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Pulling Together

A Missouri regulator fosters respect and improves cooperation among local installers

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Sandy May
Wastewater system inspector specialist
St. Charles County, Mo.

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July 2011

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Septic Dreams

Pleasant thoughts about life at a Wisconsin Northwoods lake cottage turn to questions about onsite system issues

By Ted J. Rulseh, Editor

The septic system went in last June at the lot where my wife and I are building a lake cottage this summer. As you read this, the cottage (if all has gone well) is nearly complete. As I write this, in mid-April, we're a few days away from the ceremonial groundbreaking (snow-breaking?) with our kids.

I am contemplating quiet evenings on the screen porch, predawn hours probing the rock bars for walleyes — and septic system questions. The tank is there, the chambers laid, the system all permitted and landscaped. Yet the job isn't really done.

Managing water

First question: What will we do about water usage? My wife grew up on a farm but has lived in a town since she was about 18. I was a town kid — I remember just a few struggles my father had with a septic tank before the city hooked us to the sewers when I was in early grade school. And Noelle and I have always lived in town.

So I am guessing that our water-use habits will need some adjusting, perhaps easy for me, being frugal by nature, but not for the female of the species. We sized our system for a three-bedroom home, which basically means four people, and it'll just be the two of us (other than when we have company), but still.

Here I'm thinking seriously about taking the advice of Roger Machmeier, the Septic System Answer Man in this magazine's sister publication, *Pumper*. For years Roger has said every house on a septic system should have a water meter. It's hard to argue with him: How else do you know if you're living within the system's means?

Roger figures it will cost about $100 to buy the meter and have the plumber install it. The trick is, if possible, to install it so that it only records what comes into the cottage, not what we might spray around from the outside faucets.

OK, it costs a little. But think of the arguments it can prevent. If I want to come at Noelle about taking too long a shower or running too much water while washing dishes, at least I can come at her with data. And it works in reverse, too: Maybe when I question her habits and she tells me to check the meter, the facts will be on her side.

So a water meter definitely looks like a good idea.

For years Roger (Machmeier) has said every house on a septic system should have a water meter. It's hard to argue with him: How else do you know if you're living within the system's means?

Caring for the system

Then there's the matter of system maintenance — and that pesky thing our septic tank already contains, and that Wisconsin law requires: an effluent filter. Again, it's something very hard to argue against, and anyway you can't argue with the law.

There's a high-water alarm in the tank that will ring in the cottage if the filter gets plugged or if the tank gets full or (heaven forbid) for some other reason. But the last thing I want is for that alarm to sound. And even though I work in the onsite industry, I am not so sure I want to be in charge of pulling and hosing the filter.

So I am thinking two words: maintenance contract. I would love to find a pumper in the area who will bill me some regular monthly or quarterly fee in return for checking on my system as needed during the year, cleaning the filter, looking down the inspection ports, and pumping the tank when needed. It's getting to be time to check the Yellow Pages and make some calls.

Need a cover-up?

Then what about those inspection ports? Do we want to look at them? Maybe they're OK. But what about the green lids on the two tank risers? Should we cover them with something decorative? Like maybe the cedar-ringed planter outfits I saw at the last Pumper & Cleaner Expo? Maybe three hundred bucks by the time we're done — but visually worth it? We'll see.

And then there's that drainfield, nicely planted last fall in no-mow grass, and surrounded by prolific oak, white pine, hemlock, maple and birch trees. I don't imagine I will want trees growing on the drainfield and sending roots down to do all sorts of violence to my trenches. So I suppose I'll need to add periodic tree seedling removal to my list of chores.

And finally, what to tell guests? My family members, and Noelle's, are city folk. Maybe I'd better have a sign above the commode in the bathrooms:

Caution:
Drains to Septic System
If it isn't toilet paper,
don't flush it.

Or some such thing. We hope to have a lot of company. I would sure hate to see our visitors sending all the wrong sorts of goodies out to our tank. I also don't want to have to make a great big deal about it.

So, those are the thoughts I'm entertaining, along with those reveries of quiet evenings by the campfire, and early-morning vistas of mist rising from the lake. ■

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Why Tanks Break Down

I read the article on hydrogen sulfide and septic tanks ("Why Do They Break Down?" *Onsite Installer,* May 2011).

As a designer/installer in New Hampshire, I am responsible for the maintenance of a five-building condominium that has an onsite system. Each building discharges into two septic tanks, which discharge into a single pump station with dual pumps. The pumps discharge into a small distribution box that splits the flow and discharges to two 12-outlet distribution boxes that flow to twin, vented distribution fields.

The small two-outlet distribution boxes, which are not vented, are the problem. The hydrogen sulfide gas collects in the concrete distribution boxes, and over the last 15 years it has caused the concrete to disintegrate into sand above the waterline in the box.

My solution to this problem has been to break out the concrete boxes without disturbing the pipes and fit a plastic distribution box in their place. I reinforced the sides of the plastic boxes with bricks to give them some structural strength. I am sure that the gas is what causes the concrete to become sand.

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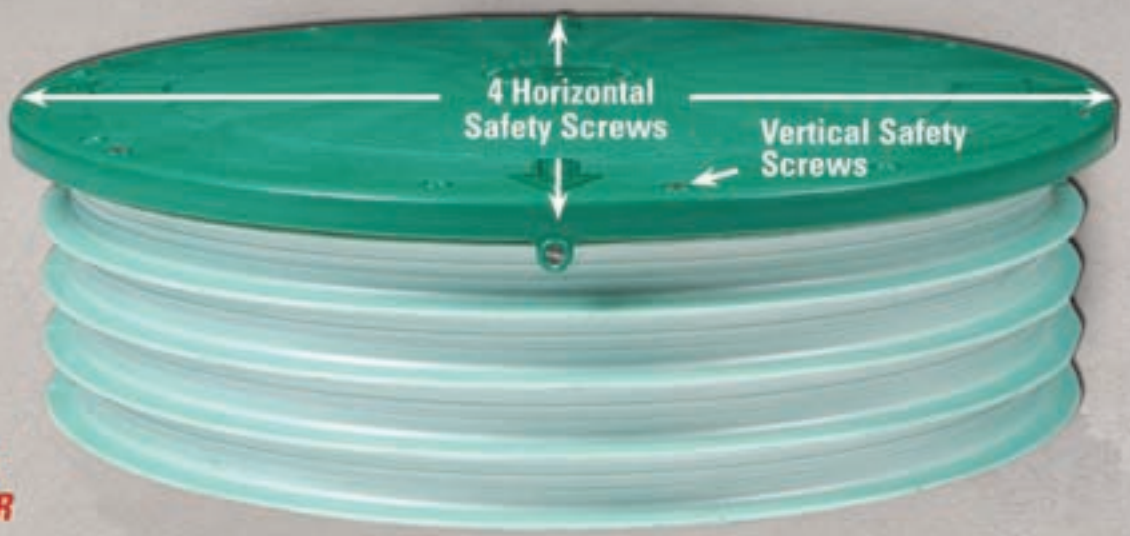

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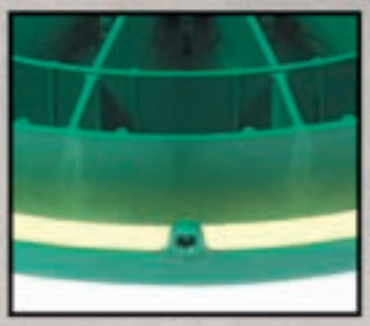

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St. Charles County wastewater system inspector specialist Sandy May monitors drainfield trenching and pipe installation at a home in Defiance, Mo. Matt Hauser from Jody Schmidt Well & Sewer Service sets the grade in the trench. (Photography by Tom Tussey)

Pulling Together

A thorough approach and a collaborative style help a Missouri regulator foster respect for her work and improve cooperation among local installers.

