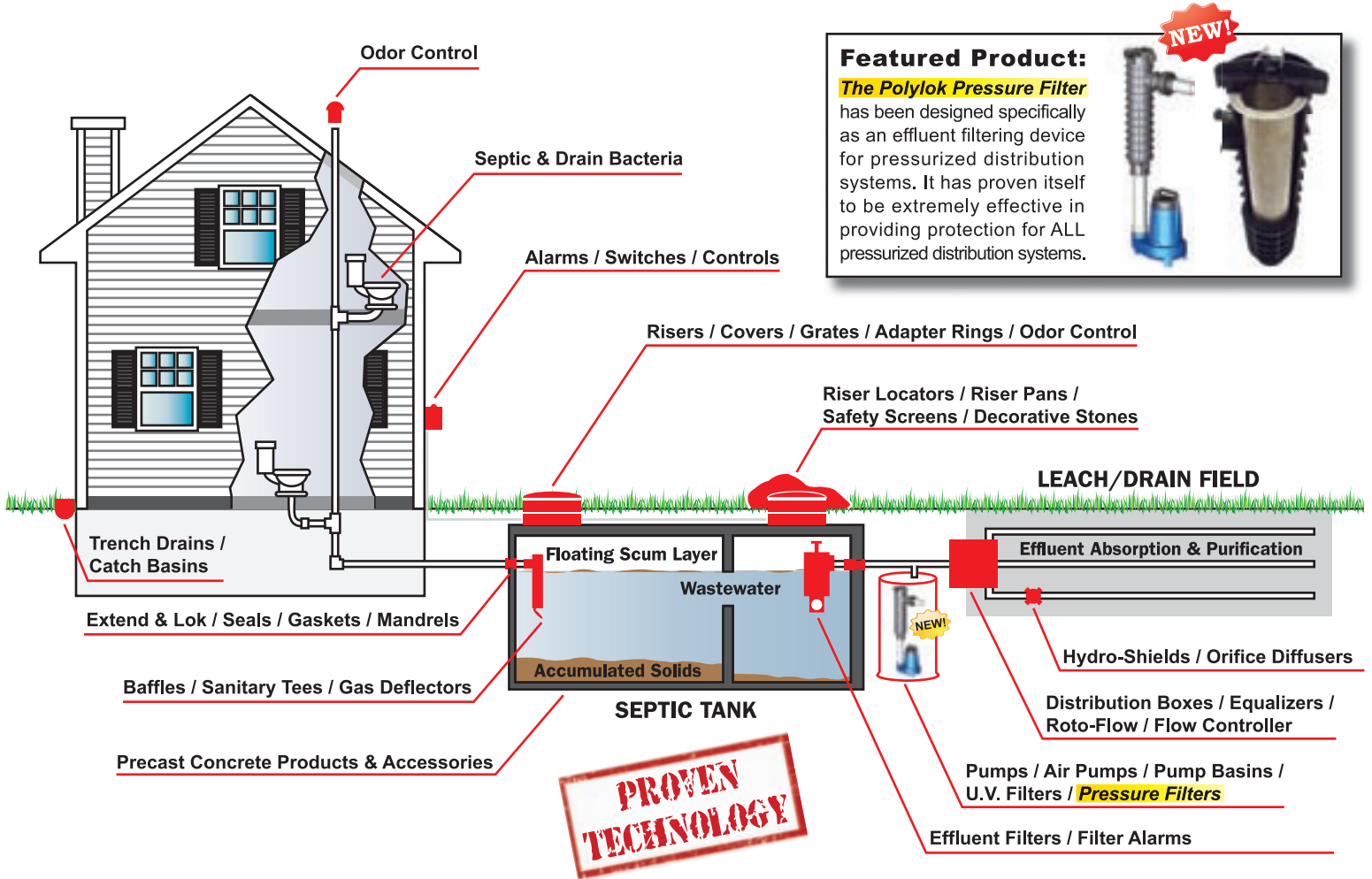
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