By Scottie Dayton

Sandy May, St. Charles County (Mo.) Government Building Division

POSITION: Wastewater system inspector specialist

EXPERIENCE: 23 years

EDUCATION: Purdue University, bachelor's degree, restaurant/hotel institutional management; University of Arkansas, 80 hours of soils study

GOALS: Better training for inspectors, consistent state septic code

CONTACT: smay@sccmo.org

An engineer in St. Charles County, Mo., hired 18-year-olds to do his percolation tests, designed the onsite systems on his kitchen table, and charged homeowners $1,500.

In the drainfield, he used a land block system, which fills the first trench until hydraulic pressure forces effluent through a 90- or 45-degree solid elbow to the second trench, where the process repeats. The system leaves the upper runs saturated while the lower ones receive little or no usage.

County wastewater system inspector specialist Sandy May was furious when she found out and suggested to her boss that the $1,500 would be better spent paying for onsite components. He agreed, and told the recently hired May to do whatever was necessary. She did.

Since 1993, May has developed her own educational programs for contractors and third-party inspectors and has established the county's onsite inspection program. She and co-workers in the Community Development Department contributed language to ordinances passed by the county council mandating time-of-sale septic system and well inspections, the licensing of inspectors and installers, and the requirement that they carry a $10,000 performance bond and $500,000 of liability insurance.

First viewed as the enemy, May won over the contractors with her fair, no-nonsense attitude, then formed them into a cohesive group of professionals who support each other and often serve as her eyes and ears. May's concern for the interests of homeowners led practitioners to think of her not as a meddlesome bureaucrat but as a welcomed adviser and even a friend.

Winds of change

May, who has a restaurant/hotel institutional management degree from Purdue University, was running a restaurant for Arkansas State Parks when a health inspector's visit altered her course. "I liked the idea of being in the office for a few hours, then out in the field for the rest of the day," she says. May returned to the classroom for the required 30 hours of science, then trained with the health inspector for six weeks in a seven-county area before joining the Arkansas Health Department in Hope.

She spent four-and-a-half years there before her husband's job dissolved and they moved to St. Louis in 1992. She immediately found a job as an environmental sanitarian for the St. Charles County Health Department.

For six months, she did food inspections and responded to sep-

(continued)

Covering All Bases

Wastewater system inspector specialist Sandy May visits new construction sites in St. Charles County, Mo., at least four times.

She plans her final septic system inspection for the day of the final occupancy inspection, enabling her to meet the homeowners and explain how the system works. She also discusses the service agreement and who will provide the service.

During one visit, the next-door neighbor listened in on the conversation. "The lady said that her house was built in 1988, and wondered if her system was supposed to have an aerator motor," says May. "She had never heard it run." When May pulled the lid on the tank, she saw wires and wire nuts, but no aerator.

May called the manufacturer and reported the missing component. The representative checked the records and swore the tank was shipped with it. May disagreed. The lady who answered the phone suggested that someone may have stolen the motor. "It happens, but a thief isn't going to take the time to put the wire nuts back on," says May.

Provoked, May ramped up her argument until the company representative admitted that the firm had never installed the aerator. The company later shipped one for free. "That's why I go out on final inspections," says May. "If I don't check for all the required components, nobody else will."

Sandy May won over installers in her county with fairness and a no-nonsense attitude.

"I had inspected many systems when the homes were built, and the paperwork some inspectors were submitting didn't agree with what I knew was in the ground."

— Sandy May

Sandy May, center, does a residential septic system inspection in Defiance, Mo. Mark Klemme, right, of Klemme's Backhoe Services in Wentzville, was the system installer. At left is the homeowner, Mitch Lampe.

tic system complaints, which she turned over to the Building Division. "I talked to the director and learned they didn't have a good sewage program," she says. "People didn't know what they were looking at. In February of 1993, I moved to the Building Division, and I've been here ever since."

Out in the field, May found contractors in surrounding rural areas doing percolation tests and slopping in drainfields in the rain. "I had 80 hours of training in soils with professors from the University of Arkansas," she says. "We had 10-foot-deep test pits and Munsell color charts. We learned how to evaluate soils, and I could see these installers were ruining every system."

Instead of making contractors call 24 hours in advance to schedule an inspection, May asked them to phone the day of the inspection, enabling them to work in a part of the county where it wasn't raining. She also replaced percolation tests with soils permeability testing methods.

St. Charles County, once one of the fastest growing in the state, has 7,300 onsite systems. May and assistant Dan Walker did 15 to 25 inspections per day. When the county council passed an ordinance requiring time-of-sale inspections, the additional workload overwhelmed them.

The state Health Department responded by training and licensing private or third-party inspectors, but there were problems. "I had inspected many systems when the homes were built, and the paperwork some inspectors were submitting didn't agree with what I knew was in the ground," says May. "I asked them to get additional training or they would no longer be doing inspections for us."

However, the state's one- and two-day classes fell short of May's expectations. Lacking alternatives, she developed her own, based on seminars she attended at association conferences and training centers. "People must touch components and see them to understand how they operate," says May. "Sitting in a classroom or reading a book doesn't cut it."

Upgrading performance

Her Field Day Workshops involved three contractors installing an alternative system, then leaving it open so that May could discuss it with inspectors and installers from St. Charles and other counties. To force attendance, she promoted the ordinance requir-

(continued)

ing third-party inspectors to be licensed.

The professional installers then approached May, saying they wanted to be licensed, bonded, and insured through the county to knock out fly-by-night companies. The ordinance passed in 1995, but it didn't stop contractors from badmouthing each other in hopes of getting more work. The unprofessional conduct irked May.

At a meeting, she told the installers that if they were not working, they needed to pound the pavement harder — jobs were everywhere. May welcomed installers into her office to track them down.

"I let them look at new construction and system repair permits, and copy soils reports and homeowners' phone numbers," she says. The strategy worked, and the badmouthing stopped. The meeting also started the contractors on the path of cooperation, and they began treating May with guarded acceptance. Eventually, the companies even referred jobs to other licensed contractors if they were too busy.

May also met with Realtors in the field, educating them about the onsite systems on the properties they were selling. Heavy turnover among agents meant spending too much time repeating the same message. So, to multiply her efforts, May began attending real estate meetings to discuss onsite ordinances and distribute handouts.

"The state code allows county health departments to set their own regulations, so we have 114 counties all with different rules," she says. "The lack of consistency is a big nightmare for everyone, including real estate agents."

In 2009, May gave her first presentation to the Missouri Board of Realtors, and drew more than 200 members.

Regulations and reality

The state Health Department allows counties to enforce stricter codes than the state code, enabling St. Charles to become a leader in safe onsite system practices. For example, the state does not require timed dosing, but St. Charles County does.

Sandy May considers it part of her job to help educate industry professionals as well as homeowners. Here, she checks a site while Jody Schmidt, president of Jody Schmidt Well & Sewer Service, operates an excavator and company employee Matt Hauser sets grades.

"I tell homeowners that if they are going to have an issue with a sewage pump, it will happen during the first two years. Once they realize that the $300 difference is the cost of a five-year warranty, they choose quality over less expensive."

— Sandy May

The state setback for drainfields is 10 feet from the property line, but in St. Charles County it is 30 feet. State and local codes require 450 feet of drainfield in 100-foot runs for three-bedroom houses where soils are suitable; otherwise, the homes may require alternative systems. May saw no logic in having four 100-foot laterals and one 50-foot run, so she increased the requirement to 500 feet for a uniform footprint.

The county requires homeowners to have a septic system operating permit with an inspection every two years. It is the only county that requires systems with pump tanks to time dose the drainfield. "Timed dosing is an efficient, economical solution, and my contractors love it," says May.

She tells of an estate with a stable and restroom all served by an aerobic treatment unit, a 1,000-gallon on-demand pump tank, and a Wisconsin mound that was ponding. May talked to the wife and learned that she laundered six to 10 consecutive loads of horse items per day. The on-demand pump cycled repeatedly, overloading the uppermost laterals. May recommended that the installer put a timer on the pump to spread out the doses over 24 hours. The quick fix solved the overloading problem and saved the owners from remediating the drainfield.

May's job often involves troubleshooting, which she relishes. One site had an older system with ball valves instead of a distribution box and a conventional drainfield that was ponding. Rather than replace the system, May suggested upgrading the 500-gallon pump tank to a 1,000-gallon tank and time dosing the field.

"We had room for another 200 feet of laterals, so I suggested tilling topsoil into that area and installing chambers in 3-foot-wide trenches," she says. "That took the load off the overloaded and leaking upper lines." The fix worked.

May prefers flow-diversion ball valves over distribution boxes because hydrogen sulfide gas corrodes the baffles in the boxes and causes system failure. Ball valves are activated by water pressure. Each time the pump cycles, the valve rotates to the next zone. They are installed 10 inches deep in a sprinkler valve box, but above the sewage level in the drainfield.

May requires that installers avoid disturbing the ground when they set the ball valves. "I have them tee off the pump line, come up above the sewage level, turn 90 degrees over the valve, then turn 90 degrees back down and run the rest of the line to the trench," she says. "Now they never have to stick their hands in sewage to adjust a valve."

Guiding hand

May enjoys designing repairs on existing systems, and especially figuring out how to fit components into tight places. The soil test tells her the most suitable site for the drainfield. She determines the size of the septic tank and absorption bed from the number of bedrooms. An engineer in the office supervises May on new residential construction. Only designs for commercial systems require an engineer.

May depends on contractor suggestions to optimize and finalize the designs. Homeowners may choose the kind of system they want from her list of options. If they have never owned an onsite system, May starts talking.

"They don't know the difference between a recirculating sand filter and a MicroFast aerobic treatment unit from Bio-Microbics," says May. "If I have a young couple with kids facing that choice, I tell them that the first place their youngsters will play is in the filter's pea gravel. For slightly more money, they can purchase a system with enclosed components."

May explains that the different prices on bids are mainly driven by product differences, such as a pump with a one-year warranty versus a five-year warranty. "I tell homeowners that if they are going to have an issue with a sewage pump, it will happen during the

first two years," she says. "Once they realize that the $300 difference is the cost of a five-year warranty, they choose quality over less expensive."

May also helps buyers through short sales and foreclosures. The county ordinance requires sellers to pay for septic systems and well inspections. "I urge short sale buyers to have the septic system inspected," says May. "Repairs on a failed system will cost them $5,000 to $8,000. Knowing that, they can renegotiate the deal with the bank. Most buyers are oblivious to this issue."

Since inspectors cannot stress-test systems on houses vacant for years, the county attorney drew up a notarized affidavit. "The buyer states that he or she will have the system inspected after 30 to 45 days of occupancy, and assume responsibility for upgrades to the septic system or well," says May.

Same book, same page

It took all of May's experience, and her philosophy that one is never too old to learn, to convince homeowners and contractors to work with her. Training and education, the keys to her approach, taught the parties to support each other and not fear new technology or approaches.

For May, the rewards are many. Homeowners welcome her onto their properties and call with concerns or questions about their systems. The contractors, now a cohesive team, are helping her find and evaluate some 3,650 undocumented systems.

"They are a good group that takes pride in what they do," she says. "In unity, we benefit homeowners and the environment instead of throwing money away by doing things wrong." ■

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(See ad page 19)

Crossing the Divide

An Eliminite treatment system provides a single solution for two rest areas on opposite sides of a Montana interstate

By Scottie Dayton

Blowing and drifting snow often closed stretches of Interstate 15 and mountain passes near Dearborn, Mont., backing up traffic to southbound and northbound rest areas.

The high-strength wastewater from these facilities' two conventional onsite treatment systems had 180 to 250 mg/l total nitrogen (TN). Because the effluent numbers exceeded the state Department of Environmental Quality (DEQ) groundwater standards, officials suggested that the state Department of Transportation (DOT) research advanced treatment technologies.

The DOT published a request for proposals, specifying a DEQ-approved system to remove 60 percent TN. Eliminite in Three Forks, Mont., won the bid with a pre-engineered fixed-film bioreactor invented by Thomas Kallenbach, P.E., of Three Forks. His design consolidated the two systems into one behind the northbound rest area.

"The units easily achieved 40 to 50 percent TN reduction right out of the box in below-freezing temperatures," says Kallenbach. To attain the required percent reduction, he added a separate nitrification/denitrification stage to control pH, as well as a carbon source. When the system went online in November 2010, effluent numbers displayed an immediate 80 percent reduction in TN.

Site conditions

Soils are fine sand and silt loam with a percolation rate of 30 minutes per inch. The water table is 20 feet below grade. The only suitable site for the drainfield was a natural bench with 6 to 8 percent slope on a hill with 15 percent slope.

System components

Kallenbach designed the system to handle 3,500 gpd. The major components are:

- Two 3,500-gallon dual-compartment concrete septic tanks, each with A100-8 effluent filter (Zabel, a product of Polylok). Precast tanks made by Three Forks Lumber and Ready-Mix and Flathead Concrete Products, Kalispell, Mont.
- Eliminite system of two 620 C bioreactors, each with two 24-inch Tuf-Tite risers and 1/2 hp Franklin discharge and recirculation pumps; and a 3,500-gallon dual-compartment polishing tank with 1/2 hp Franklin discharge pump.
- 2,000-gallon dosing tank with duplex 1/2 hp Hydromatic (Pentair) SHEF 50 discharge pumps.
- 960 feet of 2-inch pressurized pipe inside 220 36-inch Quick4 chambers (Infiltrator Systems). Pumps and piping supplied by Northwest Pipe Fittings Co., Great Falls, Mont.
- Siemens Logo control panel from SJE-Rhombus.

PHOTOS COURTESY OF ELIMINITE

Steve Durkin, caretaker of the Dearborn highway rest area, takes readings from the onsite treatment system control panel.

System operation

The septic, bioreactor, and polishing tanks are set in series. Wastewater from the southbound rest area flows under the freeway to the treatment train. Both laterals are 4-inch Schedule 40 PVC pipe plumbed to a septic tank. As effluent drains from the tanks to the bioreactors, small automatic feed pumps designed and built by Kallenbach monitor the flow and inject the appropriate amount of bicarbonate to control pH.

The bioreactors have a 9-foot-deep packed media bed that needs no cleaning or replacement. When the recirculation pump in the pump basin activates, it draws 150 gallons of effluent into a spray bar with four heads that evenly distributes it over 620 cubic feet of MetaRocks.

"MetaRocks are spheres of closed-cell polyurethane resins with three deep-contoured channels that provide large, open pores for passive air transfer," says Kallenbach. "A coating of coarse sand and finely crushed recycled glass enables a thin liquid film to cover the entire

System Profile

Location:	Dearborn, Mont.
Facility served:	Highway rest areas
System designer:	Thomas Kallenbach, P.E., Three Forks, Mont.
Installer:	Dick Anderson Construction from Helena, Mont.
Site conditions:	Fine sand and silt loam, percolation rate 30 minutes per inch
Type of system:	Eliminite fixed-film bioreactor with pressure distribution
Hydraulic capacity:	3,500 gpd

Workers lay 3,000 feet of 4-inch 160 psi DR 11 HDPE force mains down the highway department right-of-way.

surface and promote even, consistent growth of microorganisms."

Nitrified liquid collects at the bottom of the tanks. Each time the recirculating pumps engage to dose the filters, they return a portion of the fluid through the denitrification lines to the septic tanks. When the rising liquid at the bottom of the tanks engages the float-activated discharge pumps in the pump basin, they each send 700 gallons to the polishing tanks.

A second set of automatic feed pumps injects a proprietary, environmentally safe carbon source into the first compartment of the polishing tanks. These post-anoxic denitrification chambers are upflow reactors.

"Liquid enters the bottom of the compartment, then flows up and over the dividing wall into the final carbon oxidation chamber," says Kallenbach. "It removes excess carbon added to the flow by recirculating the water over 160 cubic feet of MetaRocks."

When the water engages the float-activated discharge pumps, each sends 300 gallons to the dosing tank. Alternating pumps then deliver 700 gallons per dose through two 4-inch 160 psi DR 11 HDPE Schedule 40 force mains to the drainfield 3,000 feet away. The pipe diameter and material were necessary because of the distance.

Each half of the drainfield has a force main and central manifold

A worker from Dick Anderson Construction prepares to lift the top half of the tank for an Eliminite fixed-film bioreactor.

The treatment units are set 18 inches higher than the septic tanks to facilitate servicing the tanks through 18-inch instead of 48-inch risers.

feeding three 160-foot-long laterals on 7-foot centers. "The trenches are long because I wanted to keep them as close in elevation as possible," says Kallenbach. He used Squirt, a pressurized drainfield design program, to analyze the hydraulics, as the elevation dropped 100 feet from the drainfield to the dosing tank.

"Because the force mains have so much capacity and are never full, the drainfield is always in a non-equilibrium state," says Kallenbach. "There is a constant change in discharge rate with respect to head, which made the design far more complicated than most." Orifices at the manifold lateral junctions control flows so each lateral receives an equal amount of water.

Installation

Work began in late October. Dick Anderson Construction of Helena, Mont., decommissioned the existing tanks and directional drilled under the freeway to run the 4-inch lateral from the southbound rest area. While excavating the 4-foot-deep tank holes, the crew hit undocumented ground water and ran a pump to stay ahead of it. They bedded the septic tanks on eight inches of compact 3/4-inch minus road base before backfilling with native material.

Instead of setting the treatment units in the water, foreman Frank Rask asked Kallenbach for permission to raise them to 30 inches and core drill a second inlet lower in the concrete tanks for the septic tanks' plumbing. "That also made it easier to service the pumps, because now we used 18-inch instead of 48-inch risers," says Kallenbach. Setting the tanks took a day and a half.

Workers fused the polyethylene pipes, then ran the force mains down the highway right-of-way and up the hill to the drainfield. They scarified the soil at the bottom of the 18-inch-deep trenches, laid the pressure piping after drilling 3/16-inch orifices five feet apart, and suspended the lines with plastic snap-tie fasteners inside the chambers.

At the bottom of each cleanout on the distribution piping, the crew installed a tee, ball valve, and 90-degree elbow. "Now when the service provider opens the valve, it flushes the lateral, but the discharge goes back into the trench instead of up onto the ground," says Kallenbach.

Based on independent laboratory test results and the system's reliability, the Federal Highway Administration issued a public interest finding designating Eliminite the sole source provider of advanced wastewater treatment systems for Montana DOT rest areas and facilities including maintenance shops, weigh stations and airports.

Maintenance

State regulations require the septic tanks to be pumped every five years and the effluent sampled annually. Kallenbach trained the DOT staff to draw samples and replace empty containers of carbon and bicarbonate. ■

MORE INFO:

Eliminite, Inc.
406/581-1613
www.eliminite.com

Franklin Electric
405/228-1204
www.franklin-electric.com

Infiltrator Systems, Inc.
800/221-4436
www.infiltratorsystems.com

Pentair Water – Hydromatic
888/416-9513
www.hydromatic.com

Polylok, Inc.
877/765-9565
www.polylok.com
(See ad page 32)

Siemens Water Technologies Corp.
866/926-8420
www.water.siemens.com

SJE-Rhombus
888/342-5753
www.sjerhombus.com
(See ad page 27)

Tuf-Tite, Inc.
800/382-7009
www.tuf-tite.com
(See ad page 9)

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.

Understanding Pumping Systems

Here are the fundamentals for selecting and installing pumps that deliver wastewater to a gravity-based onsite treatment system

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

A pump quick-disconnect and piping in a pump tank.

In keeping with our tour of onsite treatment systems, we now turn to pumping systems. Of course, one aspect of pumping systems is a tank, which we'll discuss only from the perspective of proper sizing for the application, and not installation (since we covered that earlier). So now we'll embark on a series on pumping system design and installation.

Pumps are used to move raw sewage or septic tank effluent to different parts of the onsite treatment system. A pumping system consists of four parts regardless of the application:

- Pump tank or sump.
- Discharge assembly.
- Controls.
- Pump.

How sewage moves through the system determines the placement of the pump. The pump then affects the sizing and appearance of all the system components. Some pumps are used to move raw sewage to a pretreatment device, such as a septic tank. Others move septic tank effluent to another pretreatment device, such as a media filter, or the final soil dispersal area. Some applications use more than one pump.

Pumping to gravity systems

There are two main gravity applications. The first involves pumping raw sewage from a basement sump up to the house sewer, where it flows by gravity into the septic tank. The second involves lifting septic tank effluent to the final soil treatment area.

When the pump is in the basement or lower level of the home, it is installed in a sump basket. This is not to be confused with a sump pump, which is used to pump clear water. Sump pumps should never be used for sewage applications.

If there is a toilet on the lower level, a sewage ejector or solids-handling pump is used. In this application, a two-compartment septic tank or two tanks in series should be used to prevent turbulence from pushing solids through the system. Effluent screens at the outlet of the septic tank will also help keep this from occurring.

A pump should never be installed directly in the septic tank, because in that event, solids are likely to cause plugging. Typically, two-compartment tanks are installed, where the first compartment is used as the septic tank and sized according to state code, and the second is used as the pump tank.

In the event of pump failure, only the basement plumbing cannot be used, because the rest of the household sewage is delivered by gravity to the septic tank.

Sump baskets in the basement are usually made of plastic and hold 30 to 50 gallons. They can be smaller than other pump or dosing tanks, since the delivery of sewage to the pretreatment device should be continuous. When a pump problem occurs, it will be apparent immediately, since there is limited storage capacity. Water use in the basement will have to stop until the problem is corrected.

This sump needs to be vented; that requirement will likely be covered in the state plumbing code, which may mandate that a licensed plumber install and work on the sump. The vent must extend through the roof and must be large enough in diameter to maintain atmospheric pressure within the sump. The cover needs to be gastight and of a bolt-and-gasket type that allows access for maintenance and replacement. It must also be strong enough to support any anticipated loads in the area.

From pump to field

In the second application, the raw sewage flows from the house by gravity to the septic tank, and the tank effluent flows by gravity to a pump tank. From the pump tank the effluent is delivered to the soil treatment unit for final dispersal.

If the pump fails here, water use in the house needs to be restricted until repairs can be made. The reserve storage capacity for sewage from the house is determined by the pump tank capacity above the high-water alarm level.

A pump should never be installed directly in the septic tank, because in that event, solids are likely to cause plugging. Typically, two-com-

A pump tank with controls and alarm as well as a riser brought to the surface.

partment tanks are installed, where the first compartment is used as the septic tank and sized according to state code, and the second is used as the pump tank.

Often, a separate watertight tank is installed to act as the pump or dosing tank. Any of these tanks have to meet the same construction and installation requirements as the tanks we have discussed in previous articles. Some proprietary products use pump vaults to protect the pump in either a septic tank or pump tank. Make sure if you are using one of these that the vault and the pump capacity match.

Sizing the pump tank

The size of a pump tank is determined by the total daily flow. It needs to be large enough to supply the dose volume and provide storage capacity in case of pump failure. The tank should be large enough to hold the average daily sewage flow from the home. If a smaller tank is used, an alternating two-pump system should be installed.

Pump tanks can be round or rectangular. As with any tank but especially with pump tanks, a riser is needed to provide easy access to the pump for maintenance and replacement. We are always amazed at how many times we are called to systems that are having problems, only to find that access to the pump tank and pump are restricted due to poor installation.

The pump should be set up off the bottom of the tank at least four inches. This keeps the intake out of any solids that have carried over from the septic tank. The block or blocks used should be wide enough to accommodate the pump base so that when it is removed, the replacement or repaired pump can be easily set back onto the pedestal.

A pump basket may be added to the tank so that the pump draws effluent from a higher elevation in the tank. Again, make certain that the basket will work for the pump capacity.

When the pump delivers effluent to a series of trenches that are higher in elevation, the inlet into the drop box or distribution box should be equipped with a device to dissipate the force of the incoming effluent. The bottom of the discharge piping from the pump must be at least two inches higher than the supply line to the next box. This avoids potential drainback to the pump station other than the amount contained in the supply pipe.

In a drop box system this also ensures that the effluent gets delivered to the first trench in sequence. In the next article, we will discuss pumping to pressure systems, including mounds, at-grades, and low-pressure-pipe trenches. ■

By Scottie Dayton

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

California

Environmental advocacy groups Heal the Ocean and Heal the Bay filed a lawsuit against the California State Water Resources Control Board (SWRCB) for taking more than seven years to adopt septic system permitting and operation standards after rules were supposed to go into effect by Jan. 1, 2004.

The groups sued the board to protect public health and aquatic life. California does not have regulations for monitoring the state's 1.2 million onsite systems. A spokesperson for the SWRCB stated that a final draft of the rules should be out in the next few months and that the delay was normal for the public processes.

New York

In response to new state and federal stormwater regulations aimed at protecting the New York City reservoir system, 10 watershed towns of northern Westchester added a five-year septic tank pumpout requirement to their sanitary codes.

Most took effect in May 2011. During the service, existing regulations require haulers to inspect the drainfield and report failure signs to the county health department. There are about 40,000 septic systems in Westchester; 30,000 in the watershed.

Septic haulers are ambivalent about the law because it makes them report on their customers. The New Castle board added a chapter to the town code requiring owners of homes with onsite systems to show proof of an inspection by a licensed service provider every five years.

Florida

The Jacksonville Water and Sewer Expansion Authority closed in June for lack of business. The agency, created in 2003, helped extend water and sewer service in established neighborhoods and received $15.5 million in state and federal grants to work in areas where failing septic tanks polluted waterways feeding the St. Johns River.

Proposed legislation calls for the city and JEA, the municipal utilities provider, to take over the work of the authority. According to the authority's former executive director, the number one priority of the partnership is to phase out septic tanks. The project is financed by stormwater utility fees.

Oregon

A draft ordinance proposed by a Dunes City council member would eliminate mandated onsite inspections except for new or replacement systems, buildings that are expanded or remodeled or sold, or when the city receives written complaints.

Under current legislation effective in March 2012, homeowners must submit proof of an inspection, mapping, and pumping of an onsite system. Follow-up inspections would be due every five years with pumping as required. The council formed an Ordinance Review Committee to rewrite the proposal.

Pennsylvania

The state Department of Environmental Protection required the Delaware Township to update its sewage management plan to address old systems with rusting steel tanks. Supervisors proposed an ordinance that would require homeowners to have their septic tanks pumped and onsite systems inspected every three years. Part of the Pennsylvania Sewage Facilities Act also requires supervisors to develop an inspection plan for onsite systems. ■

In Control

A variety of methods can be used to regulate onsite treatment system devices such as pumps and blowers

By Kit Rosefield

For those reading this series on the Treatment Train for the first time, welcome to the process of evaluating the components of an onsite wastewater treatment system.

In our last discussion, we added a pump to the system. This segment on system controls takes us to a new level of understanding. Controls can range from old-school piggyback units to sophisticated computer-controlled technologies. So, buckle up: The Treatment Train just became high-speed.

Let's start with the most basic control — the piggyback, where a plug interceptor wired with a mechanical float plugs in between the prewired pump and the wall receptacle. Simple, yes, but these were designed for basement sump pumps and cannot withstand the corrosive environment in a pump tank.

There are four basic factors in a control system: the environment to be controlled, a sensor of some sort, a controller that receives the sensor signal, and the device that is controlled — such as a pump, valve, air blower, or alarm.

Controlled environment

There are four basic factors in a control system: the environment to be controlled, a sensor of some sort, a controller that receives the sensor signal, and the device that is controlled — such as a pump, valve, air blower, or alarm.

In the rest of this series, we will reference the different environments we'll be controlling. Our last article covered a pump-to-gravity system, which includes a pump tank in which liquid levels change due to flow from the source through the septic tank.

In this case, when the liquid level in the pump tank rises, a sensor responds and sends a signal for the pump to turn on and pump out a specified volume of liquid (the dose). If the liquid level does not drop and continues to rise, a second sensor activates an alarm, indicating a problem.

Understanding floats

Now we'll talk a bit more about sensors. Mechanical floats have been used for decades as a standard method of liquid-level control. The basic mechanical float has an internal ball that travels in a cage, activating a microswitch. Some mechanical floats can carry a specified load (electric current) that can directly activate devices such as pumps. Others are low-voltage and are intended only to transmit a signal that activates an electrical contactor in a control panel.

Another characteristic of floats is the angle of operation. Many mechanical floats are considered wide angle, as even in their finest adjustment they need to be raised as much as three inches to activate. Other more sensitive signal floats, such as mercury units, are often called narrow angle, as even a 1/4-inch movement will cause activation.

Narrow-angle floats are typically used in timer applications. That's because if used for direct operation, even the slightest turbulence in the liquid surface can trigger the float to send a sporadic signal, causing chattering and eventual burnout of the controlled device. It is important to know what type of float is specified for the system, as installing an improper float can lead to expensive repairs.

Most floats are connected by an electrical cord. In the case of mechanical floats, the cord length from the mounting point (tether) can be adjusted to control the dose. When corded signal floats are used, the tether length is typically set at about three inches.

Vertical mechanical floats have a cylindrical float that travels on a vertical shaft, engaging a load-carrying microswitch. These floats can be fairly narrowly adjusted and are often used in the

Vertical floats are often used in the internal pump basin of single-pass media filters. One characteristic of floats is the angle of operation: Wide-angle and narrow-angle floats are the two variations. (Photos courtesy of Kit Rosefield)

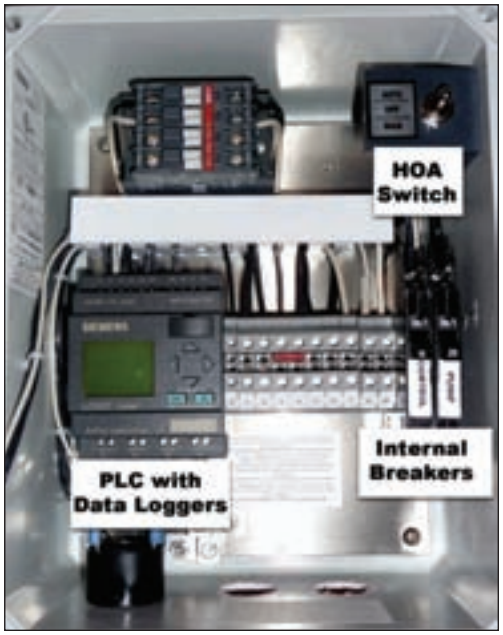
A conductive sensor, in which a rising liquid level provides conductivity between electrodes, transmits low-voltage signals to a control panel. A pressure transducer can monitor the rise of liquid by trapping an air pocket in a bell-shaped housing.

internal pump basin of single-pass media filters.

There are many options for mounting sensors in the system, but whatever method we choose, we must consider ease of removal for inspection and service.

Other sensor options

Now let's talk about other kinds of sensors. The onsite industry is beginning to see methods of liquid-level control that have been applied to other industries for decades. A single pressure transducer can monitor the rise of liquid by trapping an air pocket in a bell-shaped housing. This type of sensor can activate numerous devices as pressure increases in the bell. These sensors are typically paired with proprietary control panels.



An example of a control panel that includes invaluable components: data loggers, Hand/Off/Automatic (HOA) control switch, and internal breakers.

Another tried-and-true liquid-level control device is a conductive sensor, in which a rising liquid level provides conductivity between electrodes, thus transmitting low-voltage signals to a compatible control panel.

In addition, some larger systems employ ultrasonic sensing devices that transmit a sound wave from the sensor to the liquid surface and back, constantly communicating with a control system to activate devices such as pumps and valves.

Later in this series, we will discuss the use of light-intensity meters and photo sensors in the operation of disinfection devices.

One important note here about any electrical component: The wire connections must be properly sealed and protected from corrosion. We can do this by using silicon- or grease-filled wire nuts within internal or external splice boxes, or by running the factory-sealed sensor cords through conduits to the control panel. In running sensor wires, it is important to seal the conduit passages with electrician's putty to prevent corrosive gases from migrating from the controlled environment into the panel circuitry.

Control panels

Control panels come in many sizes and configurations. While simpler systems might employ demand dosing, more complex systems rely on timed dosing. In any case, certain features are invaluable in all control panels. These include:

- Dedicated internal electrical breakers.
- Hand/Off/Automatic (HOA) control switch.
- Data loggers including event counters (also called cycle counters).
- Running-time clock (also called an elapsed-time meter).

From the most basic to complex, these features enable comprehensive management of any system. Some may question the inclusion of dedicated electrical breakers, so let me address that with a question: If we have a control panel servicing a pump and alarm system, and this panel has a single 30-amp electrical breaker from the structure's subpanel to the control system, and if for some reason the pump fails and trips the breaker, what happens to the alarm? It loses power, and we don't know of a problem until wastewater either backs up in the structure or comes out of the ground.

Test switches (HOA) are extremely valuable when performing O&M on a system, as they make it possible to turn the pump on and off as needed, or to verify its automatic operation in a test scenario.

As for data loggers, comparing the number of times a pump is activated to how long it has run enables us to determine exactly how much effluent was pumped and at what rate. Both figures are extremely valuable in determining if a system is being used according to design.

As management will soon become the norm, learning to use these tools for reporting will be very important for qualified service providers. Other valuable management tools being used in our industry include programmable logic controllers (PLCs) that can be adjusted to control unit processes such as recirculating media filters, time-sequenced aerobic treatment units and timed dosing of disinfection devices and soil treatment units.

In addition, telemetry devices on the market enable remote monitoring and adjustment of systems from an office-based computer or handheld smart phone.

Let's review

Let's quickly review the key points about onsite system controls. We need to ask:

- What environment in the system are we trying to control? Liquid level? Oxygen level? Application rate?
- What kinds of sensors are used in the system? Mechanical floats? Signal floats? Pressure transducer? Conductive electrode?
- Are the sensors load-carrying or low-voltage transmitters?
- Does the sensor mounting facilitate easy removal, inspection and service?
- Are the wiring connections and conduits sealed to prevent corrosion?
- Is the alarm component in the control panel wired independent of the pump?
- Is there a test switch in the control panel to facilitate O&M?
- Are there data loggers to provide important management information?
- Is the system equipped with telemetry? If so, are you trained to manage it?

To learn more about operation and maintenance of control systems and all the variables only touched on in this article, check this magazine's events calendar or visit www.nawt.org for an O&M training session near you.

Our next installment of O&M Matters will discuss media filters as final treatment and dispersal components. If any terms used in this article are new to you, check out the glossary of terms at www.onsiteconsortium.org/proj.html# glossary.

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. ■

Alarms, Controls and Monitoring Systems

By Pete Litterski

Transducer control panel

Transducer control panels from **Alderon Industries** pump and monitor liquid from onsite systems. They can accommodate multiple pumping ranges of up to 20 feet. Tank level is displayed at the control panel, and switches on the panel allow an installer to set the desired alarm level in the field.

Audible and visible alarms, HOA switches and indicator lights for pump run and system power are provided. Auxiliary contacts to connect remote alarms, auto dialers or other devices are standard. The transducer is made of heavy-duty PVC and operates on water pressure. There are no moving parts, and temperature does not affect the unit's operation. **218/483-3034; www.alderonind.com.**

Tank level display

The **Level Monitor CL** system from **SJE-Rhombus** includes a scalable LED bar graph to display the level in a tank as a percentage of capacity. A touchpad can be used to set the level at which an alarm is triggered. As the tank level reaches the installer-specified set point, an audible alarm is activated. The system can be calibrated for depths from 12 to 40 inches and uses a floatless C-Level sensor for monitoring of tanks up to 300 feet away. **888/342-5753; www.sjerhombus.com.**

High-visibility alarm

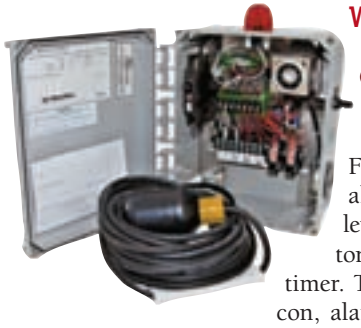
The **AlarmBot** from **CSI Controls** includes a clear beacon and four red flashing LEDs for maximum visibility. When the tank level activates the high-water alarm float, the clear beacon illuminates 360 degrees and is supplemented by four alternating high-intensity red flashing LEDs and a 95-decibel beep tone. The 12V alarm system can be separated from the pump power supply. A universal plug allows installation on any piggyback plug. **800/363-5842; www.csicontrols.com.**

Three-way pump control

The **JJ1HOA** pump control from **Septronics** allows immediate specific control of pump function and has a separate audiovisual alarm in the same junction box. The HOA toggle switch mounted on its own terminal board allows users to turn the pump completely off or have it run automatically. A fused alarm is wired into a separate terminal board. The system comes fully assembled and includes an alarm float switch, riser attachment and cord seals. **262/567-9030; www.septronicsinc.com.**

Wireless monitoring

The **Polylok Wireless Alarm** is available as a tank alarm model PL-WTA and a wireless filter alarm model PL-WSA. The systems include a battery-operated wireless transmitter that is placed in the tank. When high water triggers the alarm, the transmitter (with a range up to 1,500 feet) signals the indoor alarm. The alarm is powered by a lithium battery that lasts two years. **888/765-9565; www.polylok.com.**



Water level and blower alarm

The **Fusion** series alarm panel from **Clarus Environmental** sounds an alarm in the event of high water or a malfunctioning diaphragm blower on Fusion treatment units. The high-water alarm operates off of a single variable-level control switch. The blower is monitored through two pressure sensors and a timer. The panel comes with a red alarm beacon, alarm horn, circuit breaker protection for the blower, a test/normal/silence switch, and disinfection alarm contacts. **877/244-9340; www.clarusenvironmental.com.**

Sump pump switch

Electronic **sump pump switches** from **Level-Guard Fluid Control Products** replace mechanical contact floats with a solid-state system. The switches are designed with two field-effect electronic sensors that are 6.7 inches apart and monitor the presence of fluids without direct fluid contact. Once both electronic sensors detect the presence of water, a solid-state switch sends power to the pump via a piggyback plug. The switches resist contaminant buildup, preventing false actuations, and eliminating the short-cycling that burns out pump motors. **877/342-3261; www.levelguard products.com.**

Aerobic controls

The **80000** series aerobic control panel from **Septic Products** is designed for custom aerobic applications. The panels are engineered to control operation of up to three pump systems in simplex or duplex sequence. Pumps can be configured for timed dose, drip-type, custom programmable relay operation, and demand or spray applications. The system can control from one to six compressor units. A red alarm light signals high-water failures and an amber light signals compressor failures. **419/282-5933; www.septicproducts.com.**

Comprehensive control system

The **Model 2252** control panel from **Ecological Tanks** is a single-panel solution for overland dispersal aerobic wastewater treatment systems that require post-aeration, UV disinfection and remote alarm monitoring. It provides power and low air alarm monitoring for the treatment tank and post-aeration compressors. It uses dual air switches for floatless high-water alarm monitoring for both tanks. It has power and a dry-contact alarm input for the disinfection device. The panel has a built-in Model AVD-45B auto dialer with integrated keypad programming and voice message recording that will report the alarm to up to four phone numbers. **800/277-8179; www.etiaquasafe.com.**

Weatherproof aeration timer

The **P101-2** series of aeration timers from **Septic Services** is housed in a UL Type 4X weatherproof plastic enclosure with an external toggle switch that offers on/auto/off and continuous modes. The 20-amp-rated 24-hour timer has 96 on/off events that allow for 15-minute incremental settings. The P101FA-2 unit adds a 7-amp breaker and a warning light for use with aeration units requiring a smaller tripper breaker. **636/583-5564; www.septicserv.com.**

Touchpad programming

IP-Series control panels from **Liberty Pumps** incorporate programmable pump features on the inner door. The compact floatless level sensor detects the liquid level in the tank and sends a signal to the IP panel, which displays the level in inches or centimeters. Pump activation and alarm levels can be adjusted using the panel touchpad, eliminating the need to go into the tank for manual adjustment.

The sensor is backed up by a redundant alarm float included for extra security. **800/543-2550; www.libertypumps.com.**

Aerator control

The **Model 197** control panel from **Jet Inc.** monitors the operation of Jet treatment system aerators and additional components. It can monitor single or dual aeration systems with selectable high- and low-amperage monitor settings. The panels have dedicated alarm and control circuits with separate power circuits for aeration devices. In addition to the aerator control circuits, the panel contains three auxiliary 120V output circuits for external device control relays.

The panels include three low-voltage auxiliary input circuits selectable for N/O or N/C alarm inputs. An integrated pump power control relay is automatically disabled in an auxiliary device alarm condition. A signal array includes a power indicator LED and four additional equipment alarm indicator LEDs. The integrated alarm buzzer has an output for an optional remote-mounted audible alarm. An external reset switch and internal master reset switch are standard. The panel also has an alarm mode auto dialer and control interface, NEMA 4X enclosure, and primary circuit fuse. **800/321-6960; www.jetincorp.com.**

Versatile control panel

The 4-in-1 **MVP-S1/2DM** control panel from **Orenco** supports numerous electrical configurations and dosing schedules in a single panel. It can be configured in the field for timed or demand dosing. The control circuit operates on 120V power, but the pump circuit is dual-rated for 120V or 240V. The control panel has a programmable logic unit with multiple timing intervals for changing flow conditions, as well as a built-in elapsed time meter and counter. The PLC also displays float position and has a float error indicator. The panel is compatible with many applications, from new installs to older panels needing replacement. **800/348-9843; www.orenco.com/controls.** ■

PRODUCT news

July 2011

HydroLogex Introduces EnviroCAAT Treatment Module

The EnviroCAAT primary treatment module from HydroLogex LLC is a modified sequencing batch reactor that operates in a single vessel with continuous inflow and intermittent discharge, rather than the fill and draw process of a conventional SBR. When combined with the EnviroFilter secondary treatment PRMF, the system can deliver BOD and TSS below 5 mg/l and ammonia below 0.5 mg/l. The module also can be used as a stand-alone treatment system, delivering effluent BOD levels below 30 mg/l and TSS in the 30 mg/l range. **615/807-1405; www.hydrologex.com.**

Infiltrator Introduces IM-1060 Septic Tank

The IM-1060 injection molded, plastic septic tank from Infiltrator Systems features a mid-seam joint with EPDM gasket for a watertight seal. The two-piece design is permanently fastened using a series of non-corrosive plastic alignment dowels and locking seam clips. The tank can be installed with 6 to 48 inches of cover and pumped dry. Other features include inboard lifting lugs, heavy-duty lids that interconnect with TW risers and pipe risers, structurally reinforced access ports to eliminate distortion during installation and reinforced structural ribbing and fiberglass bulkheads for additional strength. **800/221-4436; www.infiltratorsystems.com.** ■

INDUSTRY news

July 2011

NESC Offers PSAs on Septic Maintenance

The National Environmental Services Center has three 30-second public service announcement videos on the importance of septic system maintenance. The PSAs are available for communities and watershed groups. They can be viewed and downloaded at www.nesc.wvu.edu/subpages/psa.cfm. ■

Our Fair Share

Lobbying at the federal level is essential if the onsite industry is to receive adequate funding

By Eric Casey

Suppose you had a farm of about 25 acres and your neighbor had a farm of about 75 acres. What if the government said it wanted to give you fertilizer to help grow your crops, but when it came time to get that fertilizer you received one bag and your neighbor received 500 bags. Would you feel you were treated fairly?

That's pretty much the situation our industry faces when it comes to getting its fair share of the U.S. EPA Clean Water State Revolving Fund (SRF), and it's the reason NOWRA believes the industry needs a lobbyist in Washington.

Although the onsite industry serves 20 to 30 percent of homes in the U.S., it receives only a tiny fraction of SRF funding. The latest EPA data (2008) shows that only $9 million of the $5.5 billion available that year was spent on "individual/decentralized sewage." Almost all of the rest went to municipal sewer projects. That's roughly one cent for every five dollars received by central sewer interests. And it's patently unfair.

Tell the story

Our industry has a terrific story. Properly installed and maintained, onsite systems are an ecologically sound, energy-efficient and safe solution. They are often more cost-effective than sewer extensions, even in suburban and urban areas. They safely recharge aquifers.

Septage pumped from onsite systems provides an excellent and safe fertilizer in agricultural applications. Onsite systems and technologies have a key role in the movement toward integrated watershed management.

These are all important stories to share with the public, regulators and the environmental community, but they are unlikely to be told if onsite systems continue to be treated as the ugly stepchild of big-pipe systems.

To be sure, our industry has its challenges: too many poorly functioning systems, poor maintenance by consumers, a fragmented regulatory structure, public misconceptions about the benefits of onsite systems, and others. All this contributes to a situation where negative media coverage about onsite systems often goes unchallenged. The industry's interests are often steamrolled by better-funded and better-organized interest groups when it comes to securing more favorable regulation and support at all levels.

With a fairer share of federal funds, problems with public image and education, practitioner training and development, remediation of problem systems, and many other issues could be addressed far more effectively.

A funding issue

Many of our problems are the direct result of insufficient funds. If we received funding commensurate with the number of homes and businesses we serve, our annual share of SRF money would be $1.0 to $1.5 billion annually. Other sources, such as the USDA Rural Development program, also fall short in funding for onsite and decentralized projects.

With a fairer share of federal funds, problems with public image and education, practitioner training and development, remediation of problem systems, and many other issues could be addressed far more effectively. More money would also help stabilize companies facing a difficult economy and would likely increase employment within the industry.

NOWRA strongly believes a starting point is a lobbying effort intended to secure a fairer share of federal funding for our industry. This effort will only work if the onsite community recognizes the need to work together to enlarge the pie for everyone involved. Additional funding from the SRF or other federal sources could help:

- Fix failing onsite systems.
- Prevent future failures by encouraging proper maintenance and service.
- Educate the public about the benefits of onsite treatment.
- Empower and encourage states to develop the capacity to win and manage federal funding for onsite and decentralized projects.
- Develop standards of professionalism to curtail substandard, shoddy work and dishonest or fraudulent activity.
- Encourage faster and more consistent transfer of new technologies from the research stage to commercialization.

Setting the direction

NOWRA has taken a number of steps to move forward with a lobbying effort. We have established the Coalition for Onsite Wastewater Equity to bring the industry together around the goal of increasing federal funding. The group includes NOWRA, other national organizations, state affiliates, the manufacturing community, and interested individuals.

The coalition has begun fundraising to hire a lobbyist to represent our industry before the EPA and Congress. Many manufacturers have stepped up with financial support. Other members of the coalition are well placed to provide technical support, public and media relations, and grassroots advocacy.

The coalition is evaluating lobbying firms with environmental and wastewater advocacy experience. A steering committee of coalition members is being assembled. Its role will be to define specific goals for the lobbying effort and to provide feedback on strategic approaches suggested by the lobbying firm.

We envision the lobbying campaign as a two-year effort initially to increase the industry's share of federal funding. As is often the case when working through federal channels, progress is likely to occur through incremental victories. If the effort shows progress, the coalition will have shown the value of working together and should be able to broaden its efforts.

This effort is not intended to add to the deficit or increase government spending. The money the industry is seeking is already obligated, and onsite systems are specifically identified as eligible for funding. We simply want our fair share.

Eric Casey is executive director of NOWRA. He can be reached at 800/966-2942 or wecasey@comcast.net. ■

Oil Field Wastewater Tanks

The Alberta Onsite Wastewater Management Association Industry spring newsletter warns installers that wastewater treatment plants decommissioned from oil fields are coming on the market. In Canada, the tanks are used only under a variance in the oil fields. When their original purpose is voided, so is the variance. The tanks must be approved again before they can be installed in different locations, and another variance will probably be required to use them.

The association elected Dale McLure president, Daniel Morris vice president and Charles Hallett secretary-treasurer.

Missouri Board Changes

The Missouri Smallflows Organization membership elected Janet Murray president, Christina Keller vice president, Seth Coggin secretary and Nancy Leighton treasurer.

CALENDAR OF EVENTS

Aug. 4-6

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

Aug. 19-20

Georgia Onsite Wastewater Association Conference and Industry Exhibit, Hilton Atlanta/Marietta Hotel and Conference Center, Marietta. 678/646-0369; www.onsitewastewater.org.

TRAINING & EDUCATION

NAWT

The National Association of Wastewater Transporters has the first half of its Operation and Maintenance course Sept. 22-23 at Citrus Heights, Calif. Contact Kit Rosefield at 530/513-6658; 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 stated otherwise:

- Aug. 11-12 – Continuing Education, Guntersville
- Aug. 24-26 – Advanced Installer II
- Sept. 8-9 – Continuing Education, Florence
- Sept. 21-23 – Basic Installer

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 in sponsorship with the University of Arizona Onsite Wastewater Education Program has a Soil and Site Evaluation for Onsite Systems class Aug. 17-18 in Flagstaff. Call Kitt Farrell-Poe at 520/621-7221, email kittfp@ag.arizona.edu, or visit www.ag.arizona.edu/waterquality/onsite.

California

The California Onsite Wastewater Association is offering these NAWT classes:

- Aug. 12 – System Controls, Citrus Heights
- Sept. 22-23 – Operation and Maintenance, Part 1, Citrus Heights

Call Kit Rosefield at 530/513-6658 or visit www.cowa.org.

Florida

Courses are at the Florida Onsite Wastewater Association Training Center in Lake Alfred unless stated otherwise.

- Aug. 4-6 – FOWA Convention & Trade Show, Daytona Beach
- Aug. 17 – Master IV: Low-Pressure Distribution System Design, Tallahassee
- Aug. 18 – Master IV: Low-Pressure Distribution System Design, Jacksonville
- Aug. 25 – Advanced Treatment Systems, Part I, Ft. Myers
- Aug. 30 – Advanced Treatment Systems, Part I
- Aug. 31 – Advanced Treatment Systems, Part II
- Sept. 7 – Advanced Treatment Systems, Part II, Key Largo
- Sept. 13 – Advanced Treatment Systems, Part I, Hawthorne
- Sept. 15 – Advanced Treatment Systems, Part I, Port St. Joe

Contact FOWA at 321/363-1590 or visit www.fowaonsite.com.

Iowa

The Iowa Onsite Wastewater Association has a Small Community Systems course on Sept. 19 in Ogden. Call Alice Vinsand at 515/225-1051, email execdir@iowwa.com, or visit www.iowwa.com.

Michigan

The Michigan Onsite Wastewater Training and Education Center at MSU Tollgate Center in Novi is offering these courses:

- Aug. 10-11 – Onsite Systems Evaluator
- Sept. 28-29 – Onsite Systems Maintenance

Call Barb DeLong at 517/355-4720 or visit www.egr.msu.edu/age/outreach.html.

Minnesota

The University of Minnesota Water Resources Center has these classes:

- Aug. 3 – Sampling Onsite Systems, Waterville
- Aug. 5 – Soils Continuing Education, Alexandria
- Aug. 23-26 – Service Provider, Brainerd
- Sept. 8 – Soils Continuing Education, Brainerd
- Sept. 27-29 – Advanced Design and Inspection, Part 1, 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:

- Aug. 30 – Media Filters, Cape Girardeau
- Aug. 31 – Aerated Treatment Units, Cape Girardeau
- Sept. 6 – Drainfields and Water Management, St. Louis
- Sept. 7 – Earthen Structures, St. Louis
- Sept. 27 – Troubleshooting, Springfield
- Sept. 28 – Hydraulics, Springfield

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:

- Aug. 11 – Surveying Basics for the Onsite Wastewater Contractor
- Sept. 1 – Conventional Onsite Treatment Basics for Installers
- Sept. 15 – Innovative and Alternative Technologies
- Sept. 21 – Conventional Onsite System Inspection
- Sept. 21-22 – Conventional Onsite System Inspection and Field Training
- Sept. 29 – Installing Advanced Onsite Systems
- Sept. 29 – Innovative and Alternative Technology Field Training, Peckham Farm

Call 401/874-5950 or visit www.uri.edu/ce/wq.

North Carolina

The North Carolina Soils and On-Site Wastewater Training Academy has the following courses at Raleigh unless stated otherwise:

- Aug. 4 – Soil Survey in the 21st Century, webinar
- Aug. 9-11 – Subsurface Wastewater System Operator, Mills River
- Aug. 30 – Septic System Options for Difficult Sites, Concord
- Sept. 1 – Wastewater in the Environment, Concord

MARKETPLACE advertising

- Sept. 7-8 – Introductory Installer, Mills River
- Sept. 9 – Installing Pump Systems, Mills River
- Sept. 14-15 – Subsurface Wastewater System Inspector, Greensboro

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

The North Carolina Pumper Group and Portable Toilet Group are holding the four-hour septage management training and three-hour land application seminar on Sept. 24 in Asheville. Call Joe McClees at 252/249-1097, visit www.ncpumpergroup.org or www.ncportabletoiletgroup.org.

Pennsylvania

The Pennsylvania Septage Management Association is offering the Basic and Advanced Onsite Treatment Inspection Certification course Sept. 13-14 in Montoursville. Call 717/763-7762 or visit www.psma.net.

Utah

Utah State University has these On-Site Wastewater Treatment Training Certification Workshops on:

- Sept. 12-13 – Level 1, Heber City
- Sept. 14 – Renewal Level 1 Certification, Heber City
- Sept. 15 – Renewal Level 2 Certification, Heber City
- Sept. 28-29 – Level 2, Logan

Call 435/797-1000 or visit http://uwrl.usu.edu/partnerships/training/classes.html.

Virginia

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

- Aug. 30-Sept. 1 – Basic Skills Camp
- Sept. 5-Nov. 11 – Nitrogen Dynamics, Online Course
- Oct. 3-7 – System Design Camp I
- Oct. 17-21 – Soils/Site Evaluation, TBA
- Oct. 31-Nov. 4 – System Design Camp II

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

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